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ΙΟΥΛΙΟΣ 2012

Περίληψη

Η παρούσα εμπειρική ανάλυση επιχειρεί να προσδιορίσει την αποτελεσματικότητας μίας απλής στρατηγικής στατιστικού αρμπιτράζ, αυτής των ζευγών συναλλαγής (pairs trading). Στο πλαίσιο της μελέτης χρησιμοποιούνται ημερήσια στοιχεία για 21 είδη εμπορευμάτων- που καλύπτουν όλες τις βασικές κατηγορίες όσων διαπραγματεύονται μέσω συμβολαίων μελλοντικής εκπλήρωσης- για το χρονικό διάστημα 16 ετών (από το 1995 έως το 2011). Η διαμόρφωση των εν λόγω ζευγών θα μπορούσε να χαρακτηριστεί ως μία άκρως ενδιαφέρουσα διαδικασία στον τομέα της χρηματοοικονομικής επιστήμης που προσπαθεί, χρησιμοποιώντας έννοιες και μεθόδους της στατιστικής επιστήμης και της οικονομετρίας- όπως η επιστροφή στο μέσο (mean reversion), ο συντελεστής συσχέτισης, ο δείκτης Sharpe, ο κανόνας του κινούμενου μέσου (mean average)-, να προσδιορίσει το χρόνο συναλλαγής στον οποίο δύναται να επιτευχθούν σημαντικές αποδόσεις.

Λέξεις Κλειδιά: στατιστικό αρμπιτράζ, ζεύγη συναλλαγής, pairs trading, συμβόλαια μελλοντικής εκπλήρωσης, futures, εμπορεύματα, αποδόσεις, κινούμενος μέσος, δείκτης Sharpe

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1. Στατιστικό αρμπιτράζ

1.1. Εισαγωγή

Η επιστροφή στο μέσο (mean reversion) των τιμών είναι μία ιδιαίτερα ισχυρή και θεμελιώδης δύναμη, που οδηγεί συστήματα και αγορές σε διορθωτικές σχέσεις. Ξεκινώντας στις αρχές του 1980, το στατιστικό αρμπιτράζ αποτέλεσε μία επίσημη και επιτυχημένη προσπάθεια μοντελοποίησης αυτής της συμπεριφοράς στοχεύοντας στην κερδοφορία. Κατανοώντας την υπολογιστική βάση του στατιστικού αρμπιτράζ, γίνεται η απαρχή της ανάπτυξης των όσων είναι γνωστών ως σύνθετα χρηματοοικονομικά συστήματα και ως μοντέλα κινδύνου.

Η επενδυτική στρατηγική που περιγράφεται ως στατιστικό αρμπιτράζ, θεωρείται ως μία δυσνόητη για πολλούς- λόγω του μαθηματικού υπόβαθρού της- και ταυτόχρονα *αυστηρά πειθαρχημένη* επενδυτική τακτική. Παράλληλα, αυτή η δυσκολία κατανόησής της σε βάθος, δημιούργησε αυξημένη ανάγκη για μαθηματική ωριμότητα στους επενδυτές, οι οποίοι αναζητούν να διορίσουν διαχειριστές, γνώστες των προχωρημένων μαθηματικών εννοιών της στρατηγικής, στους οποίους είναι κατανοητή η συγκεκριμένη «γλώσσα» της κερδοσκοπίας.

Το στατιστικό αρμπιτράζ είναι μία επενδυτική στρατηγική μακρόχρονης περιόδου η οποία παράγει χωρίς κίνδυνο κέρδη (κερδοσκοπία). Ειδικότερα, εκμεταλλεύεται την εσφαλμένη- πρόσκαιρη- αποτίμηση ενός ή περισσοτέρων τίτλων η οποία αναμένεται τελικά να επανέλθει στην εύλογή της αξία.

Η ιδέα του στατιστικού αρμπιτράζ είναι αντικείμενο έρευνας σε πληθώρα εμπειρικών μελετών. Στην παρούσα εργασία μελετάμε πώς εφαρμόζεται η στρατηγική των ζευγών συναλλαγής (pairs- trading) στα προθεσμιακά συμβόλαια εμπορευμάτων και πόσο ικανοποιητικά ποσοστα κερδοφορίας μπορεί να επιτύχει.

1.2. Η έννοια της επιστροφής στο μέσο (mean reversion)

Το στατιστικό αρμπιτράζ υπάρχει, σχεδόν, τα τελευταία 30 χρόνια. Σε αυτό το διάστημα, η γενική της σύλληψη διαδόθηκε αρκετά μέσω των όσων ανέφεραν οι πρώτοι που αναμείχθηκαν με αυτό: οι επενδυτικοί τραπεζικοί αναλυτές και οι ακαδημαϊκοί. Παρόλα αυτά, η δυσκολιά κατανόησής της παραμένει λόγω του ότι οι ειδικοί που την εφαρμόζουν, αυξάνουν διαρκώς την πολυπλοκότητα του μοντέλου τους, και για εμπορικούς λόγους δεν αποκαλύπτουν τις καινοτομίες. Σε αυτή τη μεγάλη διάδοση της βασικής μορφής του στατιστικού αρμπιτράζ, ο όρος επιστροφή στο μέσο προβάλλεται ιδιαίτερα.

Μία χρονοσειρά λέγεται πως παρουσιάζει ***επιστροφή στο μέσο*** όταν, κατά τη διάρκεια μίας συγκεκριμένης περιόδου, «επιστρέφει» σε μία σταθερή μέση τιμή.

Αναλυτικότερα: η στρατηγική *επιστροφή στον μέσο (mean reversion)* στηρίζεται στην πεποίθηση των επενδυτών ότι τόσο οι υψηλές, όσο και οι χαμηλές τιμές μιας μετοχής ή ενός γραμμικού συνδιασμού δύο μετοχών, όπως η διαφορά των τιμών τους, είναι *προσωρινό φαινόμενο* και τελικά η τιμή της θα κινηθεί σε ένα μέσο επίπεδο μακροπρόθεσμα. Η μεθοδολογία mean reversion περιλαμβάνει πρώτα την εξακρίβωση του εύρους της τιμής που θα κινηθεί μία μετοχή και μετά τον υπολογισμό της μέσης τιμής χρησιμοποιώντας αναλυτικές τεχνικές που βασίζονται στο Ενεργητικό της εταιρίας, στα κέρδη της κτλ. Όταν η τρέχουσα τιμή είναι μικρότερη από την μέση, η μετοχή θεωρείται ελκυστική για αγορά με την προσδοκία ότι θα ανέβει. Όταν η τρέχουσα τιμή είναι μεγαλύτερη από την μέση, η τιμή αναμένεται να πέσει. Με άλλα λόγια, αποκλίσεις από την μέση τιμή αναμένεται να αντιστραφούν στο μέλλον.

Τα τελευταία χρόνια, η έννοια της επιστροφής στο μέσο έχει λάβει αξιοσημείωτη προσοχή στην χρηματοοικονομική βιβλιογραφία. Για παράδειγμα, έχει παρατηρηθεί αυξανόμενη τάση για τη μελέτη μακροχρόνιων ιδιοτήτων των τιμών των μετοχών, με ιδιαίτερη να δίνεται στη διερεύνηση του διαχωρισμού για το πότε μπορούν να χαρακτηριστούν ως μονοπάτι τυχαίας επιλογής και πότε διαδικασίες επιστροφής στο μέσο. Εάν μία χρονοσειρά αναπτύσσεται ως τυχαίο μονοπάτι, τότε κάθε αιφνίδιο περιστατικό επιδρά μόνιμα με αποτέλεσμα να μην εμφανίζεται καμία τάση που θα επαναφέρει την τιμή σε ένα επίπεδο σταθερού διαχρονικού μέσου. Επιπροσθέτως, μακροπρόθεσμα, η μεταβλητότητα της διαδικασίας αναμένεται να μεγεθύνεται απεριόριστα αποκλείοντας τη δυνατότητα πρόβλεψης βασιζόμενη σε ιστορικά στοιχεία. Από την άλλη μεριά, εάν μία χρονοσειρά τιμών μετοχών ακολουθεί μία διαδικασία επιστροφής στο μέσο, οι επενδυτές μπορεί να δύνανται να προβούν σε πρόβλεψη μελλοντικών αποδόσεων μέσω της αξιοποίησης παρελθόντων πληροφοριών. Από την ολοκλήρωση της μελέτης των Fama και French (1988) και Poterna και Summers (1988), που πρώτοι τεκμηρίωσαν την επιστροφή στο μέσο σε χρηματιστηριακές αποδόσεις σε χρονικό ορίζοντα μεγάλης διάρκειας, αρκετές μελέτες διενεργήθηκαν για τη διερεύνηση επιστροφής στο μέσο σε αρκετές αγορές (βλ.Chaudhury and Wu (2003)) καθώς και σε πολλές κατηγορίες περιουσιακών στοιχείων (βλ. Deaton and Laroque (1992), Jorion and Sweeney(1996)).

Εφόσον μπορεί να γίνει πρόβλεψη μελλοντικών παρατηρήσεων χρονοσειρών επιστροφής στο μέσο μέσω της αξιοποίησης ιστορικών δεδομένων, μία σειρά μελετών έχει εξετάσει τις συνέπειες της επιστροφής στο μέσο στη διαμόρφωση χαρτοφυλακίων και στη διαχείριση στοιχείων του ενεργητικού (βλ.Barberis (2000) & Carcano et al.(2005))

1.3. Ο νόμος της μίας τιμής (the law of one price)

Ο νόμος της μίας τιμής αναφέρει πως εάν οι αποδόσεις δύο επενδύσεων είναι πανομοιότυπες από κάθε άποψη, τότε η τρέχουσα αξία των δύο επενδύσεων θα πρέπει να είναι και αυτή ίδια. (Ingersoll, 1987). Αντίστοιχα, δύο χαρτοφυλάκια που έχουν δημιουργηθεί από δύο αγορές, δεν είναι δυνατόν να υπάρχουν σε διαφορετικές τιμές εάν η αξία εξόφλησή τους είναι η ίδια. (Chen and Knez, 1995). Σε περίπτωση που αυτές οι υποθέσεις δεν ικανοποιούνται, ευκαιρίες κερδοσκοπίας δίνονται σε επενδυτές για χωρίς κίνδυνο κέρδη αγοράζοντας υποτιμημένους τίτλους και πουλώντας τους υπερτιμημένους. (Lamont and Thaler, 2003).

Σε μία πλήρως αποτελεσματική αγορά, οι τιμές αντανακλούν πλήρως όλες τις διαθέσιμες πληροφορίες σε όλες τις περιόδους (Fama, 1970). Η υπόθεση της αποτελεσματικότητας της αγοράς (market efficiency hypothesis) άγγιξε την αιχμή της τη δεκαετία του 1970, και εκείνο τον καιρό υπήρχε ομοφωνία όσον αφορά την αντίληψη πως κάθε πληροφορία που φτάνει στην αγορά διαχέεται πολύ γρήγορα και άμεσα το αποτέλεσμα της πληροφορίας αντανακλάται στην τιμή της μετοχής.

1.4. Η υπόθεση της αποτελεσματικής αγοράς

Αναφορικά με την υπόθεση της αποτελεσματικής αγοράς (efficient market hypothesis) υπάρχουν τρία επίπεδα αποτελεσματικότητας:

- **Ισχυρής μορφής** η οποία ελέγχει εάν κάποιος επενδυτής έχει μυστικές πληροφορίες είτε αυτές αντικατοπτρίζονται στην αγορά είτε όχι.
- **Ενδιάμεσης ισχύος**, μία μορφή αποτελεσματικότητας κατά την οποία οι τιμές της αγοράς προσαρμόζονται σύμφωνα με την κοινή πληροφόρηση
- **Αδύναμης μορφής** η οποία υποδηλώνει πως οι μελλοντικές τιμές δεν δύνανται να προβλεφθούν με κανέναν τρόπο.

Σχετικά με την αδύναμη μορφή της αποτελεσματικότητας δεν έχει αποτελεσματική εφαρμογή κανένα είδος τεχνικής ανάλυσης, καθώς οι μελλοντικές δεν είναι εξαρτώμενες από την τρέχουσα τιμή εφόσον καμία συσχέτιση δεν υπάρχει μεταξύ τους. Εκ των τριών μορφών αποτελεσματικότητας της αγοράς, η τελευταία είναι η πιο ενδιαφέρουσα καθώς τη η μορφή δεν είναι δυνατόν να υπάρχει εάν θετικές αποδόσεις επιτυγχάνονται με την εφαρμογή pairs- trading στρατηγικής. Αξιομνημόνευτα είναι τα σχετικά σχόλια που έχουν γίνει: οι Famma και French (1988), όπως επίσης οι Campell και Shiller (1988) διενήργησαν ελέγχους προκειμένου να επισημάνουν πότε οι ιστορικές αποδόσεις μπορούν να χρησιμοποιηθούν για πρόβλεψη μελλοντικών αποδόσεων. Τελικά, το αποτέλεσμα έδειξε πως οι μελλοντικές αποδόσεις, σε κάποιο βαθμό, μπορούν να προβλεφθούν από τη μερισματική απόδοση της αγοράς. Εκτός της μερισματικής απόδοσης για την πρόβλεψη αποδόσεων, τα επιτόκια και οι δείκτες τιμών μπορούν να χρησιμοποιηθούν στην προσπάθεια αυτή.

1.5. Οι στρατηγικές Διαχείρισης

Ενεργές στρατηγικές διαχείρισης περιουσιακών στοιχείων βασιζόμενες σε χαρτοφυλάκια με το *χαρακτηριστικό της επιστροφής στο μέσο*, που γενικότερα προσδιορίζονται από τον γενικότερο όρο του **στατιστικού αρμπιτράζ**, έχουν χρησιμοποιηθεί από επενδυτικές τράπεζες και κεφάλαια διαχείρισης κινδύνου, με ποικίλες κλίμακες επιτυχίας, για αρκετά χρόνια. Πιθανότατα, <u>η πιο απλή στρατηγική αυτής της κατηγορίας</u> αποτελείται από ένα χαρτοφυλάκιο δύο περιουσιακών στοιχείων, όπως το **pairs-trading** (ανά ζεύγη συναλλαγή). Σε αυτή την προσέγγιση συναλλαγής γίνεται η ταυτόχρονη αγορά (long) ενός περιουσιακού στοιχείου, με την πώληση (short) ενός άλλου ούτως ώστε το χαρτοφυλάκιο να μην επηρεάζεται από τη γενικότερη κατάσταση της αγοράς. Υπό αυτό το πρίσμα, η στρατηγική περιγράφεται ως εμπορικά ουδέτερη (market neutral). Πολλαπλές αναλύσεις και μελέτες έχουν γραφτεί προκειμένου να διευκρινιστεί πώς επιτυγχάνεται το pairs-trading, με ποιόν τρόπο υλοποιείται σε πραγματικές συνθήκες, και τι αποτελέσματα έχει επιτύχει κατά τη διάρκεια των τελευταίων ετών (βλ. Vidyamurthy(2004) και Pole (2007)). Η θεμελιώδης υπόθεση της *ανά ζεύγη συναλλαγής* είναι πώς τα δύο χρηματοοικονομικά μέσα που χρησιμοποιούνται έχουν παρεμφερή χαρακτηριστικά θα πρέπει να αποτιμώνται λίγο-πολύ το ίδιο. Συνεπώς, το πρώτο βήμα έγκειται στον εντοπισμό των δύο «εργαλείων» των οποίων οι τιμές, στο απώτερο μέλλον, αναμένεται να δείχνουν δεμένες σε μία κοινή στοχαστική τάση. Αυτό που προκύπτει από αυτή την κοινή πορεία, παρόλο που οι δύο χρονοσειρές των τιμών μπορεί να μην κινούνται πάντα προς την ίδια κατεύθυνση, η απόκλισή τους (spread), για παράδειγμα: η απλή διαφορά στις τιμές, θα μεταβάλλεται γύρω από ένα ορισμένο επίπεδο ισορροπίας. Και εφόσον το μέγεθος του «ανοίγματος» ποσοτικοποιεί το βαθμό της λανθασμένης αποτίμησης του ενός περιουσιακού στοιχείου σε σχέση με το άλλο, για το λόγο αυτό, αυτές οι στρατηγικές αναφέρονται και ως σχετικής αξίας (relative-value). Εάν μία κοινή στοχαστική τάση πράγματι εμφανίζεται μεταξύ των δύο επιλεχθέντων στοιχείων, οποιαδήποτε προσωρινή απόκλιση από τον υποτιθέμενο μέσο ή επίπεδο ισορροπίας είναι πιθανό να διορθωθεί με το πέρασμα του χρόνου. Η δυνατότητα πρόβλεψης του συγκεκριμένου χαρτοφυλακίου μπορεί να διερευνηθεί μέσω των υπερβαλλόντων αποδόσεων: ένας συμβαλλόμενος, ή ένα αλγοριθμικό σύστημα συναλλαγών, θα μπορούσε να ανοίγει μία θέση κάθε φορά που εντοπίζεται μία πραγματικά μεγάλη απόκλιση από το επίπεδο ισορροπίας και να την κλείνει όταν το άνοιγμα επιστρέφει πίσω στον μέσο. Αυτή η απλή ιδέα μπορεί να επεκταθεί με ποικίλους τρόπους, για παράδειγμα με την αντικατάσταση ενός από τα δύο συνθετικά περιουσιακά στοιχεία, με στόχο την διερεύνηση των ιδίων θεμάτων της *σχετικής αξίας* και της *επιστροφής στο μέσο,* αλλά με διαφορετικό τρόπο. Σχετική μελέτη σε αυτή την κατεύθυνση έχει πραγματοποιηθεί, μεταξύ άλλων, από τους Montana et al.(2009) και Montana και Parella (2009), όπου περιγράφονται στρατηγικές στατιστικής κερδοσκοπίας προθεσμιακών συμβολαίων (futures contracts) και εισηγμένων κεφαλαίων (exchange-traded funds), αντιστοίχως. Ένα ενδεχόμενο το οποίο δεν έχει διερευνηθεί ενδελεχώς στις αναφερθείσες μελέτες αφορά το πόσο ακριβές είναι το μοντέλο του παρατηρούμενου ανοίγματος. Ένα στοχαστικό μοντέλο το οποίο θα περιγράφει πώς εξελίσσεται η διαφορά διαχρονικά είναι εξαιρετικά επιθυμητό καθώς επιτρέπει στον αναλυτή να περιγράψει με ακρίβεια και να παρακολουθήσει μερικές από τις αξιοπρόσεκτές του ιδιότητες., όπως η επιστροφή στο μέσο. Επιπλέον, βελτιωμένοι όροι συναλλαγών είναι δυνατόν να διαμορφωθούν από την ακολουθούμενη διαδικασία σχετικά με το άνοιγμα (spread) της τιμής των τίτλων.

Προσφάτως, Elliot et al.(2005) υποστήριξαν πως η *Gaussian γραμμική κατανομή* μπορεί να είναι κατάλληλη για τη μοντελοποίηση επιστροφής στο μέσο spread που προκύπτουν στο pairs-trading, και περιγράφεται πως τέτοιου είδους μοντέλα μπορούν να χρησιμοποιηθούν σε στρατηγικές κερδοσκοπίας. Η βασική επισήμανση σε αυτές είναι πως η παρατηρούμενη διαδικασία θα πρέπει να αντιμετωπιστεί ως η κατανόηση μίας αφανούς διαδικασίας που περιγράφει το πραγματικό spread, που πιθανόν να μπορεί να συλλάβει τις υπάρχουσες συνθήκες που επικρατούν και επηρεάζουν την αγορά. Για το λόγο αυτό , συγκρίνοντας το εκτιμώμενο spread της διαδικασίας με το παρατηρούμενο είναι δυνατή η εκτίμηση μόνιμων αδυναμιών της αγοράς. Βασιζόμενοι στην υπόθεση πως οι παράμετροι του μοντέλου δεν διαφοροποιούνται στον βραχυχρόνιο ορίζοντα, Elliot et al.(2005) προτείνουν τη χρήση του EM αλγόριθμου, μίας επαναλαμβανόμενης διαδικασίας εκτίμησης της μεγίστης πιθανοφάνειας, ώστε να εντοπιστεί η αφανής διαδικασία και να εκτιμηθούν οι υπόλοιπες άγνωστες παράμετροι του μοντέλου.

2. Εξερευνώντας τα ζεύγη συναλλαγής (pairs trading)

2.1. Εισαγωγή

Η στρατηγική παραμένει ομιχλώδης λόγω ανεπαρκούς ακαδημαϊκής έρευνας. Παρόλο που βασίζεται σε απλές αντιθετικές αρχές, το pairs trading δεν έχει προκαλέσει την προσοχή της ακαδημαϊκής κοινότητας όσο η αντιθετική στρατηγική. Κι ενώ η ανάπτυξη ενός δομημένου πλαισίου που περιλαμβάνει τις διάφορες παραμέτρους του pairs trading, αναμφίβολα θα προσέλκυε την προσοχή όσων το εφαρμόζουν, αυτό το ζήτημα είναι *ιδιαιτέρως πολύπλοκο*. Ωστόσο, το <u>πρώτο βήμα</u> κάποιο σε αυτή την κατεύθυνση είναι πως θα χρειαζόταν μία σχετική κατανόηση όσον αφορά τη φύση του pairs trading. Κάποια *ενδεικτικά ερωτήματα* τα οποία θα πρέπει να απαντηθούν κατά την διαμόρφωση μιας στρατηγικής pairs trading είναι :

- Πώς εντοπίζεται ένα ζεύγος της στρατηγικής
- Πότε το συνδυασμένο χαρτοφυλάκιο απέχει αρκετά από τη αξία ισορροπίας του ώστε να ανοίξει θέση, και
- Πότε κλείνει η θέση

Μελετώντας τη συγκεκριμένη στρατηγική από άποψης διαχείρισης του ***κινδύνου***, είναι επίσης πολύ σημαντικό να διερευνηθεί και να προσδιοριστεί:

- ο μέγιστος επιτρεπόμενος χρόνος κατά τη διάρκεια του οποίου θα παραμένει ανοιχτή η θέση
- το μέγιστο επιτρεπόμενο όριο ζημιών (Value at Risk -VaR)
- περεταίρω κριτήρια μείωσης του κινδύνου (όπως η πολιτική stop-loss.)

2.2. Λόγοι που βοήθησαν στη διάδοση

Υπάρχουν αρκετοί λόγοι που έκαναν δημοφιλές το pairs-trading. Καταρχάς, πρόκειται για μία διαδικασία απλή και στην κατανόηση αλλά και στην εκτέλεσή της. Δεύτερον, τα μοντέλα αποτίμησης, που παρουσιάζουν ένα ευρύ περιθώριο σφάλματος, δεν προαπαιτούνται καθώς το pairs- trading βασίζεται στην σχετική αξία και η θέση είναι συχνά ουδέτερη για την αγορά. Τρίτον, είναι σημαντικά ευέλικτη στρατηγική επιτρέποντας την προσαρμογή διάφορων επενδυτικών τακτικών. Τέλος, συνήθως δεν απαιτούνται τακτικά διαδικασίες εξισορρόπησης, όπως σε ημερήσια βάση στο πραγματικό εμπόριο, και μπορεί να επιτύχει κέρδη.

Το pairs-trading είναι μία στρατηγική στατιστικής κερδοσκοπίας σχεδιασμένη έτσι ώστε να εκμεταλλεύεται τις βραχυπρόθεσμες αποκλίσεις από τη μακροχρόνια σχέση ισορροπίας των τιμών δύο μετοχών. Παραδοσιακές μέθοδοι έχουν προσπαθήσει να εντοπίσουν εμπορικά ζεύγη εκτιμώντας τη συσχέτισή τους αλλά και άλλους μη παραμετροποιημένους κανόνες αποφάσεων. Σημειώνεται πως αυτού του είδους οι προσεγγίσεις δεν εγγυούνται την πλέον στατιστικά σημαντική ιδιότητα που είναι θεμελιώδης για μία κερδοφόρα στρατηγική pairs-trading, την επονομαζόμενη επιστροφή στο μέσο.

Η ύπαρξη συνολοκλήρωσης (cointegration) επιτρέπει τον συνδυασμό δύο μετοχών με συγκεκριμένη γραμμική αλληλουχία έτσι ώστε το χαρτοφυλάκιο ως σύνολο να ακολουθεί μια στάσιμη (stationary) διαδικασία. Το χαρτοφυλάκιο σχηματίζεται αγοράζοντας τη σχετικά υποτιμημένη μετοχή και πουλώντας τη συγκριτικά υπερτιμημένη. Σε περίπτωση που δύο μετοχές που συνολοκληρώνονται μοιράζονται και μία μακροπρόθεσμη σχέση ισορροπίας, οι αποκλίσεις τους από αυτό το επίπεδο ισορροπίας είναι μόνο βραχυπρόθεσμες και αναμένεται να εξαλειφθούν στο μελλοντικές περιόδους. Προκειμένου να προκύψει κέρδος μέσω αυτής της σχετικά εσφαλμένης αποτίμησης(mis-pricing), μία θετική θέση (long position) στο χαρτοφυλάκιο ανοίγει όταν η αξία του μειώνεται, και προκύπτει σημαντικά κατώτερη του επιπέδου μακροπρόθεσμης ισορροπίας, ενώ η θέση αυτή κλείνει όταν η αξία του χαρτοφυλακίου εξομοιωθεί με την αναμενόμενη. Αντιστοίχως, κέρδη μπορούν να υπάρξουν, όταν το χαρτοφυλάκιο κινείται σε επίπεδο ανώτερο από αυτού όπου ισορροπεί, παίρνοντας αρνητική θέση (short position) έως ότου επανέλθει στην αναμενόμενή του αξία

2.3. Η έννοια της αντιθετικής στρατηγικής- Σχετικές μελέτες

Σε αυτό το σημείο θα πρέπει να αναφερθεί η έννοια της αντιθετικής στρατηγικής (contrarian strategy) εφόσον το pairs- trading αποτελεί ένα είδος της: σύμφωνα λοιπόν με τον ορισμό της, στην αντιθετική στρατηγική, ο επενδυτής δημιουργεί ένα χαρτοφυλάκιο χωρίς αρχικό κεφάλαιο (zero investment strategy), πουλώντας ανοικτά (short) μετοχές με πολύ υψηλές αποδόσεις (winner) για το προηγούμενο διάστημα, αγοράζοντας (long) παράλληλα μετοχές που είχαν πολύ χαμηλές αποδόσεις (loser) το ίδιο προηγούμενο χρονικό διάστημα. Η αντιθετική επενδυτική στρατηγική δείχνει ότι ένας επενδυτής είναι σε θέση να προβλέψει τις μελλοντικές αποδόσεις και να επιτύχει υπερβολικές αποδόσεις, εκμεταλλευόμενος πληροφορίες σχετικές με τη ιστορική απόδοση των μετοχών. Σε μία πληροφοριακά αποτελεσματική αγορά, κάτι τέτοιο δεν θα έπρεπε να συμβαίνει ,και συνεπώς τα αποτελέσματα αποδίδονται στην υπεραντίδραση (overreaction) των επενδυτών. Συνεπώς, ένας αντιθετικός επενδυτής δεν ακολουθεί τη γενικότερη τάση της αγοράς και δεν ακολουθεί το πλήθος- συνήθως κάνει ακριβώς το αντίθετο από τους άλλους επενδυτές που παρασύρονται από αυτή. Το να ακολουθείς τέτοιου είδους στρατηγική απαιτεί να διαθέτεις αρκετή δύναμη ώστε να κατορθώνεις να ενεργείς αντίθετα με την ψυχολογία των πολλών.

Συνήθως, το *αντιθετικό pairs trading* καθορίζει την πώληση παρελθόντων «νικητών» και την αγορά «χαμένων» μετοχών. Η εφαρμογή του κανονικά περιλαμβάνει την κατάταξη των αποδόσεων των μετοχών σύμφωνα με τη χρονική στιγμή t-1, και ακολούθως με ταυτόχρονες θέσεις αγοράς και πώλησης μέχρι την χρονική στιγμή t. Η στρατηγική είναι σχεδιασμένη να δημιουργεί κέρδος από την υπεραντίδραση και την ακόλουθη επιστροφή στο μέσο. (αρνητική σειριακή συσχέτιση στις αποδόσεις των μετοχών). Κέρδη αναφέρονται και στους Jegadeesh (1990) και Lehmann (1990).

Ωστόσο, οι Lo and MacKinlay (1990) δείχνουν πως τα *αντιθετικά* κέρδη μπορεί να επηρεάζονται από την καθυστερημένη αντίδραση ή χρονικές επιδράσεις μεταξύ «χαμένων» και «νικητών» μετοχών. Πιο συγκεκριμένα, εάν η μετοχή *j* αντιδρά προς την ίδια κατεύθυνση με τη μετοχή *i* αλλά με καθυστέρηση, τότε αγοράζοντας (πουλώντας) τη *j* ύστερα από μία αύξηση (μείωση) στην *i* θα δημιουργήσει κέρδη λόγω της επίδρασης της χρονικής υστέρησης που μεσολαβεί. Τα αποτελέσματα δείχνουν πως κοντά στο 50% των αντιθετικών επενδυτικών στρατηγικών δημιουργούνται από αντίστοιχες επιδράσεις. Το καταστάλαγμα από τους Lo and MacKinlay (1990) είναι να τονίσουν την αρνητική σειριακή συνδιακύμανση σ <0 και θετική δια-σειριακή συνδιακύμανση σ>0 για κάθε i διάφορο του j στις τιμές των μετοχών ως δύο πιθανές τιμές αντιθετικών κερδών.

Οι Jegadeesh και Titman (1995), επέκτειναν τους Lo και MacKinlay [1990], συσχετίζοντας τη δυναμική των χρονικών υστερήσεων, με τη δυναμική της αντίδρασης των τιμών σε κοινούς παράγοντες. Η ανάλυσή τους από contrarian κέρδη περιλαμβάνει και ένα πιο λεπτομερές σύνολο σεναρίων αντίδρασης των τιμών των μετοχών, τα οποία καλύπτουν την *υπό/ υπέρ-αντίδραση*, κάτω από την κάλυψη και υπερβολική αντίδραση σε κοινούς παράγοντες και απρόβλεπτα συμβάντα. Σε αντίθεση με τους Lo και MacKinlay [1990], οι Jegadeesh Titman (1995), όπως και το μεγαλύτερο μέρος των contrarian κερδών οδηγείται από την υπεραντίδραση ιδιαίτερων συμβάντων. Αυτό συνάδει με το γεγονός ότι υπερβολική αντίδραση σε τέτοιου είδους συμβάντα δημιουργεί πάντα αντιθετικά κέρδη, αλλά και η υπερβολική αντίδραση σε συνηθισμένους παράγοντες μπορεί να μειώσει τα αντιθετικά κέρδη. Το ουσιαστικό συμπέρασμα των Jegadeesh και Titman (1995), είναι να δείξουν πως η συνήθης αντίδραση των κοινών τιμών παραγόντων στις τιμές είναι ένα καταλληλότερο μέτρο αξιολόγησης των χρονικών υστερήσεων, από τη δια-σειριακή συνδιακύμανση των συνολικών αποδόσεων (βλ.Chng.T.Michael (2007).

2.4. Σημαντικές δημοσιεύσεις

Αρκετοί είναι οι συγγραφείς που δημοσίευσαν άρθρα που αφορούν το pairs- trading όπως και οι μέθοδοι που καθένας τους επέλεξε προκειμένου να γίνει η επιλογή του ζεύγους περιουσιακών στοιχείων.

Οι Gatev et al (1998, 2006) πρωτοπόρησαν το ακαδημαϊκό ενδιαφέρον σε αυτού του είδους τη στρατηγική: χρησιμοποίησαν έναν τρόπο κατάταξης των εφικτών ζευγών βάσει της συσχέτισής τους. Θέσεις πώλησης και αγοράς δημιουργούνται όταν οι τίτλοι απομακρύνονται από την ιστορική αξία που έχει υπολογιστεί. Στο τελευταίο τους άρθρο, χρησιμοποιούν δεδομένα τεσσάρων δεκαετιών και ανακαλύπτουν σημαντικά υπερβάλλοντα κέρδη, σε ποσοστό σχεδόν 12 τοις εκατό ανά έτος.

Οι Elliot et al. (2005) προτείνουν μία διαδικασίας επιστροφής στο μέσο (χρησιμοποιώντας μετοχές από τον ίδιο κλάδο) γνωστή ως η Gaussian Markov αλυσιδωτή μέθοδος. Έδειξαν λοιπόν πως το μοντέλο μπορεί να κάνει προβλέψεις σχετικά με το spread των δύο μετοχών. Μετά τη διαδικασία των προβλέψεων, οι διαδοχικές παρατηρήσεις συγκρίνονται με τις προβλεπόμενες αξίες. Εάν το παρατηρούμενο spread είναι μεγαλύτερο από την αντίστοιχη αναμενόμενη τιμή, μία θέση για το ζεύγος συναλλαγής ανοίγει.

Η μεθοδολογία που αναπτύχθηκε από τον Huck (2009) βασίστηκε σε ζεύγη πληροφοριών για την πρόβλεψη αποδόσεων. Μία κατάταξη δημιουργείται για τους τίτλους σύμφωνα με τις αναμενόμενες αξίες που δίνουν *πληροφορίες για υπέρ και υπό-τιμημένα περιουσιακά στοιχεία*. Τα αποτελέσματα από την εφαρμογή της μεθόδου σε μετοχές, επιβεβαίωσε την ικανοποιητική ικανότητά του για πρόβλεψη μελλοντικών αποδόσεων. Σημειώνεται πως η μέθοδος φάνηκε να παράγει μεγαλύτερες αποδόσεις όσο μικρότερος ήταν ο αριθμός των ζευγών.

Ένα γενικότερο πλαίσιο για την ικανότητα πρόβλεψης μεταξύ των μετοχών προσπάθησαν να σκιαγραφήσουν οι Dattasharma et al.(2008). Αυτοί μετέτρεψαν χρονοσειρές μετοχών σε μία δυαδική αλληλουχία, της οποίας η εξάρτηση μπορούσε να αναλυθεί μέσω υπολογιστικού πραγμάτωσης μίας επενδυτικής απόφασης, βασιζόμενοι σε παράγοντες που βοηθούν τη μείωση του κόστους και, συνεπώς, μεγιστοποιώντας τα πιθανά κέρδη.

Τέλος, ο Perlin (2007) εισαγάγει μία πολυπαραγοντική προσέγγιση. Η βασική ιδέα από την οποία πηγάζει η συγκεκριμένη προσέγγιση είναι η εύρεση ζευγών μετοχών χρησιμοποιώντας πληροφορίες που παράγονται από τις υπόλοιπες μετοχές και όχι με την τυχαία επιλογή. Αυτή η προσέγγιση εφαρμόστηκε στην χρηματοοικονομική αγορά της Βραζιλίας σε 57 περιουσιακά στοιχεία. Τα αποτελέσματα της υιοθέτησης μία πολυπαραγοντικής προσέγγισης αποδείχθηκαν ελπιδοφόρα. Επιπλέον, εάν μία εταιρία έχει ανακοινώσει άσχημα αποτελέσματα, τότε λιγότερες θέσεις αγορών λαμβάνονται.

3. Τα εμπορεύματα ως επένδυση

3.1. Ιστορική εξέλιξη

Το ενδιαφέρον για τα εμπορεύματα ως επένδυση αυξήθηκε υπερβολικά τα τελευταία χρόνια. Λόγω του υψηλού κόστους και της δυσκολίας της άμεσης διατήρησης της υλικής υπόστασης των εμπορευμάτων, οι επενδυτές εμπιστεύονται τα προθεσμιακά συμβόλαια εμπορευμάτων. Προσφάτως τα commodity- based exchange- traded προϊόντα ξεχώρισαν και διευκόλυναν τη νέα ανάπτυξη στις επενδύσεις εμπορευμάτων. Η τεράστια επιτυχία αυτών των προϊόντων φαίνεται από την μεγάλη επένδυση σε προϊόντα, που ανήλθε σε $125.8δις μέχρι τον Απρίλιο του 2010(βλ. Carpenter 2010)

Η διάδοση των εμπορευμάτων ως επένδυση είχε στηριχθεί από την άποψη πως τα εμπορεύματα παρέχουν άμεση έκθεση σε έναν αριθμό παραγόντων και έχουν ιδιαίτερα χαρακτηριστικά αντιστάθμισης του κινδύνου. Ειδικότερα, οι τιμές των εμπορευμάτων επηρεάζονται από παράγοντες όπως:

- ο καιρός
- γεωπολιτικές εξελίξεις
- δυσκολίες τροφοδοσίας στο χώρο παραγωγή τους
- απρόβλεπτη αύξηση της ζήτησης ως αποτέλεσμα ευδαιμονίας σε αναδυόμενες οικονομίες, και
- γεγονότα που προκαλούν πολιτικές ή οικονομικές αναταραχές.

Σχετικά με τα εμπορεύματα, οι παραδοσιακοί τίτλοι επηρεάζονται από τους ανωτέρω παράγοντες είτε σε μικρότερο βαθμό είτε προς την αντίθετη κατεύθυνση

Δύο βασικοί παράγοντες συνέβαλαν στο φαινόμενο της πρόσφατης ανάπτυξης των επενδύσεων σε εμπορεύματα. Πρώτον, σημαντικές βελτιώσεις συντελέστηκαν σε διάφορα επενδυτικά εργαλεία που επέτρεψαν σε επενδυτές να κερδίσουν θέση σε εμπορεύματα. Δεύτερον, δύο τεράστιες κατηγορίες περιουσιακών στοιχείων ,οι κοινές μετοχές και η ακίνητη περιουσία, απέδωσαν ελάχιστα και δοκιμάστηκαν από μεγάλη αστάθεια που ακολούθησε την τεχνολογική «φούσκα» το 2000 και την κρίση των ενυπόθηκων δανείων το 2008-2009, κινητοποιώντας τους επενδυτές προς αναζήτηση εναλλακτικών περιουσιακών στοιχείων

3.2. Ζεύγη συναλλαγής εμπορευμάτων

Προηγούμενες έρευνες στο pairs- trading έχουν κυρίως εστιάσει σε συναλλαγές μετοχών. Στο άρθρο των Gatev et al.(2006, σελ.802) περιγράφονται κάποια θέματα που προκύπτουν στην αγοραπωλησία μετοχών ανά ζεύγη. Το σημαντικότερο θέμα είναι ο *κίνδυνος χρεωκοπίας* που εμπεριέχεται στη μετοχή. Εάν το αγοραστικό μέρος της συναλλαγής μπορεί να αθετηθεί, η προκαλούμενη ζημία μπορεί να ξεπεράσει σε αξία κατά πολύ τα αναμενόμενα κέρδη. Η αυξημένη πιθανότητα αθέτησης μπορεί επίσης να προκαλέσει ανεπιθύμητη *αστάθεια*, οδηγώντας σε μη-σύγκλιση και, κατά συνέπεια, σε αρνητικές αποδόσεις. Αντιθέτως, οι δείκτες μετοχών και εμπορευμάτων είναι σε πολύ μικρό βαθμό εκτεθειμένοι στον κίνδυνο χρεωκοπίας. Το γεγονός αυτό οφείλεται στο γεγονός πως τα εμπορεύματα είναι σχεδόν απίθανο να απαξιωθούν τελείως.

Επιπλέον, οι αγορές διαπραγμάτευσης εμπορευμάτων έχουν παρουσιάσει σημαντική επέκταση κατά τη *διάρκεια των τελευταίων δύο δεκαετιών*, μεγαλώνοντας με ετήσιο ρυθμό περίπου 19 τοις εκατό. Κι ενώ αυτό είναι κυρίως συνέπεια της αυξανόμενης ζήτησης που παράγεται από τις αναπτυσσόμενες χώρες της Ασίας (ιδίως της Κίνας και της Ινδίας), η πρόσφατη οικονομική κρίση προώθησε τις συναλλαγές των εμπορευμάτων ως μία *ασφαλή εναλλακτική επένδυση*. Η αυξανόμενη ρευστότητα που απορρέει από αυτή την ανάπτυξη προήγαγε την βιωσιμότητα των εμπορευμάτων ως συστατικά αλγοριθμικών στρατηγικών διαπραγμάτευσης (Coxhead and Jayasuriya, 2010).

3.3. Επενδυτικές Στρατηγικές με βάση εμπορεύματα: Μελέτες που έχουν διεξαχθεί

Εκτιμώντας τα πλεονεκτήματα της επένδυσης σε εμπορεύματα, πολυάριθμες εναλλακτικές στρατηγικές αναπτύχθηκαν και δοκιμάστηκαν. Κάποιες από αυτές τις στρατηγικές, συμπεριλαμβανομένων στρατηγικών με χρήση δεικτών εμπορευμάτων και άλλων, βασισμένων σε ποικίλα χαρακτηριστικά εμπορευμάτων και/ή στις συνθήκες της αγοράς, σε τοποθετήσεις σε αμοιβαία κεφάλαια εμπορευμάτων, και τοποθετήσεις σε πολύτιμα μέταλλα, ιδίως σε χρυσό.

Με την πάροδο των ετών, αρκετοί μελετητές έχουν εκτιμήσει τα πλεονεκτήματα της χρησιμοποίησης των εμπορευμάτων σε ένα επενδυτικό χαρτοφυλάκιο. Στην πλειονότητα των περιπτώσεων, οι μελέτες καταλήγουν πως η απόδοση του χαρτοφυλακίου ενισχύεται από τα εμπορεύματα [βλ. Bodie(1983), Ankrim και Hensel(1993), Anson(1999), και Jensen, Johnson, και Mercer (2000)].

Οι Jensen et al.(2000) μελέτησαν τα επενδυτικά οφέλη για την περίοδο 1973-97. Βρήκαν ότι προσθέτοντας εμπορεύματα σε ένα χαρτοφυλάκιο, οι επενδυτές επέτυχαν σημαντικά *υψηλότερο συνδυασμό μέσης απόδοσης και διακύμανσης επί του αποτελεσματικού συνόρου* (efficient frontier). Ειδικότερα, οι συγγραφείς έδειξαν πως προσθέτοντας προθεσμιακά συμβόλαια εμπορευμάτων (commodity futures) σε ένα χαρτοφυλάκιο, παρατηρήθηκε μία ανοδική κίνηση του αποτελεσματικού συνόρου κατά την περίοδο του δείγματος. Επιπλέον, οι ερευνητές δημιούργησαν οκτώ εναλλακτικού επιπέδου κινδύνου χαρτοφυλάκια για την περίοδο του δείγματος και παρατήρησαν πως η ιδανική τοποθέτηση σε εμπορεύματα ποικίλει από 5,6 τοις εκατό (για το χαρτοφυλάκιο με τον μικρότερο κίνδυνο), έως το μέγιστο 36,1 τοις εκατό (για ένα μέτριου κινδύνου χαρτοφυλάκιο) και μειώνεται πάλι σε 12,2 τοις εκατό (για μεγάλου κινδύνου χαρτοφυλάκια).

Προσφάτως, οι Conover, Jensen, Johnson και Mercer (2010) μελέτησαν τα οφέλη που προκύπτουν από την χρήση εμπορευμάτων σε διαφόρων ειδών χαρτοφυλάκια. Οι συγγραφείς κατέληξαν στο συμπέρασμα πως η τοποθέτηση εμπορευμάτων έχει πλεονεκτήματα ανεξάρτητα από τα ίδια κεφάλαια του επενδυτή. Σημειώνεται, ωστόσο, πως η τοποθέτηση πρέπει να είναι μεγαλύτερη του 5 τοις εκατό ώστε να παραχθούν στατιστικά σημαντικά οφέλη. Επίσης, συμπέραναν πως το όφελος εντοπίστηκε ως μείωση του κινδύνου του χαρτοφυλακίου, και όχι ως αύξηση στην απόδοσή του.

Σε μία προσπάθεια να διευκρινιστεί εάν οι επενδυτές μπορούν να βελτιώσουν την απόδοση με τον χρονικό προσδιορισμό των τοποθετήσεων, αρκετές μελέτες ασχολήθηκαν με εναλλακτικές προσεγγίσεις που διαφοροποιούν την τοποθέτηση σε εμπορεύματα διαχρονικά. Οι Wang και Yu (2004) μελέτησαν βραχυπρόθεσμα (χρονικό διάστημα μία έως οκτώ εβδομάδες) αντιθετικές στρατηγικές για 24 προθεσμιακά συμβόλαια για την περίοδο από τον Ιούλιο του 1983 μέχρι τον Ιούνιο του 2000. Κατέληξαν σε σημαντικές αποδόσεις (16 τοις εκατό ετησίως) με τη συγκεκριμένη αντιθετική στρατηγική διάρκειας μία εβδομάδας. Επιπλέον, απέδειξαν πως η κερδοφορία της στρατηγικής αυξήθηκε σημαντικά (με απόδοση σχεδόν 30 τοις εκατό ετησίως) όταν εκτελέστηκαν συμβόλαια μεγάλου όγκου και χαμηλού επιτοκίου συμβόλαια. Χαρτοφυλάκια μεγαλύτερου όγκου ή/και χρονικής περιόδου δεν αποδείχθηκαν κερδοφόρα.

4. Κύριες προσεγγίσεις

Υπάρχουν τέσσερις κύριες προσεγγίσεις που χρησιμοποιούνται για την εφαρμογή ζευγών συναλλαγής:

4.1. Η προσέγγιση της απόστασης (the distance approach)

Υπό την προσέγγιση της απόστασης, η συγχρονισμένη κίνηση ενός ζεύγους μετράται με αυτό που καλείται *απόσταση* ή με το άθροισμα των υψωμένων στο τετράγωνο διαφορών των σειρών των τιμών. Οι Gatev et al.(1999) κατασκεύασαν έναν αθροιστικό δείκτη αποδόσεων για κάθε μετοχή για την περίοδο σχηματισμού και στη συνέχεια επέλεξαν ένα ταίρι για κάθε μία, εντοπίζοντας εκείνο τον τίτλο που ελαχιστοποιεί το σύνολο των υψωμένων στο τετράγωνο αποκλίσεων μεταξύ των δύο κανονικοποιημένων σειρών τιμών. Τα ζευγάρια τιμών διαμορφώθηκαν από την κανονικοποίηση των ημερήσιων διαφορών των τιμών, οι οποίες περιλαμβάνουν επανεπενδυμένα μερίσματα.

Επίσης στην ίδια μελέτη οι κανόνες για άνοιγμα και κλείσιμο των θέσεων ορίστηκε σε ένα σύστημα μετρήσεων βάσει των τυπικών αποκλίσεων. Ένα εμπορικό άνοιγμα αγοράς/πώλησης προκαλείται όταν οι τιμές αποκλίνουν μεταξύ τους περισσότερο από δύο τυπικές αποκλίσεις, όπως αυτές υπολογίστηκαν κατά την περίοδο της διαμόρφωσης. Οι θέσεις που παραμένουν ανοιχτές, κλείνουν στην επόμενη σύγκλιση των τιμών.
Επίσης, ο Nath (2003) χρησιμοποίησε ένα μέτρο αποστάσεων για τον εντοπισμό πιθανών ζευγών συναλλαγής, παρόλο που η προσέγγισή του διαφοροποιείται. Ο Nath (2003) διατηρεί αρχείο των αποκλίσεων για κάθε ζεύγος μεταξύ του συνόλου των τίτλων, με τέτοιο τρόπο ώστε κάθε παρατηρούμενη απόκλιση που περνά από το 15^{ο} εκατοστημόριο, σηματοδοτεί την απαρχή μία συναλλαγής. Σε αντίθεση με τους Gatev et al.(1999), η προσέγγιση του Nath κάνει δυνατό ένας τίτλος να διαπραγματεύεται με πολλαπλούς άλλους ταυτοχρόνως.

4.2. Η στοχαστική προσέγγιση της διαφοράς της απόδοσης (the stochastic spread approach)

Οι Elliot et al.(2005) περιέγραψαν μια προσέγγιση του pairs-trading που μοντελοποιεί την κίνηση του spread σχετικά με την επιστροφή του στο μέσο σε συνεχή χρόνο. Το spread ορίζεται ως η διαφορά μεταξύ των τιμών των δύο μετοχών και προσδιορίζεται από μία μεταβλητή x σε λανθάνουσα κατάσταση, που θεωρείται πως ακολουθεί μία διαδικασία Vasicek :

$$dx_t = k(\vartheta - x_t)dt + \sigma dB_t \qquad (1)$$

όπου dB_t είναι μία συγκεκριμένη κίνηση Brown σε συγκεκριμένο διάστημα εμπιστοσύνης. Η μεταβλητή είναι γνωστό πως επιστρέφει στο μέσο θ με ρυθμό k. Εξισώνοντας τη διαφορά τιμών με τη μεταβλητή συν την Gaussian διαταραχή, ή

$$y_t = x_t + H\omega_t \qquad (2)$$

υποθέτουμε ότι η διαφορά τιμών καθοδηγείται από μία διαδικασία επιστροφής στο μέσο, συν την απόκλιση λόγω του σφάλματος όπου $\omega_t \sim \mathrm{N}(0,1)$.

Οι Elliot et al.(2005) προτείνουν πως αυτό το μοντέλο προσφέρει τρία πλεονεκτήματα από εμπειρικής απόψεως. Καταρχήν, εντοπίζει την επιστροφή στο μέσο, *παραπέμποντας στο pairs- trading.* Ωστόσο, σύμφωνα με τους Do et al (2006) η διαφορά τιμών ορίζεται ως η διαφορά των λογαρίθμων των τιμών:

$$\omega_t = \log(p_t^{\,A}) - \log(p_t^{\,B}) \qquad (3)$$

Γενικά, το μακροχρόνιο επίπεδο των διαφορών από το μέσο των δύο μετοχών δεν είναι σταθερό, αλλά διευρύνεται όσο αυτές αυξάνονται και περιορίζεται όσο αυτές μειώνονται.

Η εξαίρεση υπάρχει όταν οι μετοχές συναλλάσσονται σε κοντινά επίπεδα τιμής. Προσδιορίζοντας το spread ως λογαριθμική διαφορά, δεν υπάρχει πλέον πρόβλημα: εάν η σειρά του spread δεν εμφανίζει επιστροφή στο μέσο τότε απλά υπολογίζοντας τους λογαρίθμους, δεν θα προκύπτει σειρά επιστροφής στο μέσο. Αυτή η μετατροπή απλώς πιέζει τη σειρά των spread να εμφανίσει σύγκλιση. Γενικότερα, το spread ενός ζεύγους συναλλαγής μετοχών δεν αναμένεται να παρουσιάσει μία μακρόχρονη σχέση εκτός κι αν οι μετοχές αυτές συνολοκληρώνονται.

Το δεύτερο πλεονέκτημα είναι πως τα μοντέλα σε συνεχή χρόνο, είναι ένα βολικό όχημα για σκοπούς προβλέψεων. Αξιοσημείωτο είναι πως ο διαπραγματευόμενος μπορεί να υπολογίσει τον αναμενόμενο χρόνο που η διαφορά συγκλίνει πίσω στο μακροχρόνιο μέσο, οπότε τα καίρια ερωτήματα του pairs-trading όπως η μέγιστο περίοδος διακράτησης και η αναμενόμενη απόδοση, μπορούν ξεκάθαρα να απαντηθούν.
Το τρίτο πλεονέκτημα είναι πως το μοντέλο είναι πλήρως καθορισμένο, με παραμέτρους που εύκολα υπολογίζονται από το φίλτρο Kalman. Ο εκτιμητής είναι μεγίστης πιθανοφάνειας και κατάλληλος σύμφωνα με το ελάχιστο μέσο τετραγωνικό σφάλμα (MMSE). Προκειμένου να διευκολυνθεί η οικονομετρική εκτίμηση σε συγκεκριμένο χρονικό διάστημα, μπορεί να εμφανίσει την εξίσωση (εξίσωση 1) σε διακριτό χρόνο, λόγω του ότι η λύση της είναι Markov:

$$x_k = E[x_k / x_{k-1}] + \varepsilon_k \qquad (4)$$

όπου k=1,2…., και ε είναι μία τυχαία διαδικασία με μέσο μηδέν και διακύμανση ίση με $\upsilon_k = VAR[x_k / x_{k-1}]$. Και οι δύο υπό όρους προσδοκίες όπως και η διακύμανση μπορούν να υπολογιστούν με ακρίβεια και το ανωτέρω μπορεί να γραφτεί ως εξής :

$$x_k = \theta(1 - e^{-k\Delta}) + e^{-k\Delta} x_{k-1} + \varepsilon_k \qquad (5)$$

Όπου το Δ υποδηλώνει τα χρονικά διαστήματα (σε περιόδους) μεταξύ των δύο παρατηρήσεων, και η διακύμανση της τυχαία διαδικασίας ε είναι σταθερή $\upsilon = \sigma^2 / 2\kappa(1 - e^{-2k\Delta})$. Επίσης προκύπτει πως η δεσμευμένη κατανομή της x_k είναι Gaussian. Όσο η εξίσωση μέτρησης σε διακριτό χρόνο γίνεται:

$$y_k = x_k + \omega_k \qquad (6)$$

προκύπτει ένα συγκεκριμένο μοντέλο προσδιορισμού του χρόνου που είναι γραμμικό και Gausian.

Παρόλα τα πλεονεκτήματα που αναφέρθηκαν, αυτή η προσέγγιση έχει θεμελιώδεις περιορισμούς στο ότι περιορίζει την μακροχρόνια σχέση μεταξύ των δύο μετοχών σε μία απόδοση(Do et al.2006). Κατά συνέπεια ,μακροχρόνια, τα ζεύγη των επιλεχθέντων μετοχών πρέπει να εξασφαλίσουν την ίδια απόδοση ώστε οποιαδήποτε απόκλιση από αυτή να αναμένεται να διορθωθεί στο μέλλον. Αυτή η υπόθεση, περιορίζει την γενικότερη εφαρμογή του μοντέλου στην πράξη , καθώς είναι δύσκολο να εντοπίσεις δύο μετοχές με πανομοιότυπες αποδόσεις. Κι ενώ τα μοντέλα κινδύνου-απόδοσης όπως το Arbitrage Pricing Theory και το Capital Asset Pricing Model (CAMP) μπορούν να δηλώσουν πως δύο μετοχές με παρόμοιους παράγοντες κινδύνου θα πρέπει να αναμένουν παρόμοιες αποδόσεις, *στην πράξη* κάθε μετοχή επηρεάζεται από συγκεκριμένους εταιρικούς κινδύνους που διαφοροποιούν τελικά τις σειρές αποδόσεις των εταιριών. Επιπροσθέτως, είναι σημαντικό να τονιστεί πως η μεθοδολογία του Markov για τη διαφοροποίηση δεν εφαρμόζεται σε αυτή την περίπτωση που εξετάζεται , καθώς τα χαρτοφυλάκια στο pairs- trading δεν είναι επαρκώς διαφοροποιημένα.

4.3. Η στοχαστική διαφορά των καταλοίπων (the stochastic residual approach)

Οι Do,Faff and Hanmza (2006) προτείνουν μία στρατηγική ζευγών συναλλαγής που διαφοροποιείται από τις ήδη υπάρχουσες προσεγγίσεις μέσω της μοντελοποίησης του επιπέδου *απόδοσης*, το οποίο είναι αντίθετο με το παραδοσιακό επίπεδο *τιμής*. Ο μοντέλο επίσης ενσωματώνει μία θεωρητική θεμελίωση για τη σχέση των τιμών ενός ζεύγους συναλλαγής, σε μία προσπάθεια να απαλείψει τους πολύ συγκεκριμένους όρους συναλλαγής που επικρατούν σε προηγούμενες μελέτες.

Η συγκεκριμένη προσέγγιση, με την προϋπόθεση πως υπάρχει ισορροπία στην συγκριτική αποτίμηση των δύο μετοχών όσων αφορά τη διαφορά των αποδόσεών τους. Για το λόγο αυτό, η εσφαλμένη τιμή ερμηνεύεται ως η κατάσταση μη εξισορρόπησης που ποσοτικοποιείται με τη *διαδικασία της διαφοράς των καταλοίπων (residual spread function)* $G(R_t^A, R_t^B, U_t)$ όπου το U υποδηλώνει σε κάποιο εξωγενές διάνυσμα που πιθανώς εμφανίζεται στη διαμόρφωση της ισορροπίας. Ο όρος «κατάλοιπο απόδοσης» τονίζει πως η διαδικασία αιχμαλωτίζει κάθε υπερβολή για ένα μακρόχρονο διάστημα διαφορών και μπορεί να μην παίρνει μη μηδενικές τιμές, γεγονός που εξαρτάται από τη διαμόρφωσή του. Οι πιέσεις από την αγορά θεωρείται ότι διαδραματίζουν ένα σημαντικό ρόλο στη διαδικασία επιστροφής στο μέσο της διαφοράς μακροχρόνια. Όπως και σε παρόμοιες παλιότερες, μελέτες, οι θέσεις συναλλαγής ανοίγονται όταν η μη-ισορροπία είναι σημαντικά μεγάλη και το αναμενόμενο διάστημα αντιστάθμισής του αρκετά σύντομο.

Το μοντέλο το οποίο προτείνεται, ακολουθεί το ίδιο πλαίσιο μοντελοποίησης και εκτίμησης όπως οι Elliot et al(2005). Αναλυτικότερα, χρησιμοποιεί ένα στοχαστικό παράγοντα μοντελοποίησης για την περιγραφή της εσφαλμένης αποτίμησης ή μη-ισορρόπησης και να αφήσει την κατάσταση να μολύνει τις πραγματικές παρατηρήσεις από την ανωτέρω διαδικασία G. Ανακεφαλαιώνοντας, με το x

Να δηλώνει την εσφαλμένη τιμολόγηση ή το κατάλοιπο της διαφοράς, με έμφαση να δίνεται στη σχέση ισορροπίας της οποίας η δυναμική χαρακτηρίζεται από μία διαδικασία Vasicek :

$$dx_t = k(\theta - x_t)dt + \sigma dB_t \qquad (7)$$

Η εσφαλμένη αποτίμηση υπολογίζεται ως εξής:

$$y_t = G_t = x_t + \omega_t \qquad (8)$$

Οι δύο εξισώσεις αποτελούν μία κατάσταση μοντελοποίησης διαστημάτων με σχετικά εσφαλμένη αποτίμηση, καθορίζοντας μία σχέση ισορροπίας μεταξύ των δύο τίτλων. Η σχέση ισορροπίας ή ,εναλλακτικά, η διαφορά των καταλοίπων της μεθόδου G,ενεργοποιείται από το Arbitrage Pricing Theory (APT) μοντέλο (Ross, 1976). Το APT μοντέλο υποστηρίζει πως η απόδοση σε έναν επισφαλή τίτλο, θα είναι το άθροισμα των ασφαλίστρων κινδύνου πολλαπλασιασμένο επί το μέγεθος της έκθεσής του. Ο προσδιορισμός των παραγόντων κινδύνου μεταλλάσσεται και μπορεί, για παράδειγμα, να πάρει τη μορφή των Fama-French 3 μοντέλο παραγόντων:

$$R^i = R_f + \beta r^m + \eta^i \qquad (9)$$

όπου $\beta = [\beta_1{}^i \beta_2{}^{i.}..\beta_n{}^{i]}$ και $r_m = [(R^1 - r_f)(R^2 - r_f)...(R^n - r_f)]^T$, με Ri να δηλώνει την απόδοση του i -οστού όρου. Τα κατάλοιπα η αναμένεται να είναι μηδενικά, αντανακλώντας το γεγονός πως το APT εφαρμόζεται σε ένα διαφοροποιημένο χαρτοφυλάκιο όπως αυτό, του οποίου οι συγκεκριμένοι επιχειρησιακοί δεν έχουν ανταπόδοση, παρόλο που η πραγματική του αξία μπορεί να μην είναι μηδενική. Οπότε μπορούμε να έχουμε:

$$R^A = R^B + \Gamma r^m + e \qquad (10)$$

όπου $\Gamma = [(\beta_1{}^A - \beta_1{}^B).(\beta_2{}^A - \beta_2{}^B)...(\beta_n{}^A - \beta_n{}^B)]$ είναι ένα διάνυσμα με διαφορετικές θέσεις και e ένας όρος των καταλοίπων. Επιπλέον, θεωρείται πως η ανωτέρω σχέση ισχύει σε όλες τις χρονικές περιόδους, όπως αυτή:

$$R_t{}^A = Rt^{\ B} + \Gamma r_{tm} + e_t \qquad (11)$$

Υιοθετώντας το μοντέλο ισορροπίας, επιτυγχάνεται ο προσδιορισμός της διαφοράς στη συνάρτηση των καταλοίπων, G:

$$G_t = G(p_t{}^A, p_t{}^B, U_t) = R_t{}^A - R_t{}^B - \Gamma r_t{}^m \qquad (12)$$

Εάν το Γ είναι γνωστό (και το $r_t{}^m$ προσδιορίζεται), η G_t αποτελεί ένα αξιοπρόσεκτο και απλό μοντέλο επιστροφής στο μέσο της σχετικής αξίας δύο μετοχών Α και Β, που κατόπιν μπορούν να χρησιμοποιηθούν για pair- trading. Παρόμοια με τη διατύπωση των Elliot et al (2005), αυτό το μοντέλο μπορεί να επαναπροσδιοριστεί σε συγκεκριμένα διαστήματα, με τις εξισώσεις (βλ.εξίσωση7,εξίσωση 8) να διαμορφώνονται ,σε διακριτό χρόνο, ως εξής:

$$x_\kappa = \theta(1-e^{-\kappa\Delta}) + e^{-\kappa\Delta} x\kappa_{k-1} + \varepsilon_k \qquad (13)$$

$$y_k = x_k + H\omega_t \qquad (14)$$

Αυτό το μοντέλο μπορεί να παραλληλιστεί με αυτό που παρουσιάστηκε από τους Elliot et al (2005) όπου Γ είναι ένα μηδενικό διάνυσμα. Αυτό το μοντέλο παραμένει προβληματικό με τη διαδικασία των παρατηρήσεων Gk να παραμένει ασήμαντη καθώς η Γ παραμένει άγνωστη. Προκειμένου να γίνει εκτίμηση της Γ, χρησιμοποιείται μια συγκεκριμένη γραμμική παλινδρόμηση με εξαρτημένη μεταβλητή τη $(R^A - R^B)$ και μεταβλητή παλινδρόμησης τις υπερβάλλουσες αποδόσεις.

Μία εναλλακτική λύση είναι να επαναπροσδιοριστούν οι παρατηρήσεις $y = R^A - R^B$, ούτως ώστε η εξίσωση να ξαναγράφεται ως!

$$y_k = x_k + \Gamma r_k^{\ m} + H\omega_k \qquad (15)$$

Αυτή η προσαρμογή επιτρέπει τις δυνάμεις της εσφαλμένης αποτίμησης και το διάνυσμα του παράγοντα Γ, να προσδιορίζεται ταυτόχρονα με τον υπολογισμό του μοντέλου διακριτού χρόνου, και βοηθά στην διπλή εκτίμηση σφαλμάτων από την διαδικασία των δύο σταδίων. Η εξίσωση (eq.13) και (eq.15) απαρτίζουν ένα μοντέλο στοχαστικής διαφοράς των καταλοίπων για στρατηγική pairs- trading. Αυτό είναι ένα γραμμικό και Gaussian μοντέλο, που μπορεί να εκτιμηθεί με την προσέγγιση της μεγίστης πιθανοφάνειας

Για να ανακεφαλαιώσουμε, στην έρευνά τους οι Do et al(2006) δημιούργησαν ένα μοντέλο σε συνεχή χρόνο, με επιστροφή στο μέσο της σχετικής αξίας δύο τίτλων ,το μοντέλο σχετικής αξίας των οποίων υιοθετήθηκε από το APT μοντέλο .Ένα οικονομετρικό πλαίσιο, παρόμοιο με αυτό που πρότειναν οι Elliot et al (2005) επίσης προσαρμόστηκε για να βοηθήσει στη διαδικασία της εκτίμησης. Είναι σημαντικό να επισημανθεί πως το συγκεκριμένο μοντέλο δεν κάνει καμία υπόθεση για την αξιοπιστία του APT μοντέλου. Κατά κάποιον τρόπο , προσαρμόζει τη διαδικασία του APT ώστε να αντλήσει ένα σχετικής αξίας πλαίσιο χωρίς να απαιτείται ο βαθμός αξιοπιστία κατά βάση. Για τον λόγο αυτό, αν και μία αυστηρή εφαρμογή του APT μπορεί για το μακρόχρονο επίπεδο εσφαλμένης αποτίμησης, το θ, να πρέπει να είναι κοντά στο μηδέν, ένας μη μηδενικός υπολογισμός δεν σημαίνει πως ακυρώνει το APT ή το pairs- trading στο σύνολό του. Αντίθετα, μπορεί να υπονοεί πως υπάρχει συγκεκριμένο ασφάλιστρο κινδύνου επιβεβλημένο από μία επιχείρηση σε σχέση με μία άλλη, το οποίο αντικατοπτρίζει παράγοντες όπως η διοικητική ανωτερότητα. Αυτό μπορεί εύκολα να ενσωματωθεί στο μοντέλο, απλά προσθέτοντας ή παραλείποντας έναν σταθερό όρο στη εξίσωση ισορροπίας, G_t .

4.4. Η προσέγγιση της συνολοκλήρωσης (the cointegration approach)

Η προσέγγιση της συνολοκλήρωσης σκιαγραφείται στον Vidyamurthy (2004) σε μία προσπάθεια να γίνει παραμετροποίηση του pairs- trading, διερευνώντας την πιθανότητα συνολοκλήρωσης (Engle and Granger, 1987). Η συνολοκλήρωση είναι μία σχέση στατιστική δύο χρονοσειρών που και οι δύο έχουν τον ίδιο βαθμό ολοκλήρωσης d και μπορούν να συνδυαστούν γραμμικά , ούτως ώστε να παράγουν μία χρονοσειρά, με βαθμό ολοκλήρωσης $d-b$, όπου $b>0$. Εφαρμόζοντάς το στο pairs- trading, γίνεται αναφορά στην περίπτωση η σειρά των τιμών των μετοχών είναι της τάξης I(1),και συνδυάζονται για να δημιουργήσουν μία στάσιμη, ή I(0), χρονοσειρά χαρτοφυλακίου. Αυτό είναι επιθυμητό από την πλευρά των προβλέψεων, καθώς η παλινδρόμηση μη στάσιμων μεταβλητών καταλήγει σε ψευδή παλινδρόμηση (Lim and Martin, 1995). Η συνολοκλήρωση ενσωματώνει την επιστροφή στο μέσο στο πλαίσιο του pairs- trading, το οποίο είναι και η μοναδική στατιστική συσχέτιση που απαιτείται για επιτυχία. Εάν η αξία του χαρτοφυλακίου είναι γνωστό πως κυμαίνεται γύρω από μία τιμή ισορροπίας, τότε οποιαδήποτε απόκλιση από την τιμή αυτή μπορεί να γίνει αφετηρία συναλλαγής με αντίθετη θέση. Χρονοσειρές που συνολοκληρώνονται μπορούν, εξίσου, να παρουσιαστούν σε ένα μοντέλο διόρθωσης σφάλματος διανύσματος (Vector Error Correction) στο οποίο η δυναμική της μίας χρονοσειράς μοντελοποιείται ως μία διαδικασία χρονικών υστερήσεων της ίδιας, των χρονικών υστερήσεων του συνολοκληρούμενου ζευγαριού και ενός συστατικού διόρθωσης σφάλματος που διορθώνει τις αποκλίσεις της σχέσης ισορροπίας κατά την προηγούμενη περίοδο. Το σημαντικό αυτού είναι πως προβλέψεις μπορούν να γίνουν *βάσει ιστορικών πληροφοριών.*

Προκειμένου να γίνει έλεγχος για συνολοκλήρωση, ο Vidyamurthy (2004) υιοθετεί το δεύτερο βήμα της διαδικασίας Engle και Granger (1987), στην οποία γίνεται παλινδρόμηση, αρχικά της λογαριθμικής τιμή της μετοχής Α με την λογαριθμική τιμή της μετοχής Β, η εξίσωση συνολοκλήρωσης είναι η ακόλουθη:

$$\log(p_t^{\,A}) - \gamma \log(p_t^{\,B}) = \mu + \varepsilon_t \qquad (16)$$

όπου γ είναι ο «συντελεστής συνολοκλήρωσης» και ο σταθερός όρος μ εντοπίζει μία υποψία «ασφαλίστρου» στη μετοχή Α έναντι της μετοχής Β. Στη συνέχεια, η εκτιμώμενη σειρά των καταλοίπων ελέγχεται για στασιμότητα χρησιμοποιώντας τον έλεγχο Augmented Dickey- Fuller (ADF). Υπό αυτή τη διαδικασία, τα αποτελέσματα είναι ευαίσθητα στην τάξη ολοκλήρωσης των μεταβλητών. Για παράδειγμα, εάν για $\log(p_t^{\,B})$, γινόταν παλινδρόμηση στο $\log(p_t^{\,A})$, τότε μία διαφορετική σειρά καταλοίπων θα υπολογιζόταν από το ίδιο δείγμα. Το ζήτημα αυτό επιλύεται χρησιμοποιώντας το t-statistic από τους Engle και Yoo(1987).

Η εξίσωση (eq.16) δείχνει πως το χαρτοφυλάκιο αποτελείται από μεγάλες μονάδες της μετοχής Α και μικρές γ μονάδες της μετοχής Β, έχει μία μακρόχρονη τιμή ισορροπίας μ και οποιαδήποτε απόκλιση από την τιμή αυτή είναι, κατά ένα μέρος της, προσωρινή (ε_t). Το χαρτοφυλάκιο πάντοτε θα επιστρέφει στη μακροχρόνια ισορροπία του εφόσον το εt είναι I(0). Ο Vidyamurthy (2004) αναπτύσσει συναλλακτικές στρατηγικές βασιζόμενος στην δυναμική του χαρτοφυλακίου. Η κύρια συναλλακτική ιδέα είναι να ανοιχτεί μία θέση αγοράς στο χαρτοφυλάκιο όταν η τιμή της είναι σημαντικά κατώτερη της μακροχρόνιας τιμής ισορροπίας $(\mu-\Delta)$ και αντιστοίχως, θέση αγοράς στο χαρτοφυλάκιο όταν η τιμή της είναι σημαντικά μεγαλύτερη της μακροχρόνιας τιμής ισορροπίας $(\mu+\Delta)$. Όταν το χαρτοφυλάκιο επιστρέψει στην μακρόχρονη τιμή ισορροπίας του, η θέση κλείνει και το κέρδος ισούται με το $\$\Delta$ ανά συναλλαγή. Η ερώτηση- κλειδί , όταν αναπτύσσεται μία στρατηγική συναλλακτική είναι ποια τιμή του Δ πρόκειται να μεγιστοποιήσει το κέρδος της διαδικασίας. Ο Vidyamurthy (2004) παρουσιάζει ταυτοχρόνως μία παραμετρική προσέγγιση και μία μη παραμετρική, εμπειρική μέθοδο για να διενεργήσει την ανάλυση. Η πρώτη προσέγγιση μοντελοποιεί τα κατάλοιπα με διαδικασία ARMA και κατόπιν χρησιμοποιεί τη μέθοδο του Rice (1945) για να γίνει ο υπολογισμός του ρυθμού των διασταυρώσεων για διαφορετικές τιμές του Δ, και να σχεδιαστεί η γραμμή των κερδών. Η τιμή του Δ η οποία μεγιστοποιεί το κέρδος επιλέγεται ως το ερέθισμα της συναλλαγής. Η εναλλακτική μη-παραμετρική προσέγγιση κατασκευάζει μία εμπειρική διανομή από μηδενικά και επίπεδα διασταύρωσης βασισμένα στην εκτίμηση του μοντέλου. Το ιδανικό Δ επιλέγεται έτσι ώστε να μεγιστοποιείται το κέρδος από το μοντέλο εκτίμησης. Στη συνέχεια, αυτή η αξία χρησιμοποιείται για την κατασκευή ενός πραγματικού χαρτοφυλακίου. Μία θεμελιώδης υπόθεση αυτής της μη- παραμετροποιημένης προσέγγισης προσδιορισμού του Δ είναι πως η παρατηρούμενη δυναμική εt συνεχίζεται και μελλοντικά. Η προσέγγιση αυτή φαίνεται να προτιμάται από τον Vidyamurthy (2004) λόγω της απλότητας και την αποφυγής κακής εκτίμησης

Η προσέγγιση του Vidyamurthy πιθανόν να είναι επιρρεπής σε σφάλματα λόγω των οικονομετρικών τεχνικών που εφαρμόζονται. Καταρχήν, από το δεύτερο βήμα της διαδικασίας συνολοκλήρωσης προκύπτουν αποτελέσματα ευαίσθητα στο βαθμό ολοκλήρωσης των μεταβλητών, για το λόγο αυτό τα κατάλοιπα μπορεί να έχουν διαφορετικά σύνολα από στατιστικές ιδιότητες. Κατά δεύτερον, εάν η διπλή σειρά δεν συνολοκληρώνεται, η «εξίσωση συνολοκλήρωσης» καταλήγει σε παραπλανητικά αποτελέσματα (Lim and Martin, 1995). Αυτό πιθανόν να οδηγούσε στην ανάλυση των καταλοίπων για επιστροφή στο μέσο με αναξιόπιστα αποτελέσματα. Προκειμένου να ξεπεραστούν αυτές οι δυσκολίες γίνεται ο έλεγχος του Johansen για συνολοκλήρωση, που βασίζεται στο Vector Error Correction μοντέλο.

5. Τρία βασικά χαρακτηριστικά των ζευγών συναλλαγής

Σχετικής αξίας επενδυτική στρατηγική που επιδιώκει τον εντοπισμό δύο εταιρειών με παρεμφερή χαρακτηριστικά των οποίων το μετοχικό κεφάλαιο συναλλάσσεται σε επίπεδο τιμής έξω από τα ιστορικά επίπεδα συναλλαγών. Αυτή η επενδυτική στρατηγική περιλαμβάνει την αγορά του υποτιμημένου τίτλου και την πώληση του υπερτιμημένου, διατηρώντας έτσι την ουδετερότητα της αγοράς.

Ο ορισμός αυτός, εστιάζει σε τρία κύρια πεδία τα οποία θα πρέπει να αναπτυχθούν και να γίνουν κατανοητά πριν την ανάπτυξη της στρατηγικής στο σύνολό της:

- Η ουδετερότητα της αγοράς (market neutrality)
- Η σχετική αξία ή στατιστικό αρμπιτράζ (relative value or statistical arbitrage)
- Τεχνική ανάλυση

5.1. Ο ρόλος της ουδετερότητας της αγοράς στη στρατηγική

Η ουδετερότητα της αγοράς είναι το πρώτο εκ των τριών καίριων χαρακτηριστικών του pairs-trading που διερευνάται. Ο όρος *ουδέτερη αγορά* έχει υπάρξει ένας αρκετά χρησιμοποιούμενος χαρακτηρισμός κατά τη διάρκεια των τελευταίων ετών καθώς αρκετοί επενδυτές εσφαλμένα θεώρησαν πως σημαίνει *χωρίς κίνδυνο* (risk free). Η κοινότητα του μάρκετινγκ χρησιμοποίησε τον όρο, συχνά αταίριαστο, σε κάθε μεθοδολογία η οποία θα μπορούσε νε μειώσει τον κίνδυνο. Στην πραγματικότητα ο συγκεκριμένος όρος συμπεριλαμβάνει ένα ευρύ φάσμα συναλλαγών και επενδυτικών στρατηγικών. Ο πολλαπλασιασμός των επονομαζόμενων ουδέτερων-αγοράς προϊόντων κάνει σημαντική την κατανόηση των ιδιαίτερων χαρακτηριστικών της ουδετερότητας της αγοράς, οι ποικίλοι τρόποι που μπορεί να αξιοποιηθεί, και πώς αυτοί εφαρμόζονται στο pairs trading.

Υπάρχουν τρία στοιχεία-κλειδί για μία στρατηγική ουδέτερης αγοράς:

- Ο συνδυασμός των αγορών- πωλήσεων που αφορούν την επένδυση
- Η ικανότητα της χρησιμοποίησης μόχλευσης, και
- Η προϋπόθεση μίας κατάσταση κερδοσκοπίας

Καθώς η έννοια θα επαναλαμβάνεται και θα προσδιορίζεται με μεγαλύτερη ακρίβεια, είναι χρήσιμος ένας γενικός ορισμός της ουδετερότητας της αγοράς που μπορεί να εφαρμοστεί σε κάθε στρατηγική που την περικλείει:

Μία στρατηγική συναλλαγών που αποκομίζει τις αποδόσεις της από τη σχέση μεταξύ της επίδοσης που προκύπτει από τη θέση πώλησης και τη θέση αγοράς, ανεξαρτήτως από το κατά πόσο διενεργείται σε επίπεδο μεμονωμένου τίτλου ή επίπεδο χαρτοφυλακίου.

Ο ανωτέρω ορισμός αναφέρεται στην βασική ιδέα της ουδετερότητας της αγοράς: πως το χαρτοφυλάκιο διαμορφώνεται μέσω της σχετικής/συγκριτικής απόδοσης **(relative performance)** παρά της απόλυτης απόδοσης που συνήθως υπολογίζεται σε ένα συμβατικό χαρτοφυλάκιο. Σε μία στρατηγική ουδέτερης αγοράς, η απόδοση του χαρτοφυλακίου είναι συναρτήσει των διαφορών των αποδόσεων των τίτλων που διατηρούνται σε θέση αγοράς και αυτών που διατηρούνται σε θέση πώλησης. Σε ένα χαρτοφυλάκιο ξεκάθαρα προσδιορισμένο ως ουδέτερης αγοράς, διατηρώντας όλους τους άλλους παράγοντες σταθερούς, το αποτέλεσμα του χαρτοφυλακίου αγοράς και αυτό του χαρτοφυλακίου πώλησης δικαιολογούνται πλήρως από τις διακυμάνσεις της αγοράς γενικότερα. Το καθαρό αποτέλεσμα του χαρτοφυλακίου στο σύνολό του αναμένεται να είναι κοντά στο μηδέν καθώς για κάθε κίνηση ανοδική ή καθοδική του χαρτοφυλακίου αγοράς, θα υπάρχει μία αντισταθμιστική κίνηση στην αντίθετη κατεύθυνση για το χαρτοφυλάκιο πώλησης. Σε αντίστοιχη περίπτωση, ο επενδυτής αναμένεται να επωφεληθεί στην καλύτερη περίπτωση το χωρίς κίνδυνο επιτόκιο. Σε ένα χαρτοφυλάκιο ουδέτερης αγοράς με καλά καταρτισμένο διαχειριστή, ο επενδυτής αναμένει το χαρτοφυλάκιο αγοράς να υπερισχύσει έναντι του χαρτοφυλακίου πώλησης σε αναπτυσσόμενες αγορές όπως επίσης το χαρτοφυλάκιο πώλησης να υπερτερήσει του χαρτοφυλακίου αγοράς σε αγορές σε ύφεση, δημιουργώντας μία σταθερά θετική απόδοση ανεξαρτήτως των συνθηκών που επικρατούν στη συγκεκριμένη αγορά.

Σε συνηθισμένες στρατηγικές απλής αγοράς, οι διαχειριστές περιορίζονται από το επιτόκιο αναφοράς που ο πελάτης προσδιορίζει, και δεν επιτρέπεται η διατήρηση θέσεων πώλησης. Ο συγκεκριμένος περιορισμός της αγοράς μειώνει την ικανότητα του διαχειριστή να χρησιμοποιήσει αποτελεσματικά το σύνολο των προβλέψεων για τους τίτλους στον επενδυτικό κόσμο. Ένα τυπικό μοντέλο, κατηγοριοποιεί μετοχές βασισμένο στην αναμενόμενη σχετική απόδοση: μία μετοχή η οποία καταλαμβάνει υψηλή θέση στην κατάταξη, αναμένεται να κινηθεί καλύτερα και να ξεπεράσει μία που κατατάσσεται χαμηλότερα. Σε ένα παραδοσιακό χαρτοφυλάκιο γίνεται η υπόθεση πως για να υπερτερήσει θα πρέπει συνολικά οι μετοχές να κινούνται ανοδικά, γεγονός που περιορίζει τον διαχειριστή που βασίζεται σε αυτή την τακτική. Εάν το θετικό αποτέλεσμα προκύπτει όταν οι μετοχές έχουν καθοδική πορεία (και άρα και οι δύο μετοχές πέφτουν, όμως η μετοχή με την καλύτερη κατάταξη έχει μικρότερη πτώση), η απόδοση παραμένει αρνητική διότι ο διαχειριστής δεν κατάφερε να εντοπίσει και νε εκμεταλλευτεί κατάλληλα την δυνατότητα πρόβλεψης που εμπεριείχε το μοντέλο. Μία στρατηγική λοιπόν ουδέτερη αγοράς είναι σχεδιασμένη ώστε να καλύπτει αυτό το κενό και να αξιοποιεί τν διαθέσιμη πληροφόρηση. Αυτή η δυνατότητα της ενσωμάτωσης των πληροφοριών στο χαρτοφυλάκιο βελτιώνει τις αποδόσεις για κάθε συγκεκριμένο επίπεδο κινδύνου.

Υπάρχουν αρκετά είδη ουδετερότητας αγοράς:

- ουδετερότητα μετοχής
- νομισματική ουδετερότητα
- ουδετερότητα τομέα
- ουδετερότητα του βήτα

Κάθε ένα από αυτά τα είδη έχει διαφορετική επίδραση σε ένα χαρτοφυλάκιο και σχετίζεται διαφορετικά με το pairs-trading. Κατανοώντας κάθε ένα από τα ανωτέρω αλλά και τον τρόπο που εφαρμόζεται, θα έχει άμεση επίδραση στην διαδικασία επιλογής χαρτοφυλακίου.

Μιλώντας για την ουδετερότητα της αγοράς, γίνεται αναφορά στο πιθανόν σημαντικότερο χαρακτηριστικό του pairs-trading,αλλά και όλων των στρατηγικών που σχεδιάζονται.

5.2. Η σχετική αξία στην κερδοσκοπία

Στη πολύ βασική του μορφή, η κερδοσκοπία αναζητά να εκμεταλλευτεί αδυναμίες της αγοράς αγοράζοντας και πουλώντας ταυτοχρόνως τον ίδιο τίτλο για την επίτευξη κέρδους. Κι ενώ η ύπαρξη τέτοιου είδους ευκαιριών μοιάζουν φανταστικά σενάρια στην σημερινή εποχή της πληροφορίας, κάποτε ήταν πιθανή η επιλογή ενός συνόλου ατόμων με μεγάλο πλούτο που ωφελούνταν σε αντίστοιχες περιπτώσεις. Σήμερα λοιπόν, με τη δύναμη των υπολογιστών που δίνουν απεριόριστες σχεδόν δυνατότητες να διατίθενται σε κάθε κάτοχό τους, η βασική μορφή της κερδοσκοπίας ανήκει πλέον στο παρελθόν.

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Κι ενώ συγκεκριμένες *αδυναμίες* της αγοράς εξακολουθούν να υπάρχουν, η πλειονότητα της κερδοσκοπίας στις μέρες μας βασίζεται σε σφάλματα που *παρατηρούνται ή υπονοούνται στις αξίες* παρά σε διασταυρωμένες αποδείξεις. Οι συγκεκριμένες αποκλίσεις στις τιμές δεν είναι αποτέλεσμα κακής ή καθυστερημένης πληροφόρησης, αλλά το αποτέλεσμα του τρόπο με τον οποίο τα άτομα αντιλαμβάνονται τη σχέση μεταξύ των δύο τίτλων και κατά πόσο αυτή αποκλίνει από τον ιστορική μέση τιμή, κατά ένα στατιστικά σημαντικό επίπεδο. Για το λόγο αυτό, η σχετικής αξίας κερδοσκοπία είναι η διαδικασία εκείνη κατά την οποία λαμβάνονται αντισταθμιστικές θέσεις σε τίτλους που από ιστορικά ή μαθηματικά στοιχεία μεταξύ τους υπάρχει συσχέτιση, η *σχέση τους όμως προσωρινά διαταράσσεται*. Διαχρονικά, τέτοιου είδους σχέσεις παρουσιάζουν διακυμάνσεις γύρω από το μέσο όρο, απομακρύνονται και επιστρέφουν πάλι σε ένα μαθηματικά προσδιορισμένο επίπεδο. Συνεπώς, όσον αφορά το pairs-trading, το σπουδαιότερο χαρακτηριστικό της κερδοσκοπίας είναι η *σύγκλιση των διακυμάνσεων* στις αναμενόμενές τους τιμές.

Κατά τη διαδικασία κατανόησης της στατιστικής κερδοσκοπίας, είναι πολύ σημαντικό να κατανοηθεί το pairs-trading διότι κατ` ουσία είναι το ίδιο, ή τουλάχιστον θα πρέπει να θεωρηθεί *ένα είδος του*. Αναλυτικότερα, το pairs- trading εφαρμόζεται είτε με θεμελιώδεις ,είτε με τεχνικές πληροφορίες και, σχεδόν, σε οποιοδήποτε χρονικό ορίζοντα, η στατιστική κερδοσκοπία βασίζεται αποκλειστικά σε ιστορικά, στατιστικά δεδομένα τα οποία χρησιμοποιούνται βραχυπρόθεσμα σε πολυάριθμες μικρές θέσεις. Το πλέον ενδεικτικό στοιχείο διαφοροποίησης είναι πως η στατιστική κερδοσκοπία είναι απόλυτο μοντέλο και ηλεκτρονικά κατευθυνόμενο, με λιγοστή συμμετοχή των αναλυτών στην επεξήγηση κάθε μίας συναλλαγής του. Από τη στιγμή που το μοντέλο της στατιστικής κερδοσκοπίας κατασκευαστεί και γίνει αποδεκτό, «φορτώνεται» σε ένα υπολογιστικό σύστημα που «τρέχει» όλες τις αποφάσεις συναλλαγής που βασίζονται στα προαναφερθέντα κριτήρια. Η διαδικασία αυτή συχνά περιλαμβάνει εκατοντάδες συναλλαγές ημερησίως, κάθε μία εκ των οποίων να εντοπίσει μία μικρή θετική κίνηση της τιμής. Αυτού του είδους οι συναλλαγές είναι προφανές πως απαιτούν *ένα μοντέλο* με εξαιρετικά *πολύπλοκες εφαρμογές και αρκετά εξελιγμένη τεχνολογική υποδομή*.

Το pairs-trading έχει στοιχεία/χαρακτηριστικά και σχετικής αξίας και στατιστικής κερδοσκοπίας. Και παρόλο που κάθε ένας που το εφαρμόζει χρησιμοποιεί διαφορετικά κριτήρια, κατά την επιλογή των μετοχών, όλα επικεντρώνονται γύρω από αρχή της επαναφοράς στο μέσο. Αυτοί οι διαχειριστές λειτουργούν υπό την υπόθεση πως απρόβλεπτες αστάθειες μεταξύ των μετοχών που αποτιμώνται μπορούν να προκύψουν βραχυπρόθεσμα, όμως με το πέρασμα του χρόνου αυτές οι ανωμαλίες θα διορθωθούν ή θα επιστρέψουν στο μέσο. Όταν οι τιμή μίας μετοχής επανέρχεται στη μέση τιμή της ομάδας του, αυτή η διαδικασία είναι γνωστή ως επιστροφή στο μέσο. Για το λόγο αυτό, σε μία ομάδα μετοχές που συναλλάσσονται με παρόμοιο τρόπο, όπως αυτές που ανήκουν στον ίδιο κλάδο, παρόλο που μπορεί ορισμένες από αυτές τις μετοχές μπορεί να *υπερισχύσουν* έναντι κάποιων άλλων, άλλες μετοχές να φανούν κατώτερες των προσδοκιών, με το πέρασμα του χρόνου ο μέσος όρος των αποδόσεων του συνόλου του κλάδου θα συγκλίνει σε μία τιμή. Η στρατηγική αναζητά να εκμεταλλευτεί αυτού του φαινομένου παρακολουθώντας την κίνηση της μετοχής πάνω και κάτω από τον μέσο. Οι παίκτες του χρηματιστηρίου αναζητούν ομάδες μετοχών που παρουσιάζουν θετική συσχέτιση λόγω κλάδου, βιομηχανίας ή συγκεκριμένου παράγοντα κινδύνου. Σε μεγάλες χρονικές περιόδους, αυτές οι ομάδες έχουν σχετικά ομαλές γραμμές τάσης. Σε μικρά χρονικά διαστήματα όμως, οι γραμμές τάσης για τις μεμονωμένες μετοχές της ομάδας παρουσιάζουν σημαντικές διακυμάνσεις αυτές οι διακυμάνσεις μπορούν να με μελετηθούν με μία διαδικασία σχετικής αξίας.

Η μέθοδος με τα ζεύγη είναι ουσιαστικά μία μέθοδος με την οποία ο συναλλασσόμενος είναι σε θέση να εξασφαλίσει κέρδος από την απόκλιση των δύο συσχετιζόμενων μετοχών. Η αγορά στο σύνολό της είναι διαιρεμένη σε δείκτες, και αυτοί με τη σειρά τους σε τομείς που αποτελούνται από μεμονωμένους τίτλους. Η λιανική πώληση μετοχών δημιούργησε τον τομέα λιανικής, και οι μετοχές των φορτηγών αποτελούν τον τομέα των φορτηγών και ούτω καθεξής. Είναι προφανές πως ο η λιανική πώληση μετοχών πρέπει να επηρέασε τις κινήσεις της τιμής των μετοχών. Μπορούν όμως οι μετοχές να συναλλάσσονται σε τέλεια ακολουθία; Η απάντηση στο ερώτημα είναι αρνητική: οι μετοχές θα πρέπει να αποκλίνουν καθώς δεν υπάρχουν τίτλοι που συναλλάσσονται με σταθερά συσχέτισης ίση με τη μονάδα. Δεν είναι δυνατό να είναι πανομοιότυπες. Μπορούν να συναλλάσσονται σε κοντινά επίπεδα, κατά περιόδους να κινούνται σε διαφορετικές πορείες, για να καταλήξουν ξανά μαζί. Αυτή η απόκλιση και σύγκλιση παράγει ευκαιρίες που όσοι συναλλάσσονται ζεύγη pairs-trading μπορεί να επωφεληθούν αρκετών ευκαιριών.

Το pairs-trading περιλαμβάνει στοιχεία σχετικής αξίας και ταυτοχρόνως στατιστικής κερδοσκοπίας. Ειδικότερα, συχνά, χρησιμοποιεί ένα στατιστικό μοντέλο για την αρχική προσέγγιση, προκειμένου να δημιουργηθεί στη συνέχεια μία συναλλαγή σχετικής αξίας. Ένας προσεκτικός συναλλασσόμενος θα προσπαθήσει να αναλύσει και να ελέγξει με δοκιμές τα αρχικά αποτελέσματα του μοντέλου προτού προβεί σε οποιαδήποτε πραγματική συναλλαγή.

5.3. Ανάλυση των τεχνικών χαρακτηριστικών

Το τρίτο βασικό στοιχείο στο pairs-trading που θα αναφερθεί είναι η τεχνική ανάλυση. Εφόσον είναι δυνατό να χρησιμοποιηθούν θεμελιώδη στοιχεία ως η πρωταρχική βάση σε αυτή τη προσέγγιση, η μεθοδολογία που ακολουθείται στη συγκεκριμένη περίπτωση είναι περισσότερο τεχνικής φύσεως. Η θεμελιώδης ανάλυση αποτελεί μία επαλήθευση της αρχικής λογικής.

Κι ενώ ένας αναλυτής θεμελιωδών στοιχείων μελετά έναν τεράστιο όγκο πολύ υποκειμενικών δεδομένων, ο τεχνικός αναλυτής διαχειρίζεται τριών ειδών στοιχεία:

- Αξία/ Τιμή
- Όγκος συναλλαγών
- Προαίσθηση

Αυτά αξιολογούνται και τελικά διαμορφώνουν μία γνώμη για τις πιθανές κατευθύνσεις των τιμών σε μία μικρή χρονική περίοδο. Ο ολοκληρωμένος αναλυτής διερευνά τα θεμελιώδη στοιχεία για να αποφασίσει για το εάν μία σημαντική κίνηση είναι πιθανή ή να συγκρίνει δύο ή περισσότερες εταιρίες σε μεγαλύτερα διαστήματα, και διενεργεί τεχνική ανάλυση για να προσδιορίσει το πιο ευοίωνο χρόνο για να εισέλθει στην αγορά. Από το πρίσμα του pairs-trading, και ειδικότερα μίας βραχυπρόθεσμης οπτικής στατιστικής κερδοσκοπίας, η τεχνική ανάλυση διαδραματίζει έναν προεξέχοντα ρόλο, και, στην πλειονότητα των περιπτώσεων, είναι η κινητήριος δύναμη πίσω από τις συναλλαγές.

Η τεχνική ανάλυση χρησιμοποιεί υπολογιστές για να αναδομήσει παλιότερες δραστηριότητες της αγοράς, σε μία προσπάθεια να προβλεφθεί η συμπεριφορά μία μετοχής ή ενός συνόλου μετοχών στο μέλλον. Η υπόθεση που υπονοείται σε αυτή την τεχνική είναι πως μοτίβα τα οποία μπορούν να εντοπιστούν στο παρελθόν, πιθανολογείται πως θα επαναληφθούν και στο μέλλον. Οι συναλλασσόμενοι προσπαθούν να εντοπίσουν ένα σύνολο μετρήσιμων ενδείξεων που, όταν χρησιμοποιούνται συνολικά, έχουν μεγάλη προγνωστική αξία για την συμπεριφορά των μετοχών. Η διαδικασία της ανάλυσης σχετικά με το ποιοι δείκτες είναι πιο αποτελεσματικοί όταν χρησιμοποιούνται σε ακολουθίες ονομάζεται βελτιστοποίηση (optimization). Αυτή η διαδικασία διερευνά την κατασκευή ενός μοντέλου που θα έχει τη μεγαλύτερη ικανότητα πρόβλεψης κερδών και αποφυγής ζημιών ταυτοχρόνως. Η ενυπάρχουσα δυσκολία, σε τέτοιου είδους προσεγγίσεις, είναι η απουσία εγγυήσεων πως η παρελθούσα συμπεριφορά θα επαναληφθεί. Αυτός είναι και ένας σημαντικός κίνδυνος που αντιμετωπίζει ο συναλλασσόμενος και είναι γνωστός ως κίνδυνος μοντελοποίησης (model risk). Ένα μεγάλο ψεγάδι σε ένα μοντέλο διαπραγμάτευσης, μπορεί να οδηγήσει σε κατάρρευση ολόκληρου του συστήματος με ιδιαίτερα αρνητικά αποτελέσματα.

6. Εμπειρική ανάλυση και αποτελέσματα

6.1. Περιγραφή δεδομένων

Στο πλαίσιο της εμπειρικής ανάλυσης για τη συσχέτιση των αποδόσεων των εμπορευμάτων μίας στρατηγικής pairs– trading, χρησιμοποιούνται τα ημερήσια στοιχεία για 21 χαρακτηριστικά είδη εμπορευμάτων προθεσμιακών συμβολαίων που συλλέγησαν από τη βάση δεδομένων του πρακτορείου Bloomberg. Οι συγκεκριμένες τιμές των εμπορευμάτων προέρχονται από την τιμή του συμβολαίου που βρίσκεται πιο κοντά στη λήξη και εκτείνονται σε μία χρονική περίοδο 16 ετών (1995-2011). Στον **πίνακα 1** παρατίθενται οι διαθέσιμες πληροφορίες των προθεσμιακών συμβολαίων, η ημερομηνία παράδοσης για κάθε ένα από αυτά όπως επίσης και τα χρηματιστήρια στα οποία τα μεμονωμένα συμβόλαια συναλλάσσονται. Κατόπιν, στον **πίνακα 2,** εμφανίζονται τα αποτελέσματα από την περιγραφική στατιστική ανάλυση των σειρών των αποδόσεων της χρονικής περιόδου 1995-2011.

Θα πρέπει να αναφερθεί πως ένα *προθεσμιακό συμβόλαιο* είναι μία συμφωνία μεταξύ δύο μερών να αγοράσουν ή να πωλήσουν ένα αγαθό σε κάποιο προσυμφωνημένο μελλοντικό χρονικό σημείο και σε κάποια προσυμφωνημένη τιμή. Επισημαίνεται πως τα προθεσμιακά συμβόλαια διαπραγματεύονται στο χρηματιστήριο. Συνεπώς, είναι τυποποιημένα ως προς την ημερομηνία παράδοσης και το μέρος, την ποιότητα και την ποσότητα του υποκείμενου μέσου. Επιπλέον, είναι εγγυημένα από το χρηματιστήριο από το χρηματιστήριο στο οποίο διαπραγματεύονται (Δημητρόπουλος, 1999).

Τα συμβόλαια futures δεν αντιπροσωπεύουν περιουσιακό στοιχείο, αλλά κάθε συμβόλαιο κερδίζει αξία καθώς η προθεσμιακή τιμή μεταβάλλεται. Η χρηματοροή από μία θέση σε ένα προθεσμιακό συμβόλαιο είναι η ίδια με την χρηματοροή σε μία προθεσμιακή πράξη . Αυτό που αλλάζει είναι η χρονική στιγμή που επανέρχονται οι χρηματοροές εξαιτίας της ημερήσιας εκκαθάρισης συναλλαγών που μπορεί να εφαρμοστεί στα συμβόλαια αυτά.

ΠΙΝΑΚΑΣ 1

ΠΡΟΘΕΣΜΙΑΚΟ ΣΥΜΒΟΛΑΙΟ ΕΜΠΟΡΕΥΜΑΤΟΣ	ΧΡΗΜΑΤΙΣΤΗΡΙΟ	ΜΗΝΑΣ ΠΑΡΑΔΟΣΗΣ
ΑΡΑΒΟΣΙΤΟΣ	CHICAGO BOARD OF TRADE	3,5,7,9,12
ΣΙΤΑΡΙ	CHICAGO BOARD OF TRADE	3,5,7,9,12
ΚΑΡΠΟΣ ΣΟΓΙΑΣ	CHICAGO BOARD OF TRADE	1,3,5,7,8,9,11
ΒΡΩΣΙΜΗ ΣΟΓΙΑ	CHICAGO BOARD OF TRADE	1,3,5,7,8,9,10,12
ΛΑΔΙ ΣΟΓΙΑΣ	CHICAGO BOARD OF TRADE	1,3,5,7,8,9,10,12
ΒΡΩΜΗ	CHICAGO BOARD OF TRADE	3,5,7,9,12
ΚΑΚΑΟ	NEW YORK BOARD OF TRADE	3,5,7,9,12
ΚΑΦΕΣ	NEW YORK BOARD OF TRADE	3,5,7,9,12
ΒΑΜΒΑΚΙ	NEW YORK BOARD OF TRADE	3,5,7,10,12
ΖΑΧΑΡΗ	NEW YORK BOARD OF TRADE	3,5,7,10
ΖΩΝΤΑ ΒΟΟΕΙΔΗ	CHICAGO MERCANTILE EXCHANGE	2,4,6,8,10,12
ΧΟΙΡΙΝΟ	CHICAGO MERCANTILE EXCHANGE	2,4,5,6,7,8,10,12
ΒΟΟΕΙΔΗ ΠΡΟΣ ΒΡΩΣΗ	CHICAGO MERCANTILE EXCHANGE	1,3,4,5,8,9,10,11
ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	NEW YORK MERCANTILE EXCHANGE	ΟΛΟΙ
ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ	NEW YORK MERCANTILE EXCHANGE	ΟΛΟΙ
ΦΥΣΙΚΟ ΑΕΡΙΟ	NEW YORK MERCANTILE EXCHANGE	ΟΛΟΙ
ΧΡΥΣΟΣ	COMMODITY EXCHANGE ,INC	2,4,6,8,10,12
ΑΣΗΜΙ	COMMODITY EXCHANGE ,INC	1,3,5,7,9,12
ΧΑΛΚΟΣ	COMMODITY EXCHANGE ,INC	ΟΛΟΙ
ΠΛΑΤΙΝΑ	NEW YORK MERCANTILE EXCHANGE	1,4,7,10
ΠΑΛΛΑΔΙΟ	NEW YORK MERCANTILE EXCHANGE	3,6,9,12

Τα futures με τη λήξη τους έχουν αξία ίση με την αξία του ενεργητικού που αντιπροσωπεύουν, στο χρονικό διάστημα για το οποίο έχει γίνει η συμφωνία. Εάν λοιπόν κάποιος αγοράσει (πουλήσει) futures για κάποια συγκεκριμένη ημερομηνία, και όταν έρθει αυτή η ημερομηνία το ενεργητικό αποκτήσει τιμή υψηλότερη από την τιμή των futures, τότε ο επενδυτής θα κερδίσει (χάσει) χρήματα, ενώ στη αντίθετη περίπτωση που πέσει η τιμή του ενεργητικού θα χάσει (κερδίσει) χρήματα. Είναι προφανές λοιπόν πως η τελική απόληξη της συμφωνίας εξαρτάται αποκλειστικά από τη λήψη short ή long θέσης στην αγορά των προθεσμιακών συμβολαίων ή, με άλλα λόγια, με τη σωστή εκτίμηση.

Τονίζεται πως όποιος επιδιώκει να κερδοσκοπήσει δεν είναι απαραίτητο να περιμένει έως τη λήξη του συμβολαίου για να πουλήσει/ αγοράσει το προθεσμιακό συμβόλαιο σε τιμή υψηλότερη/ χαμηλότερη από αυτή της κτήσεως, εφόσον αυτό καθ` όλη τη διάρκεια της ζωής του αποκτά αξία. Για παράδειγμα εάν κάποιος έχει θέση long και έχει προβεί σε αγορά συμβολαίων που λήγουν σε x διάστημα και διαπιστώσει πως τη χρονική στιγμή $y < x$ τα ίδια συμβόλαια αγοράζονται σε υψηλότερη τιμή, τότε του δίνεται η ευκαιρία να τα μεταπωλήσει σε άλλον αγοραστή και να επωφεληθεί κέρδος χωρίς περαιτέρω κίνδυνο. Είναι προφανές πως κρατώντας τα συμβόλαια έως την ημερομηνία λήξεώς τους, ενδέχεται το κέρδος να είναι μεγαλύτερο, όμως υποβόσκει πάντοτε ο κίνδυνος περιορισμού του ποσοστού κέρδους και της εμφάνισης ακόμα και ζημιών.

Σημειώνεται πως με τα 21 είδη εμπορευμάτων που έχουν επιλεγεί καλύπτονται όλες οι βασικές κατηγορίες εμπορευμάτων που διαπραγματεύονται μέσω συμβολαίων μελλοντικής εκπλήρωσης:

- Γεωργία
- Μαλακά εμπορεύματα (softs)
- Κτηνοτροφία
- Ενέργεια
- Μέταλλα

Επιπλέον, η χρονική έκταση των δεδομένων καλύπτει διαστήματα σημαντικής ανόδου των τιμών αλλά και πτώσης τους, όπως υπήρξε η περίοδος μεγάλης ανάπτυξης 2003-2008 και η πρόσφατη οικονομική κρίση μεταξύ 2007-2009 αντιστοίχως.

ΠΙΝΑΚΑΣ 2

ΑΠΟΔΟΣΕΙΣ :	ΚΑΚΑΟ	ΚΑΦΕΣ	ΧΑΛΚΟΣ	ΑΡΑΒΟΣΙΤΟΣ	ΒΑΜΒΑΚΙ	ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ	ΧΡΥΣΟΣ	ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ	ΧΟΙΡΙΝΟ
Μέσος	0.000114	7.05E-05	0.000220	0.000243	8.94E-06	0.000405	0.000151	0.000330	0.000414	0.000121
Διάμεσος	0.000000	0.000000	0.000000	0.000000	0.000000	0.000699	0.000000	0.000256	0.000193	0.000000
Μέγιστη Τιμή	0.099621	0.211999	0.116437	0.127571	0.136218	0.164097	0.065914	0.088872	0.104031	0.065771
Ελάχιστη Τιμή	-0.100059	-0.220642	-0.117093	-0.276206	-0.304359	-0.165445	-0.079520	-0.075808	-0.209710	-0.103840
Τυπική Απόκλιση	0.019668	0.024476	0.018677	0.018450	0.019812	0.024484	0.008831	0.010794	0.023599	0.011037
Συντελεστής Ασυμμετρίας	-0.130811	-0.183307	-0.328942	-0.733614	-0.790742	-0.117688	-0.274230	0.073317	-0.557877	-1.124.164
Συντελεστής Κύρτωσης	5.308.045	9.495.678	7.103.519	1.741.774	1.930.842	7.050.732	1.361.992	9.519.447	7.840.002	1.367.009
Jarque-Bera	9.628.750	7.553.828	3.082.275	37480.55	47909.92	2.938.107	20180.70	7.588.886	4.402.661	21219.72
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Άθροισμα	0.488476	0.301814	0.943880	1.040.037	0.038306	1.734.635	0.648384	1.414.254	1.771.055	0.516810
Αθρ.Τετρ. Απόκλισης	1.656.358	2.565.152	1.493.613	1.457.573	1.680.709	2.566.933	0.333917	0.498926	2.384.680	0.521578
Παρατηρήσεις	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283

ΑΠΟΔΟΣΕΙΣ :	ΖΩΝΤΑ ΒΟΟΕΙΔΗ	ΦΥΣΙΚΟ ΑΕΡΙΟ	ΒΡΩΜΗ	ΠΑΛΛΑΔΙΟ	ΛΕΥΚΟΧΡΥΣΟΣ	ΑΡΓΥΡΟΣ	ΚΑΡΠΟΣ ΣΟΓΙΑΣ	ΒΡΩΣΙΜΗ ΣΟΓΙΑ	ΣΟΓΙΕΛΑΙΟ	ΖΑΧΑΡΗ	ΣΙΤΑΡΙ
Μέσος	0.000108	0.000134	0.000211	0.000328	0.000285	0.000415	0.000183	0.000164	0.000135	9.68E-05	0.000117
Διάμεσος	0.000394	0.000000	0.000000	0.000000	0.000718	0.001054	0.000693	0.000526	0.000000	0.000000	0.000000
Μέγιστη Τιμή	0.285606	0.324354	0.145366	0.152530	0.127158	0.121958	0.203209	0.092645	0.080388	0.130620	0.232957
Ελάχιστη Τιμή	-0.322245	-0.401097	-0.322651	-0.133829	-0.271923	-0.195457	-0.234109	-0.205213	-0.077680	-0.171148	-0.286121
Τυπική Απόκλιση	0.023236	0.037618	0.023212	0.022417	0.015133	0.019494	0.017158	0.018583	0.015238	0.022543	0.020716
Συντελεστής Ασυμμετρίας	0.210708	-0.087554	-1.644.097	-0.144190	-1.637.323	-0.870922	-1.050.122	-1.065.909	0.072791	-0.440243	-0.205922
Συντελεστής Κύρτωσης	4.391.117	1.266.973	2.262.869	8.350.928	3.165.518	1.110.472	2.175.942	1.211.201	5.332.246	6.833.791	1.657.540
Jarque-Bera	298721.7	16691.99	70686.91	5.124.536	148449.2	12263.75	63589.51	15628.19	9.744.836	2.761.323	32918.64
P-value	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000
Άθροισμα	0.463317	0.574361	0.902652	1.406.850	1.219.356	1.775.710	0.783007	0.702891	0.576068	0.414735	0.501043
Αθρ.Τετρ. Απόκλισης	2.311.962	6.059.504	2.307.107	2.151.752	0.980569	1.627.309	1.260.627	1.478.682	0.994286	2.176.024	1.837.655
Παρατηρήσεις	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283	4283

6.2. Επιλογή εμπορευμάτων ανά ζεύγη

Για κάθε είδος εμπορεύματος, δημιουργείται μία σειρά ημερησίων αποδόσεων των προθεσμιακών συμβολαίων των εμπορευμάτων για μία χρονική περίοδο 10 ετών (1995-2005). Προκειμένου να επιλεγούν τα καταλληλότερα ζεύγη για την εφαρμογή της στρατηγικής pairs- trading , με τη χρήση του προγράμματος EVIEWS 6.παράγονται οι σειρές των αποδόσεων. Στη συνέχεια, μέσω του ίδιου προγράμματος παράγεται ένας πίνακας των συντελεστών συσχέτισης για όλα τα πιθανά ζεύγη που μπορεί να προκύψουν.(βλ. **πίνακα 3**).

Η συσχέτιση μετρά το βαθμό συνάφειας- αλληλεπίδρασης ανάμεσα σε δύο ή περισσότερες μεταβλητές. Πιο συγκεκριμένα, στην πράξη, από την τιμή του *συντελεστή συσχέτισης* αντιλαμβανόμαστε το πόσο έντονη ή χαλαρή είναι η σχέση των δύο μεταβλητών. Ο συντελεστής γραμμικής συσχέτισης δύο ποσοτικών μεταβλητών (όπως οι αποδόσεις των εμπορευμάτων) ορίζεται ως το πηλίκο όπου

$$r = \frac{\mathrm{cov}(x, y)}{\sigma_x \sigma_y} \mathrm{cov}(x, y) \qquad (17)$$

είναι η συνδιακύμανση των μεταβλητών x, y και σ_x, σ_y οι τυπικές αποκλίσεις αυτών.

Ο συντελεστής γραμμικής συσχέτισης είναι καθαρός αριθμός και δεν έχει μονάδες μέτρησης ενώ το εύρος των τιμών του κυμαίνεται από -1 έως 1 (δηλαδή $-1 < r < 1$). Όταν λοιπόν παίρνει την τιμή -1, σημαίνει ότι υπάρχει τέλεια συσχέτιση και, μάλιστα, ενώ οι τιμές της μίας μεταβλητής αυξάνονται, οι τιμές της άλλης μειώνονται. Ομοίως, η τιμή +1 υποδηλώνει τέλεια συσχέτιση των μεταβλητών προς την ίδια κατεύθυνση (αύξουσες ή φθίνουσες ταυτόχρονα).Και στις δύο αυτές ακραίες τιμές του συντελεστή συσχέτισης, μεταξύ των μεταβλητών Χ και Υ ισχύει η μαθηματική/ συναρτησιακή σχέση $Y = a + \beta X$.Αντιθέτως, αν $r = 0$ τότε οι μεταβλητές χαρακτηρίζονται ασυσχέτιστες

Στα πλαίσια της συγκεκριμένης μελέτης εντοπίζονται για κάθε είδος εμπορεύματος οι τρεις πιο ισχυρές συσχετίσεις με τα υπόλοιπα είδη (**πίνακας 4**). Το εύρος του συντελεστή συσχέτισης για τα 45 ζεύγη εμπορευμάτων που επιλέγονται μέσω αυτής της διαδικασίας, κυμαίνεται από 0,000334 έως και 0,814688 (**πίνακας 5**). Τελικά, το σύνολο των ζευγών εμπορευμάτων περιορίζεται σε εκείνους τους συνδυασμούς που έχουν σχετικά ισχυρή συσχέτιση με συντελεστή $r > 0.1$. Κατά συνέπεια επιλέγονται 31 ζεύγη (οι 31 πρώτοι συνδυασμοί όπως εμφανίζονται με αύξοντα αριθμό στον **πίνακα 5**) στα οποία και θα εφαρμόσουμε την στρατηγική του pair- trading για την χρονική περίοδο 1995-2005 (in sample analysis) και θα ελέγξουμε την αποτελεσματικότητά της.

ΠΙΝΑΚΑΣ 3

ΠΙΝΑΚΑΣ 3 ΣΥΣΧΕΤΙΣΗ ΑΠΟΔΟΣΕΩΝ	ΚΑΚΑΟ	ΚΑΦΕΣ	ΧΑΛΚΟΣ	ΑΡΑΒΟΣΙΤΟΣ	ΒΑΜΒΑΚΙ	ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ	ΧΡΥΣΟΣ	ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ	ΧΟΙΡΙΝΟ	ΖΩΝΤΑ ΒΟΟΕΙΔΗ	ΦΥΣΙΚΟ ΑΕΡΙΟ	ΒΡΩΜΗ	ΠΑΛΛΑΔΙΟ	ΛΕΥΚΟΧΡΥΣΟ Σ	ΑΡΓΥΡΟΣ	ΚΑΡΠΟΣ ΣΟΓΙΑΣ	ΒΡΩΣΙΜΗ ΣΟΓΙΑ	ΣΟΓΙΕΛΑΙΟ	ΖΑΧΑΡΗ	ΣΙΤΑΡΙ
ΚΑΚΑΟ	1.000.000	0.098050	0.020006	0.054487	0.037024	0.000395	-0.007361	0.096251	0.024368	0.002376	0.020308	0.002903	0.048964	0.023784	0.030487	0.105216	0.041817	0.022128	0.042960	0.073201	0.030589
ΚΑΦΕΣ	0.098050	1.000.000	0.033673	0.043417	0.014425	0.005164	-0.006854	0.040725	0.000611	0.005772	-0.008470	-0.000601	0.027823	0.032004	0.055963	0.058679	0.036294	0.046069	0.044915	0.070830	0.048459
ΧΑΛΚΟΣ	0.020006	0.033673	1.000.000	0.060093	0.060918	0.050069	-0.011800	0.185258	0.067195	0.005689	0.002426	0.047975	0.022162	0.112377	0.120886	0.219929	0.075763	0.067555	0.074535	0.047460	0.052711
ΑΡΑΒΟΣΙΤΟΣ	0.054487	0.043417	0.060093	1.000.000	0.092462	0.052858	-0.114222	0.076017	0.029061	0.002746	0.022598	0.037884	0.418929	0.047182	0.062018	0.107534	0.473659	0.421837	0.408742	0.044076	0.507178
ΒΑΜΒΑΚΙ	0.037024	0.014425	0.060918	0.092462	1.000.000	0.051940	-0.001437	0.080563	0.033115	0.021483	0.018875	-0.006088	0.055963	0.054694	0.029880	0.080721	0.116410	0.110589	0.125503	0.045002	0.097429
ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	0.000395	0.005164	0.050069	0.052858	0.051940	1.000.000	0.000334	0.112556	0.735549	0.043473	-0.011734	0.238189	0.011216	0.022835	0.073853	0.099451	0.026125	0.037318	0.023712	0.049087	0.059326
ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ	-0.007361	-0.006854	-0.011800	-0.114222	-0.001437	0.000334	1.000.000	-0.011455	-0.013063	0.090017	0.413433	0.001423	-0.094649	0.016869	-0.005292	-0.001444	-0.064739	-0.056366	-0.045805	0.024890	-0.073024
ΧΡΥΣΟΣ	0.096251	0.040725	0.185258	0.076017	0.080563	0.112556	-0.011455	1.000.000	0.131569	0.000722	0.019240	0.060912	0.062295	0.239108	0.345204	0.601439	0.073256	0.069352	0.090354	0.047526	0.070786
ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ	0.024368	0.000611	0.067195	0.029061	0.033115	0.735549	-0.013063	0.131569	1.000.000	0.030352	0.020784	0.303771	0.003805	0.022853	0.048578	0.097356	0.039472	0.044749	0.018920	0.065173	0.047505
ΧΟΙΡΙΝΟ	0.002376	0.005772	0.005689	0.002746	0.021483	0.043473	0.090017	0.000722	0.030352	1.000.000	0.071003	-0.043169	-0.038466	0.005498	0.004946	0.013546	0.048962	0.032758	0.017876	-0.005283	0.013678
ΖΩΝΤΑ ΒΟΟΕΙΔΗ	0.020308	-0.008470	0.002426	0.022598	0.018875	-0.011734	0.413433	0.019240	0.020784	0.071003	1.000.000	0.019414	0.008356	0.005701	0.001871	0.018804	0.011642	0.018489	0.010378	-0.006286	0.019050
ΦΥΣΙΚΟ ΑΕΡΙΟ	0.002903	-0.000601	0.047975	0.037884	-0.006088	0.238189	0.001423	0.060912	0.303771	-0.043169	0.019414	1.000.000	0.025503	0.014662	0.038761	0.033087	0.056174	0.057665	0.050659	0.018240	0.016598
ΒΡΩΜΗ	0.048964	0.027823	0.022162	0.418929	0.055963	0.011216	-0.094649	0.062295	0.003805	-0.038466	0.008356	0.025503	1.000.000	0.045006	0.041378	0.089369	0.318159	0.304606	0.250568	0.008390	0.261925
ΠΑΛΛΑΔΙΟ	0.023784	0.032004	0.112377	0.047182	0.054694	0.022835	0.016869	0.239108	0.022853	0.005498	0.005701	0.014662	0.045006	1.000.000	0.446092	0.256868	0.050851	0.055452	0.038287	0.046983	0.031774
ΛΕΥΚΟΧΡΥΣΟΣ	0.030487	0.055963	0.120886	0.062018	0.029880	0.073853	-0.005292	0.345204	0.048578	0.004946	0.001871	0.038761	0.041378	0.446092	1.000.000	0.317073	0.045103	0.046075	0.057699	0.064679	0.051102
ΑΡΓΥΡΟΣ	0.105216	0.058679	0.219929	0.107534	0.080721	0.099451	-0.001444	0.601439	0.097356	0.013546	0.018804	0.033087	0.089369	0.256868	0.317073	1.000.000	0.084495	0.069023	0.079734	0.065839	0.088027
ΚΑΡΠΟΣ ΣΟΓΙΑΣ	0.041817	0.036294	0.075763	0.473659	0.116410	0.026125	-0.064739	0.073256	0.039472	0.048962	0.011642	0.056174	0.318159	0.050851	0.045103	0.084495	1.000.000	0.814688	0.648604	0.064747	0.312383
ΒΡΩΣΙΜΗ ΣΟΓΙΑ	0.022128	0.046069	0.067555	0.421837	0.110589	0.037318	-0.056366	0.069352	0.044749	0.032758	0.018489	0.057665	0.304606	0.055452	0.046075	0.069023	0.814688	1.000.000	0.396723	0.057150	0.260427
ΣΟΓΙΕΛΑΙΟ	0.042960	0.044915	0.074535	0.408742	0.125503	0.023712	-0.045805	0.090354	0.018920	0.017876	0.010378	0.050659	0.250568	0.038287	0.057699	0.079734	0.648604	0.396723	1.000.000	0.027244	0.303007
ΖΑΧΑΡΗ	0.073201	0.070830	0.047460	0.044076	0.045002	0.049087	0.024890	0.047526	0.065173	-0.005283	-0.006286	0.018240	0.008390	0.046983	0.064679	0.065839	0.064747	0.057150	0.027244	1.000.000	0.055856
ΣΙΤΑΡΙ	0.030589	0.048459	0.052711	0.507178	0.097429	0.059326	-0.073024	0.070786	0.047505	0.013678	0.019050	0.016598	0.261925	0.031774	0.051102	0.088027	0.312383	0.260427	0.303007	0.055856	1.000.000

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Συσχέτιση Αποδόσεων	ΚΑΚΑΟ	ΚΑΦΕΣ	ΧΑΛΚΟΣ	ΑΡΑΒΟΣΙΤΟΣ	ΒΑΜΒΑΚΙ	ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ	ΧΡΥΣΟΣ	ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ	ΧΟΙΡΙΝΟ	ΖΩΝΤΑ ΒΟΟΕΙΔΗ	ΦΥΣΙΚΟ ΑΕΡΙΟ	ΒΡΩΜΗ	ΠΑΛΛΑΔΙΟ	ΛΕΥΚΟΧΡΥΣΟΣ	ΑΡΓΥΡΟΣ	ΚΑΡΠΟΣ ΣΟΓΙΑΣ	ΒΡΩΣΙΜΗ ΣΟΓΙΑ	ΣΟΓΙΕΛΑΙΟ	ΖΑΧΑΡΗ	ΣΙΤΑΡΙ
ΚΑΚΑΟ		0.098050(32)																		0.073201(36)*	
ΚΑΦΕΣ	0.098050(32)																			0.070830(38)	
ΧΑΛΚΟΣ														0.112377(30)*							
ΑΡΑΒΟΣΙΤΟΣ											0.022598(44)*		0.418929(9)*				0.473659(6)	0.421837(8)	0.408742(11)*		0.507178(5)
ΒΑΜΒΑΚΙ																					
ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ							0.000334(45)*		0.735549(2)			0.238189(22)									
ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ										0.090017(35)*	0.413433(10)										
ΧΡΥΣΟΣ	0.096251(34)*		0.185258(24)*			0.112556(29)*			0.131569(25)*			0.060912(40)*			0.345204(13)	0.601439(4)					
ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ						0.735549(2)						0.303771(18)									
ΧΟΙΡΙΝΟ											0.071003(37)										
ΖΩΝΤΑ ΒΟΟΕΙΔΗ							0.413433(10)			0.071003(37)											
ΦΥΣΙΚΟ ΑΕΡΙΟ						0.238189(22)			0.303771(18)												
ΒΡΩΜΗ																					
ΠΑΛΛΑΔΙΟ								0.239108(21)*							0.446092(7)	0.256868(20)					
ΛΕΥΚΟΧΡΥΣΟΣ			0.120886(27)*					0.345204(13)						0.446092(7)		0.317073(15)					
ΑΡΓΥΡΟΣ	0.105216(31)*	0.058679(41)*	0.219929(23)*					0.601439(4)						0.256868(20)	0.317073(15)					0.065839(39)*	
ΚΑΡΠΟΣ ΣΟΓΙΑΣ				0.473659(6)	0.116410(28)*					0.048962(42)*			0.318159(14)*					0.814688(1)	0.648604(3)		0.312383(16)*
ΒΡΩΣΙΜΗ ΣΟΓΙΑ				0.421837(8)									0.304606(17)*				0.814688(1)		0.396723(12)		
ΣΟΓΙΕΛΑΙΟ					0.125503(26)*												0.648604(3)	0.396723(12)			0.303007(19)*
ΖΑΧΑΡΗ		0.070830(38)					0.024890(43)*														
ΣΙΤΑΡΙ				0.507178(5)	0.097429(33)*																

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Α/Α	ΖΕΥΓΗ ΕΜΠΟΡΕΥΜΑΤΩΝ	ΣΥΣΧΕΤΙΣΗ
1	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΒΡΩΣΙΜΗ ΣΟΓΙΑ	0.814688
2	ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ/ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	0.735549
3	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΣΟΓΙΕΛΑΙΟ	0.648604
4	ΑΡΓΥΡΟΣ/ΧΡΥΣΟΣ	0.601439
5	ΣΙΤΑΡΙ/ΑΡΑΒΟΣΙΤΟΣ	0.507178
6	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΑΡΑΒΟΣΙΤΟΣ	0.473659
7	ΛΕΥΚΟΧΡΥΣΟΣ/ΠΑΛΛΑΔΙΟ	0.446092
8	ΒΡΩΣΙΜΗ ΣΟΓΙΑ/ΑΡΑΒΟΣΙΤΟΣ	0.421837
9	ΑΡΑΒΟΣΙΤΟΣ/ΒΡΩΜΗ	0.418929
10	ΖΩΝΤΑ ΒΟΟΕΙΔΗ/ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ	0.413433
11	ΑΡΑΒΟΣΙΤΟΣ/ΣΟΓΙΕΛΑΙΟ	0.408742
12	ΒΡΩΣΙΜΗ ΣΟΓΙΑ/ΣΟΓΙΕΛΑΙΟ	0.396723
13	ΛΕΥΚΟΧΡΥΣΟΣ/ΧΡΥΣΟΣ	0.345204
14	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΒΡΩΜΗ	0.318159
15	ΛΕΥΚΟΧΡΥΣΟΣ/ΑΡΓΥΡΟΣ	0.317073
16	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΣΙΤΑΡΙ	0.312383
17	ΒΡΩΣΙΜΗ ΣΟΓΙΑ/ΒΡΩΜΗ	0.304606
18	ΦΥΣΙΚΟ ΑΕΡΙΟ/ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ	0.303771
19	ΣΟΓΙΕΛΑΙΟ/ΣΙΤΑΡΙ	0.303007
20	ΠΑΛΛΑΔΙΟ/ΑΡΓΥΡΟΣ	0.256868
21	ΠΑΛΛΑΔΙΟ/ΧΡΥΣΟΣ	0.239108
22	ΦΥΣΙΚΟ ΑΕΡΙΟ/ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	0.238189
23	ΑΡΓΥΡΟΣ/ΧΑΛΚΟΣ	0.219929
24	ΧΡΥΣΟΣ/ΧΑΛΚΟΣ	0.185258
25	ΧΡΥΣΟΣ/ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ	0.131569
26	ΣΟΓΙΕΛΑΙΟ/ΒΑΜΒΑΚΙ	0.125503
27	ΧΑΛΚΟΣ/ΛΕΥΚΟΧΡΥΣΟΣ	0.120886
28	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΒΑΜΒΑΚΙ	0.116410
29	ΧΡΥΣΟΣ/ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ	0.112556
30	ΠΑΛΛΑΔΙΟ/ΧΑΛΚΟΣ	0.112377
31	ΑΡΓΥΡΟΣ/ΚΑΚΑΟ	0.105216
32	ΚΑΦΕΣ/ΚΑΚΑΟ	0.098050
33	ΣΙΤΑΡΙ/ΒΑΜΒΑΚΙ	0.097429
34	ΧΡΥΣΟΣ/ΚΑΚΑΟ	0.096251
35	ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ/ΧΟΙΡΙΝΟ	0.090017
36	ΖΑΧΑΡΗ/ΚΑΚΑΟ	0.073201
37	ΖΩΝΤΑ ΒΟΟΕΙΔΗ/ΧΟΙΡΙΝΟ	0.071003
38	ΖΑΧΑΡΗ/ΚΑΦΕΣ	0.070830
39	ΑΡΓΥΡΟΣ/ΖΑΧΑΡΗ	0.065839
40	ΦΥΣΙΚΟ ΑΕΡΙΟ/ΧΡΥΣΟΣ	0.060912
41	ΑΡΓΥΡΟΣ/ΚΑΦΕΣ	0.058679
42	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΧΟΙΡΙΝΟ	0.048962
43	ΖΑΧΑΡΗ/ΖΩΝΤΑ ΒΟΟΕΙΔΗ	0.024890
44	ΑΡΑΒΟΣΙΤΟΣ/ΖΩΝΤΑ ΒΟΟΕΙΔΗ	0.022598
45	ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ/ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ	0.000334

6.3. Μεθοδολογία – Ο κανόνας του κινούμενου μέσου

Ένας από τους απλούστερους και πλέον διαδεδομένους τεχνικούς κανόνες ο οποίος διερευνάται είναι ο ταλαντωτής του κινούμενου μέσου. Όπως εξηγείται στη μελέτη του Gartley (1935) ο κανόνας αυτός χρησιμοποιεί την γραμμή των τιμών και των κινούμενο μέσω τους προκειμένου να δημιουργηθούν σήματα αγοράς/πώλησης.

Σε μία ανοδική τάση των τιμών, οι μακροπρόθεσμες δεσμεύσεις διατηρούνται σε θέση αγοράς καθώς η τιμή τείνει να βρίσκεται πάνω από τον κινούμενο μέσο. Για το λόγο αυτό, όταν η τιμή φτάσει στο ανώτατο όριό της, και αρχίζει να πέφτει, η καθοδική διασταύρωσή της με τον κινούμενο μέσο θεωρείται σήμα πώλησης. Παρομοίως, θέσεις πώλησης διατηρούνται όσο η τιμή παραμένει χαμηλότερα του κινούμενου μέσου. Γι` αυτό όταν η τιμή φτάσει στο κατώτερο όριό της και αρχίζει να αυξάνει σε αξία, η ανοδική «συνάντηση» με τον κινούμενο μέσο θεωρείται ως σινιάλο αγοράς

Υπάρχει πληθώρα παραλλαγών του συγκεκριμένου κανόνα. Ειδικότερα, η στρατηγική διαπραγμάτευσης που θα εφαρμοστεί στα επιλεχθέντα ζεύγη εμπορευμάτων, χρησιμοποιεί *περισσότερους του ενός κινούμενους μέσους*. Σημειώνεται πως η στρατηγική που εφαρμόζεται είναι μία στρατηγική αγοράς/πώλησης με τη χρήση της *σχετικής αξίας* των τιμών. Πιο συγκεκριμένα η σχετική αξία συγκρίνει την απόδοση του ενός εμπορεύματος σε σχέση με το άλλο εμπόρευμα του ζεύγους.

Η συγκεκριμένη στρατηγική η οποία συνδυάζει τις θεμελιώδεις σχέσεις των μεταβλητών που επηρεάζουν τις τιμές με τεχνικούς κανόνες διαπραγμάτευσης, βασίζεται στην απόκλιση του spread των αποδόσεων από τον μακροχρόνιο μέσο. Προκειμένου να προσδιοριστεί ο ιδανικός χρόνος της αγοράς ή της πώλησης, κατασκευάζονται πέντε σειρές κινούμενου μέσου: μία με σύντομη επαναφορά (SMA=1 που ταυτίζεται με την ημερήσια απόδοση του εμπορεύματος) και τέσσερις με πιο αργή (LMA=50,150,300,500, που σηματοδοτεί την μέση απόδοση του ζεύγους για διάστημα 50,150,300,500 ημερών αντιστοίχως) . Η διαφορά μεταξύ των δύο σειρών που κατασκευάστηκαν, δηλαδή των SMA και LMA χρησιμοποιείται ως σινιάλο αγοράς ή πώλησης των προθεσμιακών συμβολαίων των εμπορευμάτων. Τα σινιάλα βασίζονται στην διαφορά του SMA (short moving average) και του LMA (long moving average) με τέτοιο τρόπο ούτως ώστε μία θετική διαφορά αποτελεί σινιάλο αγοράς, ενώ μία αρνητική διαφορά σινιάλο πώλησης. Για παράδειγμα, εάν έχουμε SMA(1)<LMA(150) τότε στο spread θα δημιουργηθεί μία θέση αγοράς με την αγορά του υποτιμημένου συμβολαίου και πουλώντας το υπερτιμημένο. Η θέση θα διατηρηθεί έως ότου η σχέση μεταξύ των κινούμενων μέσων αλλάξει φορά, δηλαδή SMA(1)> LMA(150). Σε αυτό το χρονικό σημείο η θέση αγοράς κλείνει και μία θέση πώλησης θα ανοίξει.

Αξίζει να επισημανθεί πως το σημαντικότερο χαρακτηριστικό και πλεονέκτημα του κινούμενου μέσου είναι πως βοηθά στον *εντοπισμό τάσης* σε διαφόρων ειδών σειρές. Ο κινούμενος μέσος δεν προβλέπει αλλαγές στην τάση αλλά υποδεικνύει την γενικότερη ροπή/κατεύθυνσή της.

Σημαντικό στοιχείο όταν αναπτύσσεται μία δυναμική στρατηγική διαπραγμάτευσης είναι τα κόστη συναλλαγών τα οποία προκύπτουν. Για τους σκοπούς αυτής της μελέτης, τα κόστη συναλλαγών υπολογίζονται, ενδεικτικά, σε 30bps .

6.4. Συνοπτική περιγραφή στρατηγικών διαπραγμάτευσης που εφαρμόζονται

Η ενεργητική στρατηγική (active strategy) δίνει σινιάλο για αγορά (πώληση) όταν ο σύντομος κινούμενος μέσος, δηλαδή ο SMA(1), είναι πάνω (κάτω) από τον εκτεταμένο κινούμενο μέσο (βλέπε: LMA για 50,150,300,500 ημέρες). Αυτή η μέθοδος επιχειρεί να προσομοιώσει μία στρατηγική όπου οι επενδυτές πάνε long όταν ο σύντομος κινούμενος μέσος κινείται πάνω από τον εκτενή (LMA) και short όταν είναι σε χαμηλότερη τιμή (δηλαδή LMA<SMA)

Η δεύτερη στρατηγική είναι αυτή του ορίου (band strategy) καθώς εισαγάγει ένα όριο γύρω από τον κινούμενο μέσο. Εάν ο SMA είναι μέσα στο πεδίο που ορίζεται, δεν παράγεται σήμα. Συνεπώς, η εισαγωγή του ορίου μειώνει τον αριθμό των σημάτων για αγορά (πώληση) με την ελαχιστοποίηση των σημάτων σε περιπτώσεις που η σύντομη και εκτενής περίοδος του κινούμενου μέσου έχουν πολύ κοντινές τιμές και για το λόγο αυτό το όριο (band) λειτουργεί ως φίλτρο λανθασμένων σημάτων για διαπραγμάτευση. Στη μελέτη μας θέτουμε το όριο ίσο με 1% αλλά και 5%, σημειώνοντας πως όσο μικρότερο είναι το ποσοστό του ορίου, τόσο μειώνονται τα κόστη συναλλαγών που προκύπτουν.

Η τρίτη στρατηγική περιγράφεται ως ελέγχου των ζημιών(stop-loss strategy), η οποία και θέτει ένα εναλλακτικό φίλτρο στην απλή ενεργητική στρατηγική. Σύμφωνα με αυτή, ελέγχεται η παρούσα απόδοση της ενεργητικής στρατηγικής η οποία εάν μειωθεί κάτω από ένα καθορισμένο επίπεδο (εμείς χρησιμοποιήσαμε το 2,5 %) τότε παράγεται ένα ουδέτερο σήμα μέχρι να παραχθεί το επόμενο σήμα συναλλαγής. Συμπεραίνουμε λοιπόν πως η συγκεκριμένη στρατηγική στοχεύει στον περιορισμό των ζημιών σε ένα συγκεκριμένο επίπεδο, ειδικά όταν πρόκειται για ιδιαίτερα ευμετάβλητες αγορές.

Τέλος, η εναπομένουσα στρατηγική αποτελεί συνδυασμό μίας στρατηγικής ορίου και ελέγχου των ζημιών. Υπό αυτό το πρίσμα, σήματα για συναλλαγές δημιουργούνται μόνο εάν ο SMA είναι έξω από τα όρια της band στρατηγικής ενώ ταυτόχρονα το περιθώριο ασφαλείας της stop-loss στρατηγικής δεν παραβιάζεται. Πρόκειται για μία ιδιαίτερα αμυντική στρατηγική, για συντηρητικούς επενδυτές.

6.5. Αποτελέσματα για την περίοδο 1995-2005 (in sample analysis)- Αξιολόγηση στρατηγικών

Σε αυτό το σημείο θα αναλυθούν τα αποτελέσματα της ενεργητικής στρατηγικής σε σύγκριση με αυτά της «παθητικής» buy-and hold στρατηγικής. Εφαρμόζοντας τις συγκεκριμένες στρατηγικές στα 31 ζεύγη που επιλέχθηκαν βάση του συντελεστή συσχέτισής τους, επιδιώκουμε να ελέγξουμε την αποδοτικότητά τους σε μία διάρκεια 10 ετών σε ένα δείγμα τιμών που αποτελείται από 2772 παρατηρήσεις, ικανοποιητικό ώστε να οδηγηθούμε σε ασφαλείς και αξιόπιστες εκτιμήσεις που αφορούν μελλοντικά χρονικά διαστήματα.

Βάσει των στοιχείων του πίνακα των ενδεικτικότερων αποτελεσμάτων των στρατηγικών που εξετάζονται (**παράρτημα 2**), παρατηρούμε πως υπάρχει μεγάλη απόκλιση στις τιμές των αποδόσεων και του κινδύνου όπως επίσης και του δείκτη Sharpe Ratio. Ο δείκτης αυτός ποσοτικοποιεί την αποζημίωση του επενδυτή για την ανάληψη κινδύνου και ορίζεται ως εξής:

$$S_I = \frac{R_I - R_f}{\sigma_i} \qquad (18)$$

Όσο μεγαλύτερο είναι ο δείκτης, τόσο υψηλότερη είναι η αποζημίωση για κάθε μονάδα κινδύνου.

Για τους σκοπούς της μελέτης μας επιλέγουμε εκείνα τα ζεύγη εμπορευμάτων στα οποία η ενεργητική στρατηγική υπερτερεί προκειμένου να δοκιμάσουμε την αποτελεσματικότητά της στο διάστημα 2006 έως και 2011 (out of sample analysis).

Εν τέλει, από τα 31 αρχικά διαμορφωμένα ζεύγη εμπορευμάτων, βασιζόμενοι στα υψηλά ποσοστά απόδοσης και των μεγαλύτερων δεικτών Sharpe, τα 14 ζεύγη τα οποία ξεχωρίζουμε για την αποτελεσματικότητα της ενεργητικής στρατηγικής, είναι τα ακόλουθα (**πίνακας 6**):

ΠΙΝΑΚΑΣ 6

ΑΡΙΘΜΗΣΗ ΖΕΥΓΟΥΣ	ΖΕΥΓΗ ΕΜΠΟΡΕΥΜΑΤΩΝ
1	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΒΡΩΣΙΜΗ ΣΟΓΙΑ
2	ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ/ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ
5	ΣΙΤΑΡΙ/ΑΡΑΒΟΣΙΤΟΣ
9	ΑΡΑΒΟΣΙΤΟΣ/ΒΡΩΜΗ
14	ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΒΡΩΜΗ
18	ΦΥΣΙΚΟ ΑΕΡΙΟ/ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ
22	ΦΥΣΙΚΟ ΑΕΡΙΟ/ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ
24	ΧΡΥΣΟΣ/ΧΑΛΚΟΣ
25	ΧΡΥΣΟΣ/ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ
26	ΣΟΓΙΕΛΑΙΟ/ΒΑΜΒΑΚΙ
27	ΧΑΛΚΟΣ/ΛΕΥΚΟΧΡΥΣΟΣ
29	ΧΡΥΣΟΣ/ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ
30	ΠΑΛΛΑΔΙΟ/ΧΑΛΚΟΣ
31	ΑΡΓΥΡΟΣ/ΚΑΚΑΟ

6.6. Αποτελεσματικότητα στρατηγικών για την περίοδο 2006-2011 (out of sample analysis)

Σκοπός της παρούσας ανάλυσης είναι να διερευνηθεί η επίτευξη, ή μη, υψηλών αποδόσεων στις pairs- trading συναλλαγές σε προθεσμιακά συμβόλαια εμπορευμάτων. Στον **πίνακα 7** δίδονται συγκεντρωτικά τα στατιστικά στοιχεία που προέκυψαν από τον υπολογισμό του μέσου όρου των στρατηγικών για κάθε συνδυασμό κινούμενου μέσου σύντομου (SMA) και εκτενούς χρονικού διαστήματος (LMA) με τη χρήση ορίου (γύρω από τον κινούμενο μέσο)– στις στρατηγικές που αυτό απαιτείται– της τάξεως του 1 τοις εκατό.

ΠΙΝΑΚΑΣ 7

Κινούμενος Μέσος		ΣΥΓΚΕΝΤΡΩΤΙΚΑ ΣΤΑΤΙΣΤΙΚΑ ΑΠΟΤΕΛΕΣΜΑΤΑ ΜΕΣΟΣ ΟΡΟΣ ΣΤΡΑΤΗΓΙΚΩΝ-ΟΡΙΟ 1%				
		BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	ΑΠΟΔΟΣΗ	11,00	14,82	14,33	6,44	6,05
	ΚΙΝΔΥΝΟΣ	36,34	36,34	34,80	29,32	27,61
	5th CENTILE	-3,22	-3,24	-3,12	-2,74	-2,55
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,16	49,27	42,90	32,79	27,48
	SHARPE RATIO	0,22	0,39	0,40	0,20	0,22
SMA(1)-LMA(150)	ΑΠΟΔΟΣΗ	11,27	12,12	12,77	7,04	7,55
	ΚΙΝΔΥΝΟΣ	36,67	36,66	35,66	28,23	27,28
	5th CENTILE	-3,26	-3,29	-3,22	-2,71	-2,62
	ΑΡΝΗΤΙΚΗ.ΑΠΟΔ.	50,01	49,64	45,69	32,72	29,47
	SHARPE RATIO	0,21	0,30	0,33	0,25	0,30
SMA(1)-LMA(300)	ΑΠΟΔΟΣΗ	11,92	14,30	12,90	9,57	8,13
	ΚΙΝΔΥΝΟΣ	36,89	36,88	36,16	29,44	28,59
	5th CENTILE	-3,30	-3,28	-3,22	-2,79	-2,71
	ΑΡΝΗΤΙΚΗ.ΑΠΟΔ.	49,93	49,76	46,79	33,63	30,85
	SHARPE RATIO	0,25	0,37	0,34	0,29	0,26
SMA(1)-LMA(500)	ΑΠΟΔΟΣΗ	11,46	3,06	3,25	-2,38	-2,51
	ΚΙΝΔΥΝΟΣ	35,93	35,93	35,29	27,69	27,03
	5th CENTILE	-3,28	-3,30	-3,26	-2,72	-2,64
	ΑΡΝΗΤΙΚΗ.ΑΠΟΔ.	50,06	50,45	48,00	32,46	30,12
	SHARPE RATIO	0,23	0,14	0,16	-0,07	-0,06

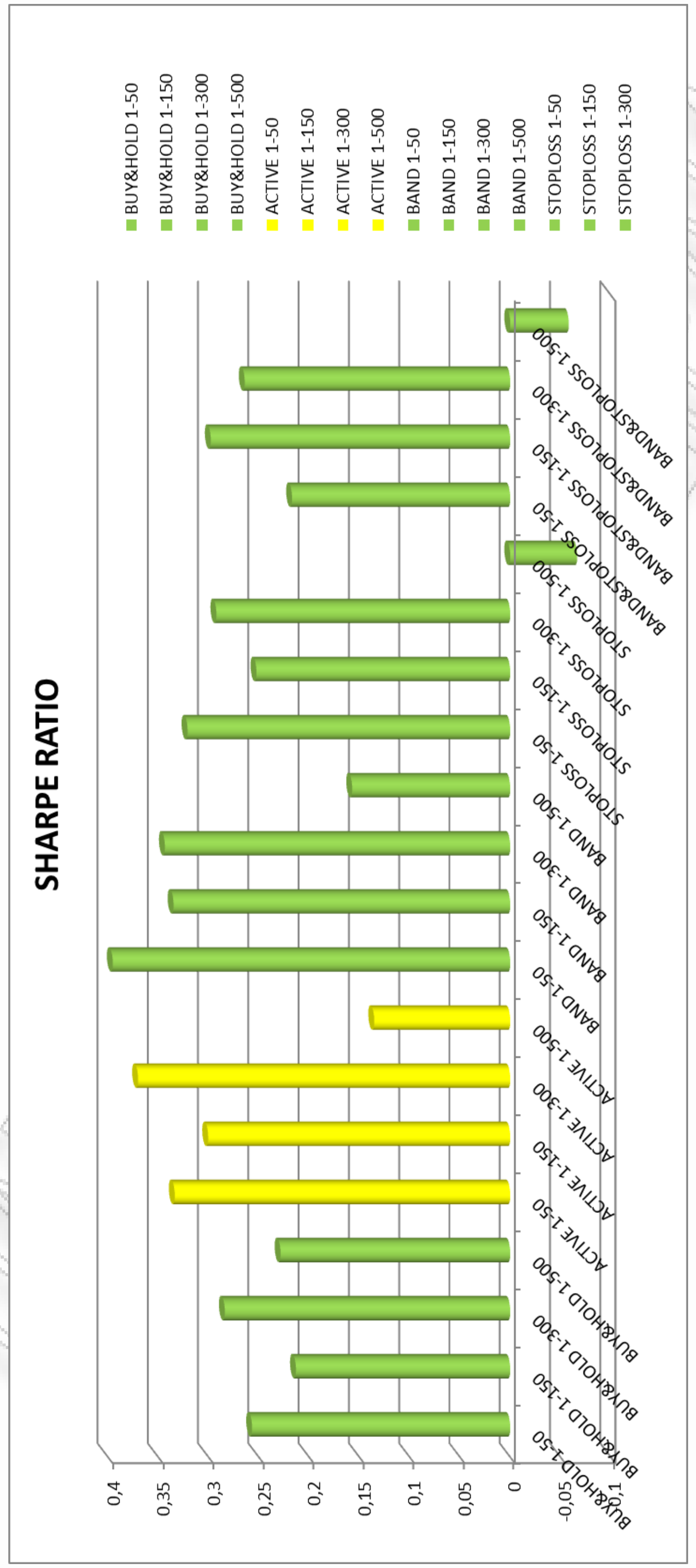
Σε όλες τις στρατηγικές οι *αποδόσεις* για SMA(1) σε συνδυασμό με LMA (50), LMA (150) και LMA(300) είναι *σημαντικά πάνω από το μηδέν*, και ειδικότερα να κινούνται μεταξύ 6,05 για τη band& stop loss στρατηγική (με SMA(1) και LMA(150)) έως και 14,82 για τη *active στρατηγική* (με SMA(1) και LMA (50)). Παράλληλα, θετικά πρόσημα προκύπτουν για τον Sharpe ratio (από 0,21 έως και 0,40) αποκαλύπτοντας την ευνοϊκή συσχέτιση απόδοσης- κινδύνου για τους επενδυτές .

Με μία προσεκτικότερη ματιά των ανωτέρω στοιχείων, συμπεραίνουμε πως και στις δύο πρώτες περιπτώσεις συνδυασμού του κινούμενου μέσου, η *active* στρατηγική κατορθώνει να *επιτύχει το μεγαλύτερο ποσοστό κέρδους* της τάξεως του 14.82% για LMA(50) και 14,30 για LMA(300) και τη δεύτερη καλύτερη τιμή του sharpe ratio η οποία ανέρχεται στο 0,39, πολύ κοντά με το 0,40 της band στρατηγικής. Πιο αποτελεσματική, αλλά χωρίς μεγάλη απόκλιση από τη στρατηγική μας, εμφανίζεται η band για LMA(150), με την απόδοσή της βελτιωμένη από αυτή της ενεργητικής κατά 5,3% στο ποσοστό κέρδους (δηλαδή 12,77%), με ποσοστό κινδύνου ελαττωμένο κατά 2,8% και κατά 1% αυξημένο Sharpe ratio.

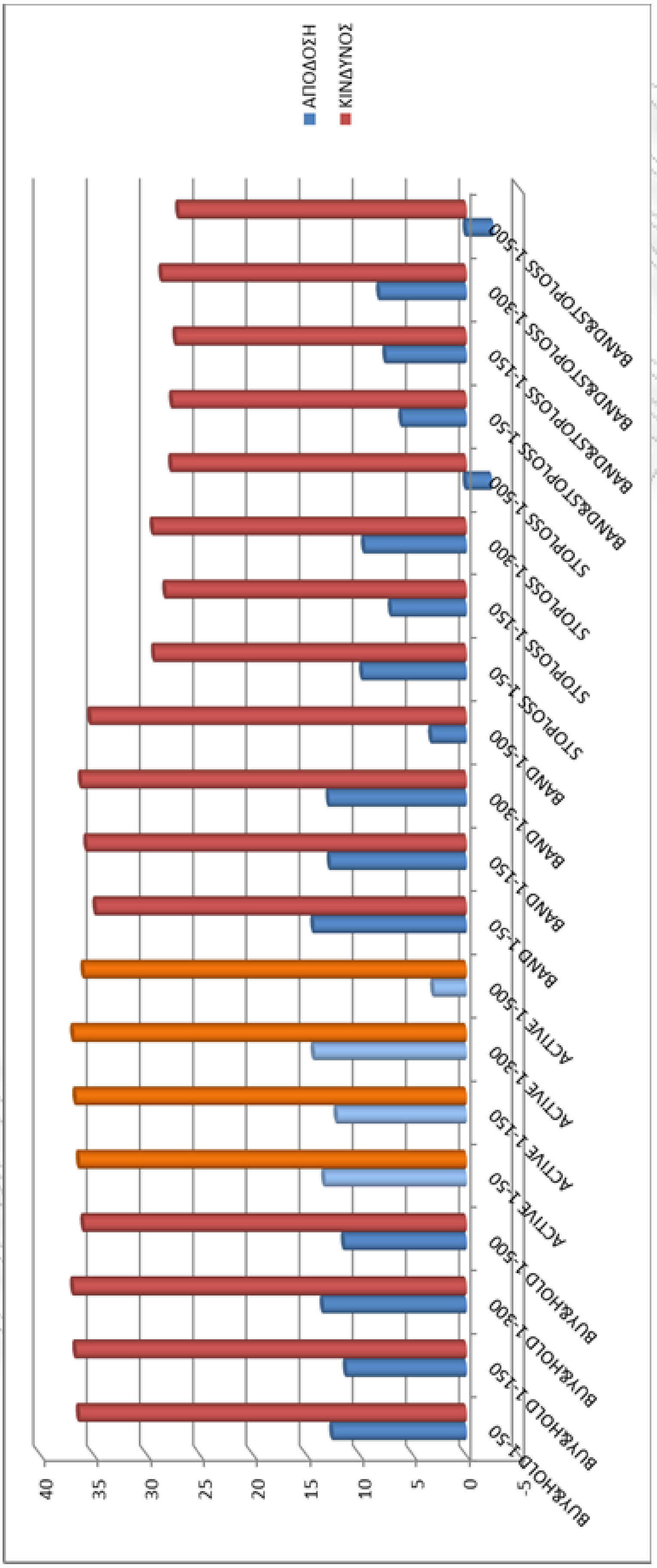
Συνεχίζοντας τη διερεύνηση των στοιχείων, είναι προφανές πως *υπερισχύει η ενεργητική στρατηγική* έναντι όλων των υπολοίπων με το ποσοστό κέρδους να κυμαίνεται κοντά στο 14,30 %, ενώ ο δείκτης sharpe να παίρνει πολύ υψηλή τιμή ,αγγίζοντας το 0,37. Αξίζει να επισημανθεί πως οι τέσσερις πρώτες στρατηγικές στους τρεις πρώτους συνδυασμούς κινούμενων μέσων, παρουσιάζουν όλες θετικά πρόσημα αποδόσεων και καλή συσχέτιση αυτών με το επίπεδο κινδύνου (δείκτες sharpe > 0,20).

Τέλος, στο τελευταίο συνδυασμό SMA(1) με LMA(500) η buy & hold στρατηγική υπερισχύει τόσο με την καλύτερη απόδοσή της (11,46%) έναντι των υπολοίπων στρατηγικών, όσο και με την σχετικά ικανοποιητική τιμή του δείκτη συσχετίσεώς της με τον αναλογούντα κίνδυνο(0,23). Η ενεργητική στρατηγική σε αυτό το συνδιασμό κινούμενων μέσων εμφανίζεται με χαμηλό ποσοστό κέρδους, ωστόσο όμως με θετικό πρόσημο, και φαίνεται να παρέχει μία *ασπίδα ασφαλείας* έναντι των ζημιών, σε αντίθεση με τα κέρδη των stop loss και band& stop loss που παρουσιάζουν αρνητικά πρόσημα ζημιώνοντας τους επενδυτές .

ΓΡΑΦΗΜΑ 1


SHARPE RATIO
BUY&HOLD 1-50
BUY&HOLD 1-150
BUY&HOLD 1-300
BUY&HOLD 1-500
ACTIVE 1-50
ACTIVE 1-150
ACTIVE 1-300
ACTIVE 1-500
BAND 1-50
BAND 1-150
BAND 1-300
BAND 1-500
STOPLOSS 1-50
STOPLOSS 1-150
STOPLOSS 1-300
STOPLOSS 1-500
BAND&STOPLOSS 1-50
BAND&STOPLOSS 1-150
BAND&STOPLOSS 1-300
BAND&STOPLOSS 1-500
0,4
0,35
0,3
0,25
0,2
0,15
0,1
0,05
0
-0,05
-0,1

ΓΡΑΦΗΜΑ 2


ΑΠΟΔΟΣΗ
ΚΙΝΔΥΝΟΣ
40
35
30
25
20
15
10
5
0
-5
BUY&HOLD 1-50
BUY&HOLD 1-150
BUY&HOLD 1-300
BUY&HOLD 1-500
ACTIVE 1-50
ACTIVE 1-150
ACTIVE 1-300
ACTIVE 1-500
BAND 1-50
BAND 1-150
BAND 1-300
BAND 1-500
STOPLOSS 1-50
STOPLOSS 1-150
STOPLOSS 1-300
STOPLOSS 1-500
BAND&STOPLOSS 1-50
BAND&STOPLOSS 1-150
BAND&STOPLOSS 1-300
BAND&STOPLOSS 1-500

Στο γράφημα **1** και **2** δίνεται η διαγραμματική απεικόνιση απόδοσης-κινδύνου και του Sharpe ratio για όλες τις στρατηγικές βάσει των αποτελεσμάτων του **πίνακα 7**. Στο **παράρτημα 5** διατίθενται τα γραφήματα απόδοσης, απόδοσης –κινδύνου και του Sharpe ratio για κάθε μία στρατηγική ξεχωριστά.

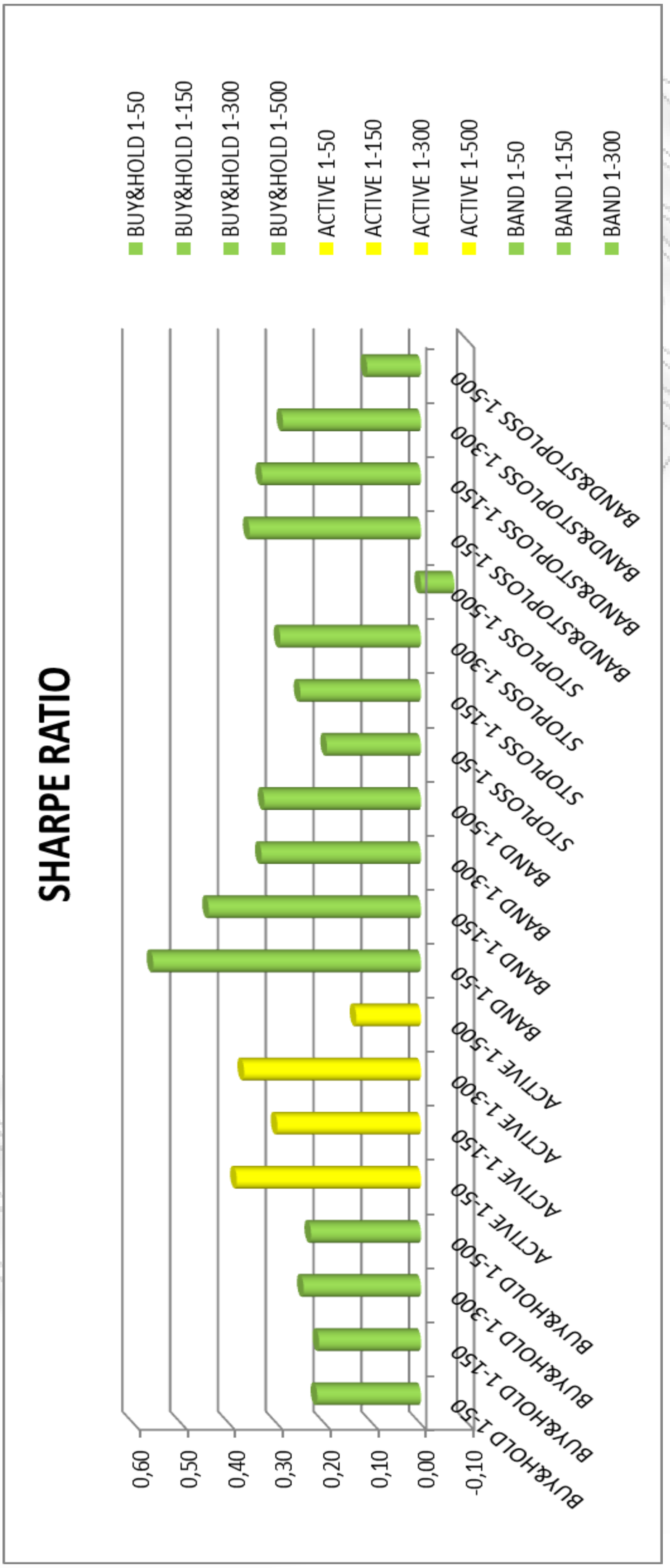
Επίσης, αναλυτικά αποτελέσματα από όλες τις στρατηγικές διαπραγμάτευσης που βασίζονται στον κινούμενο μέσο για τα έτη 2006-2011, παρατίθενται στο **παράρτημα 3,** ενώ στο **παράρτημα 4** υπάρχουν σε μορφή πίνακα τα πιο ενδεικτικά αποτελέσματα των στρατηγικών.

Σχετικά με τα στοιχεία που εμφανίζονται στον **πίνακα 8**, δίδονται συγκεντρωτικά τα *στατιστικά στοιχεία* που προέκυψαν από τον υπολογισμό του *μέσου όρου των 14 ζευγών εμπορευμάτων*, για κάθε συνδυασμό κινούμενου μέσου όρου, σύντομου (SMA) και εκτενούς χρονικού διαστήματος (LMA), με τη χρήση ορίου γύρω από τον κινούμενο μέσο – στις στρατηγικές που αυτό απαιτείται– της τάξεως του 5 τοις εκατό. Η αντίστοιχη διαγραμματική απεικόνιση των συνολικών αποτελεσμάτων για τη σχέση απόδοσης-κινδύνου και των τιμών του sharpe ratio γίνεται στο γράφημα 3 και 4. Παρατηρούμε πως τα αποτελέσματα της ενεργητικής στρατηγικής, της buy&hold όπως και της stoploss παραμένουν αμετάβλητα, καθώς ο ορισμός του ορίου (band) γύρω από τον κινούμενο μέσο επηρεάζει τα αποτελέσματα των υπόλοιπων δύο στρατηγικών χωρίς να κατορθώνει να αλλάξει την συνολική εικόνα της αποτελεσματικότητας των υπόλοιπων στρατηγικών, όπως αυτή διαμορφώθηκε με όριο της τάξεως του 1 τοις εκατό.

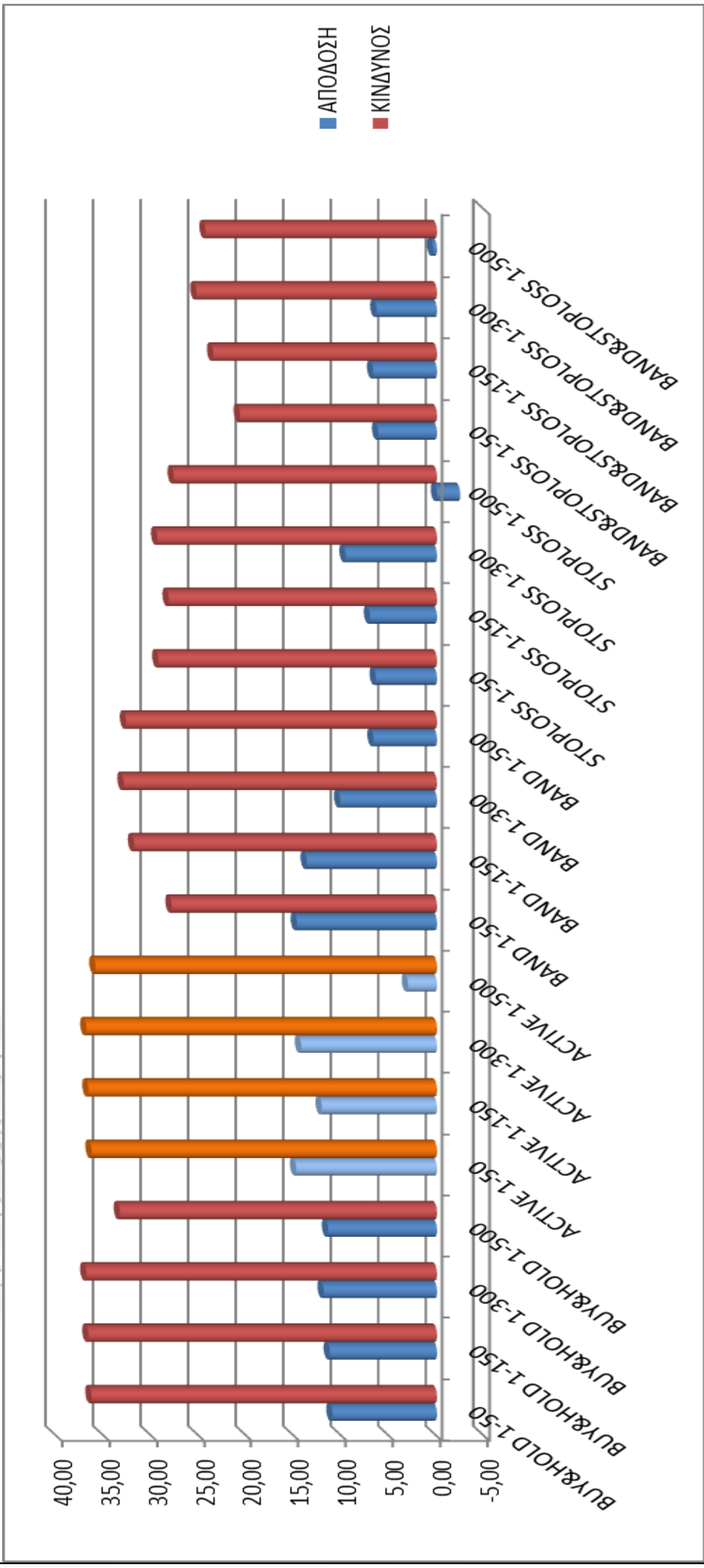
ΠΙΝΑΚΑΣ 10

Κινούμενος Μέσος		ΣΥΓΚΕΝΤΡΩΤΙΚΑ ΣΤΑΤΙΣΤΙΚΑ ΑΠΟΤΕΛΕΣΜΑΤΑ ΜΕΣΟΣ ΟΡΟΣ ΣΤΡΑΤΗΓΙΚΩΝ-ΟΡΙΟ 5%				
		BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	ΑΠΟΔΟΣΗ	11,00	14,82	14,74	6,44	6,19
	ΚΙΝΔΥΝΟΣ	36,34	36,34	27,92	29,32	20,73
	5th CENTILE	-3,21	-3,24	-2,43	-2,74	-1,56
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,16	49,27	21,27	32,83	12,09
	SHARPE RATIO	0,22	0,39	0,56	0,20	0,36
SMA(1)-LMA(150)	ΑΠΟΔΟΣΗ	11,27	12,12	13,71	7,04	6,71
	ΚΙΝΔΥΝΟΣ	36,67	36,66	31,87	28,23	23,55
	5th CENTILE	-3,05	-3,29	-2,89	-2,71	-2,17
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,01	49,64	30,87	32,72	18,67
	SHARPE RATIO	0,21	0,30	0,44	0,25	0,33
SMA(1)-LMA(300)	ΑΠΟΔΟΣΗ	11,92	14,30	10,19	9,57	6,37
	ΚΙΝΔΥΝΟΣ	36,89	36,88	32,97	29,44	25,31
	5th CENTILE	-3,30	-3,28	-2,97	-2,79	-2,35
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,93	49,76	35,29	52,49	21,55
	SHARPE RATIO	0,25	0,37	0,33	0,29	0,29
SMA(1)-LMA(500)	ΑΠΟΔΟΣΗ	11,46	3,06	6,68	-2,38	0,40
	ΚΙΝΔΥΝΟΣ	35,93	35,93	32,71	27,69	24,34
	5th CENTILE	-3,28	-3,30	-2,98	-2,72	-2,30
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,06	50,45	37,90	26,11	22,48
	SHARPE RATIO	0,23	0,14	0,33	-0,07	0,11

ΓΡΑΦΗΜΑ 3


SHARPE RATIO
0,60
0,50
0,40
0,30
0,20
0,10
0,00
-0,10
BUY&HOLD 1-50
BUY&HOLD 1-150
BUY&HOLD 1-300
BUY&HOLD 1-500
ACTIVE 1-50
ACTIVE 1-150
ACTIVE 1-300
ACTIVE 1-500
BAND 1-50
BAND 1-150
BAND 1-300
BAND 1-500
STOPLOSS 1-50
STOPLOSS 1-150
STOPLOSS 1-300
STOPLOSS 1-500
BAND&STOPLOSS 1-50
BAND&STOPLOSS 1-150
BAND&STOPLOSS 1-300
BAND&STOPLOSS 1-500

ΓΡΑΦΗΜΑ 4


ΑΠΟΔΟΣΗ
ΚΙΝΔΥΝΟΣ
BAND&STOPLOSS 1-500
BAND&STOPLOSS 1-300
BAND&STOPLOSS 1-150
BAND&STOPLOSS 1-50
STOPLOSS 1-500
STOPLOSS 1-300
STOPLOSS 1-150
STOPLOSS 1-50
BAND 1-500
BAND 1-300
BAND 1-150
BAND 1-50
ACTIVE 1-500
ACTIVE 1-300
ACTIVE 1-150
ACTIVE 1-50
BUY&HOLD 1-500
BUY&HOLD 1-300
BUY&HOLD 1-150
BUY&HOLD 1-50
40,00
35,00
30,00
25,00
20,00
15,00
10,00
5,00
0,00
-5,00

6.7. Συμπεράσματα

Σε αυτή την εργασία, ελέγξαμε την επίδοση στρατηγικών κινούμενου μέσου σε προθεσμιακά συμβόλαια εμπορευμάτων. Ειδικότερα, δημιουργήσαμε ζεύγη εμπορευμάτων επιλέγοντας εκείνα με τον πιο υψηλό δείκτη συσχέτισης. Χρησιμοποιήσαμε τα ζεύγη για την ανάπτυξη στρατηγικής που βασίζεται στην απόκλιση των spread από τον μακρόχρονο μέσο. Τα χρονικά σημεία συναλλαγής προέκυψαν από την χρήση του κινούμενου μέσου, που λειτουργεί ως ένδειξη ευκαιρίας για πώληση και αγορά. Εφαρμόζοντας απλές στρατηγικές διαπραγμάτευσης με χρήση κινούμενου μέσου, αποδείχθηκε εκ των αποτελεσμάτων, πως οι επενδυτές μπορούν να τις αξιοποιήσουν για την επιλογή του κατάλληλου χρόνου συναλλαγής και με την χρησιμοποίηση απλών τεχνικών κανόνων διαπραγμάτευσης, να επιτευχθούν σημαντικά ποσοστά κερδοφορίας.

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Παραρτήματα

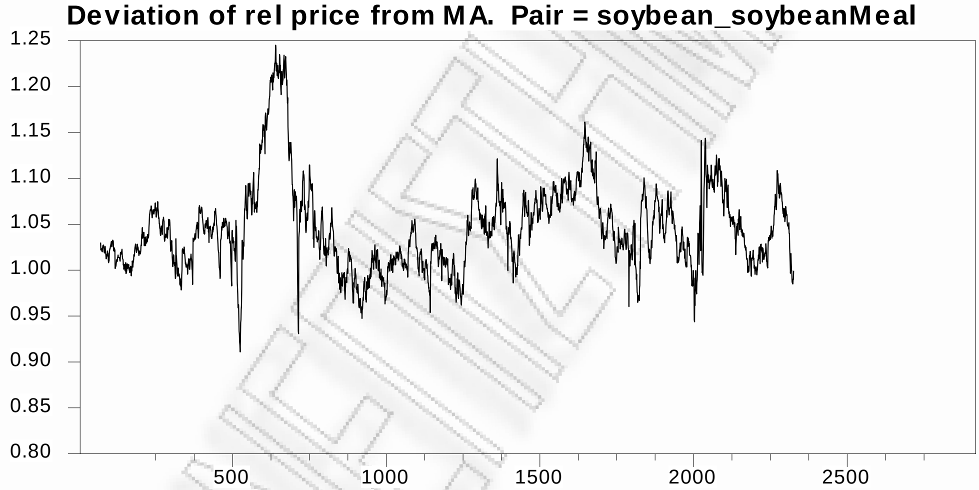
ΠΑΡΑΡΤΗΜΑ 1

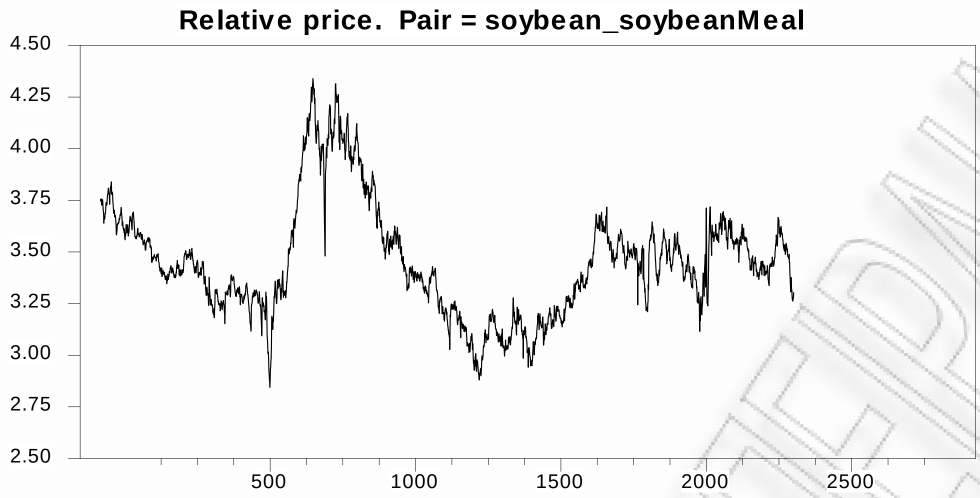
Αποτελέσματα από την εφαρμογή της ενεργητικής στρατηγικής (active) και την παθητικής buy-and-hold όπως προέκυψαν από την εκτέλεσή τους μέσω προγράμματος στο WinRATS 6.3. Τα συγκεντρωτικά αποτελέσματα παρατίθενται σε μορφή πίνακα στο **παράρτημα 2** και αφορούν τα 31 πρώτα ζεύγη εμπορευμάτων όπως αυτά καταγράφονται στον **πίνακα 5** (σελίδα 47).

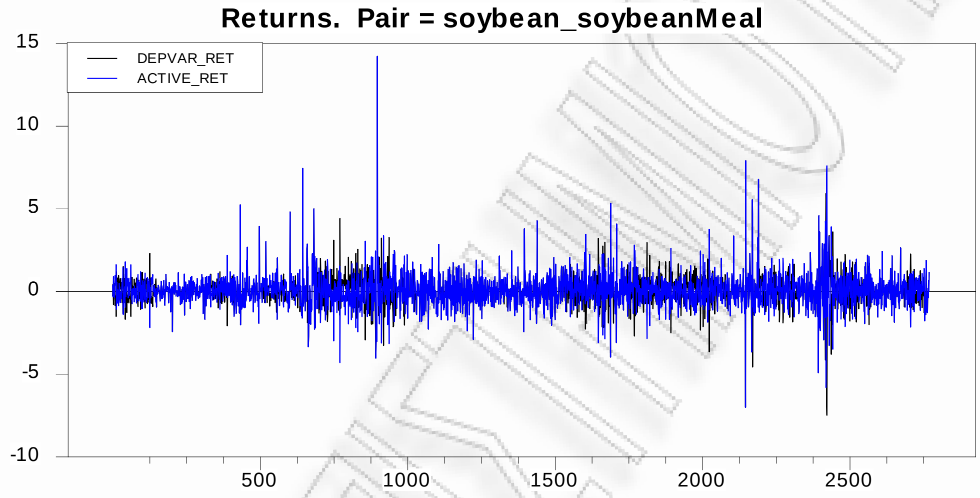
Η αρίθμηση στο πάνω μέρος κάθε συνόλου αποτελεσμάτων υποδεικνύει το ζεύγος εμπορευμάτων το οποίο αφορούν σύμφωνα με τον πίνακα 5

ΠΙΝΑΚΕΣ In Sample (1-2772, 2772 obs, dated 1995-2005)

-1-







****

********************* Pair = soybean_soybeanMeal

********************* SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000421	Variance	1.069017
Standard Error	1.033933	of Sample Mean	0.019641
t-Statistic (Mean=0)	-0.021434	Signif Level	0.982901
Skewness	1.329044	Signif Level (Sk=0)	0.000000

Kurtosis (excess) 20.139716 Signif Level (Ku=0) 0.000000
Jarque-Bera 47646.605195 Signif Level (JB=0) 0.000000

Minimum	-7.541035	Maximum	14.159056
01-%ile	-2.395240	99-%ile	3.164576
05-%ile	-1.419159	95-%ile	1.425752
10-%ile	-1.031134	90-%ile	1.007217
25-%ile	-0.514368	75-%ile	0.474729
Median	-0.037627		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.00 1.03 -1.42 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.023888	Variance	1.068446
Standard Error	1.033657	of Sample Mean	0.019636
t-Statistic (Mean=0)	1.216523	Signif Level	0.223890
Skewness	1.640970	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.007152	Signif Level (Ku=0)	0.000000
Jarque-Bera	47459.986665	Signif Level (JB=0)	0.000000

Minimum	-7.060439	Maximum	14.159056
01-%ile	-2.439835	99-%ile	3.053780
05-%ile	-1.401795	95-%ile	1.464731
10-%ile	-1.002324	90-%ile	1.031453
25-%ile	-0.498314	75-%ile	0.491587
Median	-0.013206		

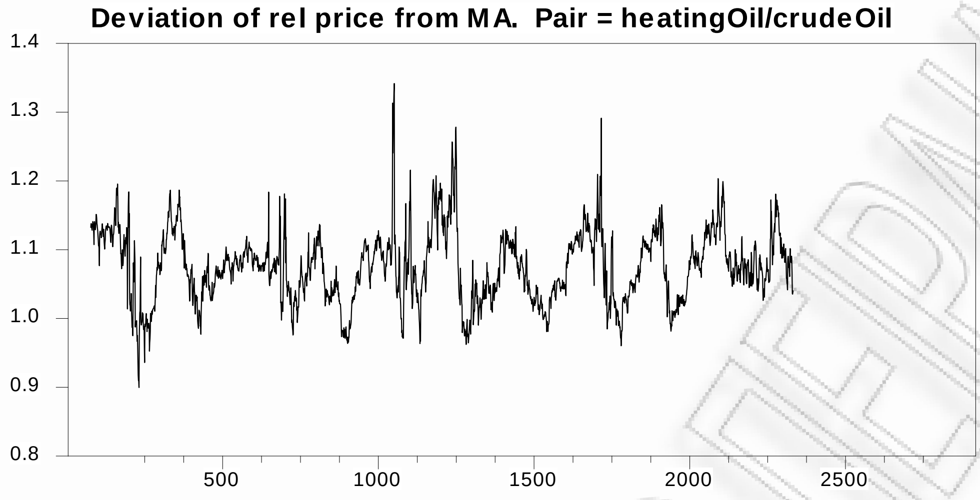
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.02 1.03 -1.40 0.48 %

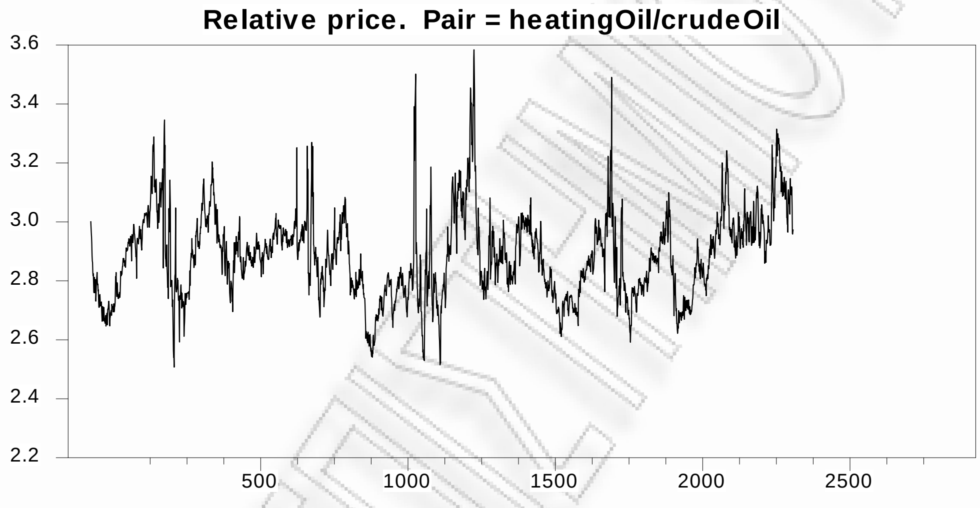
Statistics on Series MA_REL

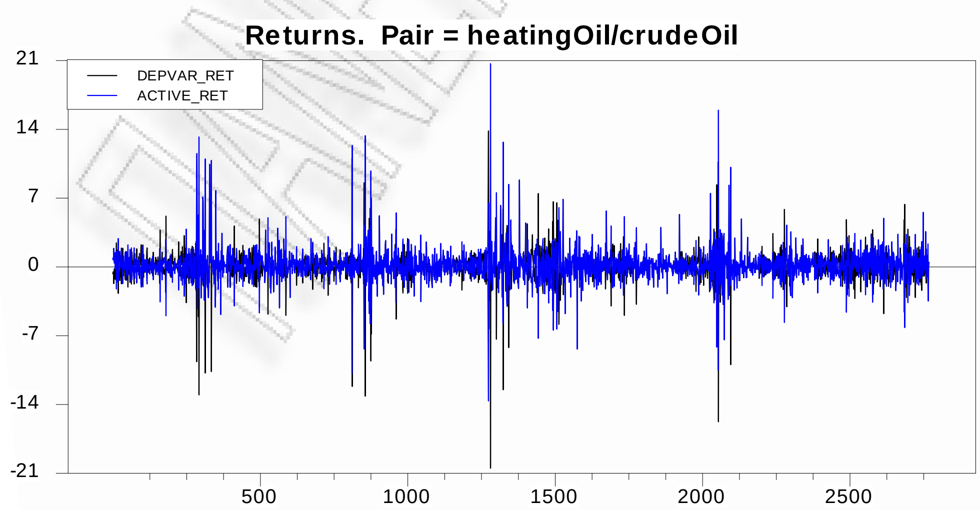
Observations	2623	Skipped/Missing	149
Sample Mean	0.998974	Variance	0.003173
Standard Error	0.056327	of Sample Mean	0.001100
t-Statistic (Mean=0)	908.318816	Signif Level	0.000000
Skewness	1.163325	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.449597	Signif Level (Ku=0)	0.000000
Jarque-Bera	1247.435595	Signif Level (JB=0)	0.000000

Minimum	0.842289	Maximum	1.231002
01-%ile	0.899677	99-%ile	1.198395
05-%ile	0.924662	95-%ile	1.100918
10-%ile	0.939190	90-%ile	1.061510
25-%ile	0.960681	75-%ile	1.026205
Median	0.991820		

-2-


Deviation of rel price from MA. Pair = heatingOil/crudeOil
1.4
1.3
1.2
1.1
1.0
0.9
0.8
500
1000
1500
2000
2500


Relative price. Pair = heatingOil/crudeOil
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
500
1000
1500
2000
2500


Returns. Pair = heatingOil/crudeOil
DEPVAR_RET
ACTIVE_RET
21
14
7
0
-7
-14
-21
500
1000
1500
2000
2500

```
**********************************************************************************************
********************  Pair = heatingOil/crudeOil
********************  SMA --->  1   LMA --->  150
**********************************************************************************************
```

Performance

```
Statistics on Series DEPVAR_RET
Observations              2771      Skipped/Missing           1
Sample Mean             0.014758      Variance            2.990445
Standard Error          1.729290      of Sample Mean      0.032851
t-Statistic (Mean=0)    0.449253      Signif Level        0.653284
Skewness               -0.979650      Signif Level (Sk=0) 0.000000
Kurtosis (excess)      21.556673      Signif Level (Ku=0) 0.000000
Jarque-Bera         54095.579900      Signif Level (JB=0) 0.000000

Minimum               -20.584528      Maximum            13.741360
01-%ile                -4.169521      99-%ile             5.036791
05-%ile                -2.135145      95-%ile             2.275982
10-%ile                -1.481046      90-%ile             1.480858
25-%ile                -0.707339      75-%ile             0.689096
Median                  0.017143
```

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.73 -2.14 0.46 %

```
Statistics on Series ACTIVE_RET
Observations              2771      Skipped/Missing           1
Sample Mean             0.102423      Variance            2.980169
Standard Error          1.726316      of Sample Mean      0.032795
t-Statistic (Mean=0)    3.123165      Signif Level        0.001808
Skewness                1.652576      Signif Level (Sk=0) 0.000000
```

Kurtosis (excess) 21.279124 Signif Level (Ku=0) 0.000000
Jarque-Bera 53540.933090 Signif Level (JB=0) 0.000000

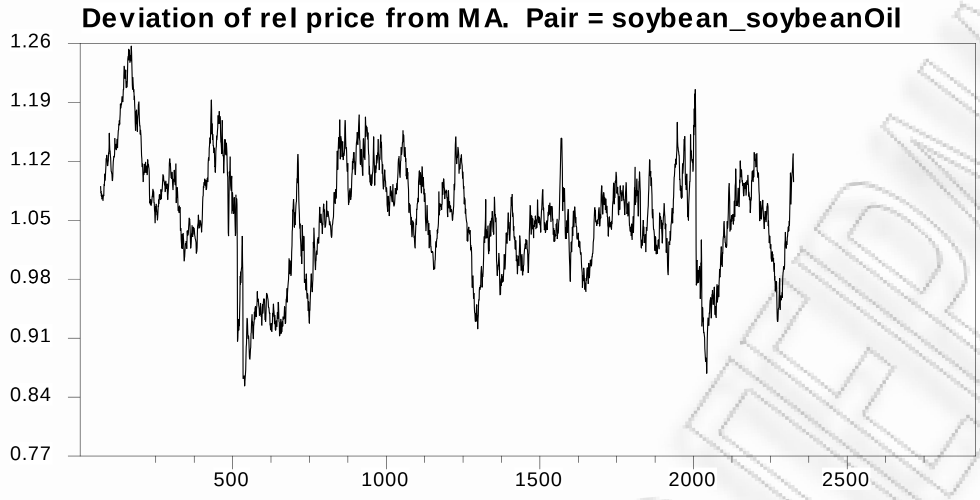
Minimum	-13.741360	Maximum	20.584528
01-%ile	-4.219456	99-%ile	5.423309
05-%ile	-2.025462	95-%ile	2.393592
10-%ile	-1.425658	90-%ile	1.589343
25-%ile	-0.651039	75-%ile	0.751680
Median	0.033177		

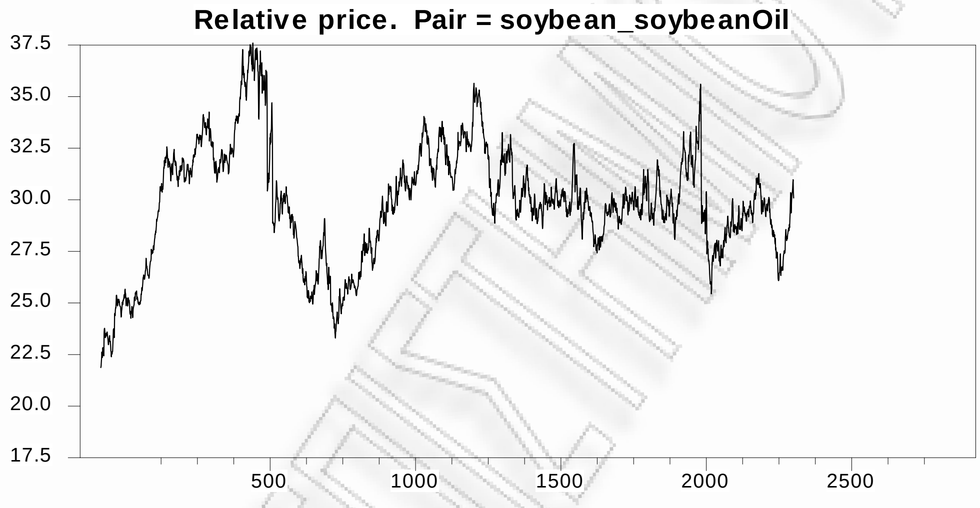
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.10 1.73 -2.03 0.45 %

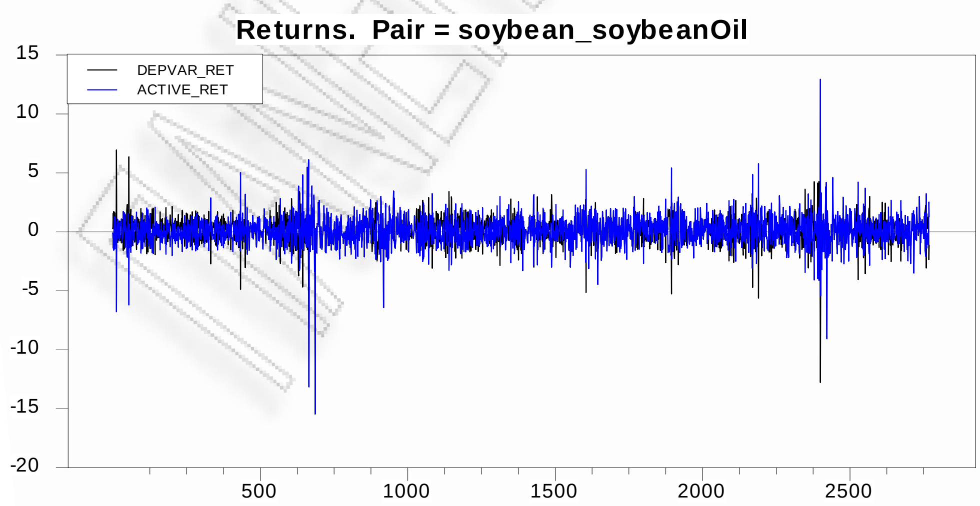
Statistics on Series MA_REL
Observations 2623 Skipped/Missing 149
Sample Mean 1.004280 Variance 0.003697
Standard Error 0.060801 of Sample Mean 0.001187
t-Statistic (Mean=0) 845.948709 Signif Level 0.000000
Skewness 0.349385 Signif Level (Sk=0) 0.000000
Kurtosis (excess) 0.868050 Signif Level (Ku=0) 0.000000
Jarque-Bera 135.717247 Signif Level (JB=0) 0.000000

Minimum	0.800211	Maximum	1.314360
01-%ile	0.883583	99-%ile	1.152458
05-%ile	0.906122	95-%ile	1.105108
10-%ile	0.927337	90-%ile	1.075990
25-%ile	0.961171	75-%ile	1.044530
Median	1.003720		

-3-


Deviation of rel price from MA. Pair = soybean_soybeanOil
1.26
1.19
1.12
1.05
0.98
0.91
0.84
0.77
500
1000
1500
2000
2500


Relative price. Pair = soybean_soybeanOil
37.5
35.0
32.5
30.0
27.5
25.0
22.5
20.0
17.5
500
1000
1500
2000
2500


Returns. Pair = soybean_soybeanOil
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = soybean_soybeanOil

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022759	Variance	1.548062
Standard Error	1.244211	of Sample Mean	0.023636
t-Statistic (Mean=0)	0.962875	Signif Level	0.335694
Skewness	-1.805608	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.845722	Signif Level (Ku=0)	0.000000
Jarque-Bera	46979.254862	Signif Level (JB=0)	0.000000

Minimum	-15.532950	Maximum	6.866004
01-%ile	-3.121745	99-%ile	2.864887
05-%ile	-1.743204	95-%ile	1.801140
10-%ile	-1.343896	90-%ile	1.363836
25-%ile	-0.658107	75-%ile	0.745133
Median	0.056297		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.24 -1.74 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.011758	Variance	1.548442
Standard Error	1.244364	of Sample Mean	0.023639
t-Statistic (Mean=0)	0.497389	Signif Level	0.618955

Skewness -0.857933 Signif Level (Sk=0) 0.000000
Kurtosis (excess) 19.736225 Signif Level (Ku=0) 0.000000
Jarque-Bera 45313.095289 Signif Level (JB=0) 0.000000

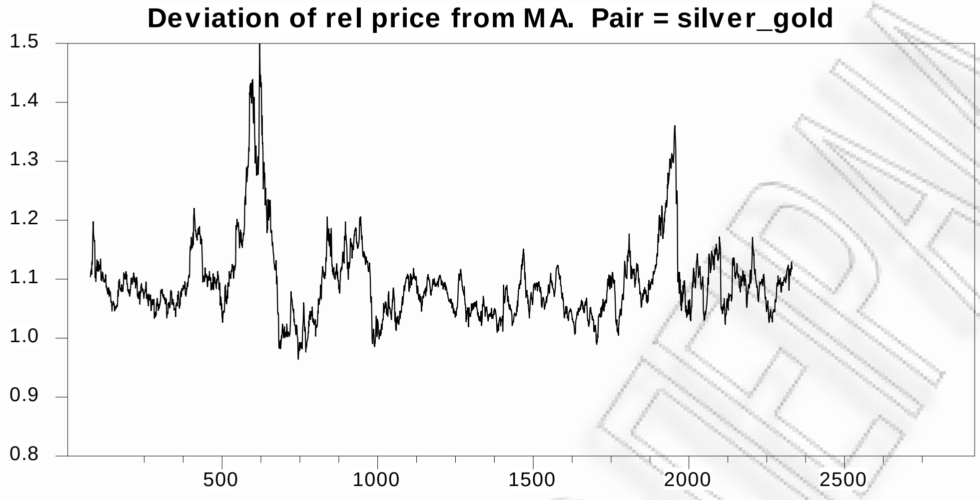
Minimum -15.532950 Maximum 12.861647
01-%ile -2.893089 99-%ile 2.930090
05-%ile -1.765151 95-%ile 1.782174
10-%ile -1.344876 90-%ile 1.363841
25-%ile -0.691777 75-%ile 0.729451
Median 0.003003

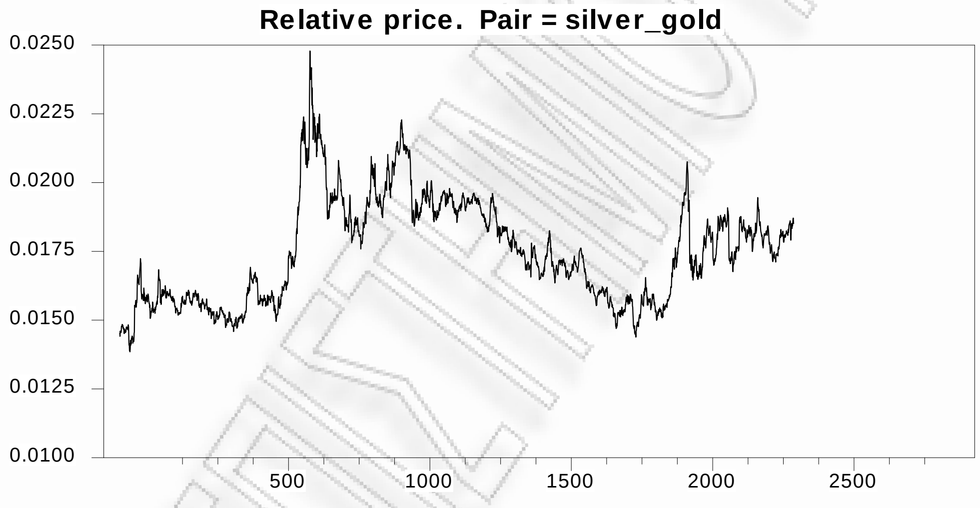
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 1.24 -1.77 0.47 %

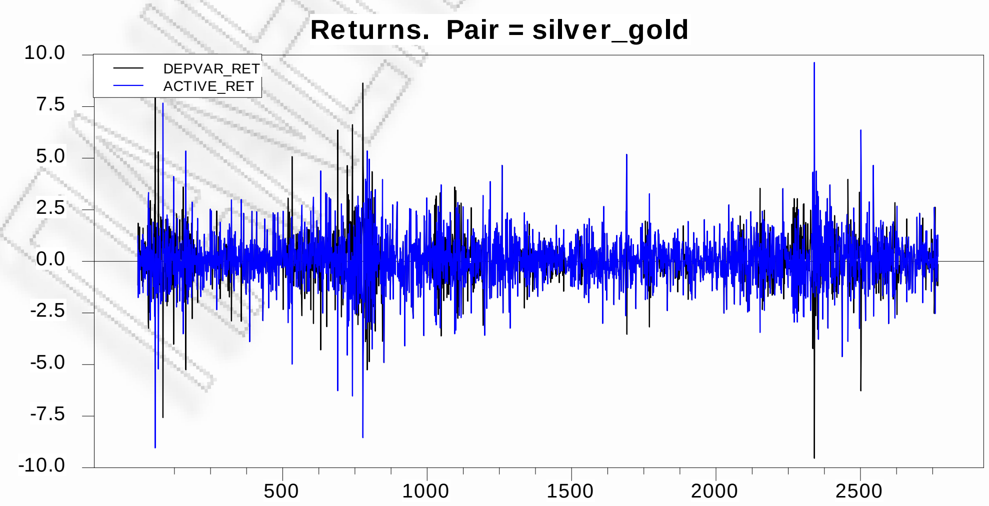
Statistics on Series MA_REL
Observations 2623 Skipped/Missing 149
Sample Mean 1.006434 Variance 0.005905
Standard Error 0.076842 of Sample Mean 0.001500
t-Statistic (Mean=0) 670.787015 Signif Level 0.000000
Skewness -0.162045 Signif Level (Sk=0) 0.000709
Kurtosis (excess) 0.179148 Signif Level (Ku=0) 0.061434
Jarque-Bera 14.986985 Signif Level (JB=0) 0.000557

Minimum 0.772355 Maximum 1.241740
01-%ile 0.824474 99-%ile 1.196264
05-%ile 0.866241 95-%ile 1.121614
10-%ile 0.893764 90-%ile 1.097533
25-%ile 0.964698 75-%ile 1.055843
Median 1.009207

-4-


Deviation of rel price from MA. Pair = silver_gold
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
500
1000
1500
2000
2500


Relative price. Pair = silver_gold
0.0250
0.0225
0.0200
0.0175
0.0150
0.0125
0.0100
500
1000
1500
2000
2500


Returns. Pair = silver_gold
DEPVAR_RET
ACTIVE_RET
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
500
1000
1500
2000
2500

****

******************** Pair = silver_gold

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018778	Variance	1.475875
Standard Error	1.214856	of Sample Mean	0.023078
t-Statistic (Mean=0)	0.813642	Signif Level	0.415920
Skewness	0.010534	Signif Level (Sk=0)	0.820998
Kurtosis (excess)	6.051425	Signif Level (Ku=0)	0.000000
Jarque-Bera	4228.105978	Signif Level (JB=0)	0.000000

Minimum	-9.590524	Maximum	9.087904
01-%ile	-3.282010	99-%ile	3.105876
05-%ile	-1.838538	95-%ile	1.873336
10-%ile	-1.325501	90-%ile	1.347578
25-%ile	-0.591186	75-%ile	0.628350
Median	0.006533		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.21 -1.84 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.026414	Variance	1.475530
Standard Error	1.214714	of Sample Mean	0.023076
t-Statistic (Mean=0)	1.144685	Signif Level	0.252439
Skewness	-0.032589	Signif Level (Sk=0)	0.483943

Kurtosis (excess)	6.057748	Signif Level (Ku=0)	0.000000
Jarque-Bera	4237.385211	Signif Level (JB=0)	0.000000

Minimum	-9.087904	Maximum	9.590524
01-%ile	-3.186690	99-%ile	3.243083
05-%ile	-1.826151	95-%ile	1.935892
10-%ile	-1.322823	90-%ile	1.347851
25-%ile	-0.585659	75-%ile	0.635245
Median	0.011914		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.21 -1.83 0.46 %

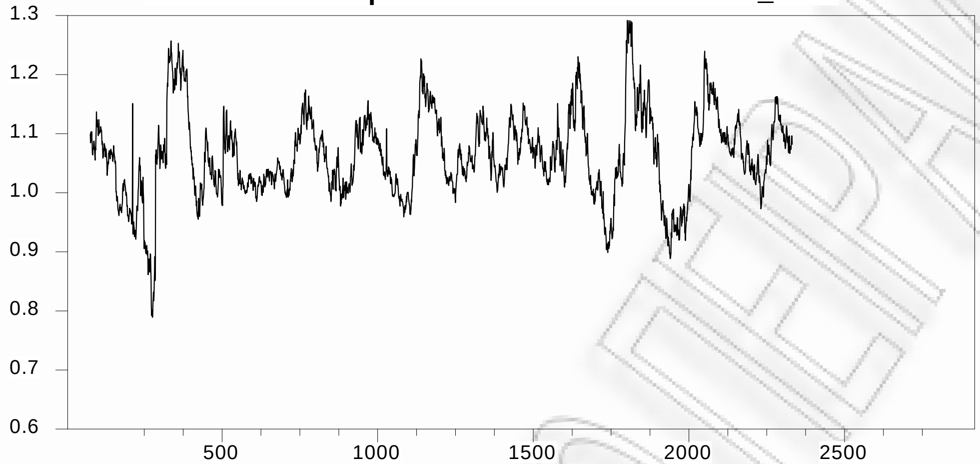
Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.006824	Variance	0.006321
Standard Error	0.079504	of Sample Mean	0.001552
t-Statistic (Mean=0)	648.578572	Signif Level	0.000000
Skewness	2.072778	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.420168	Signif Level (Ku=0)	0.000000
Jarque-Bera	6383.091672	Signif Level (JB=0)	0.000000

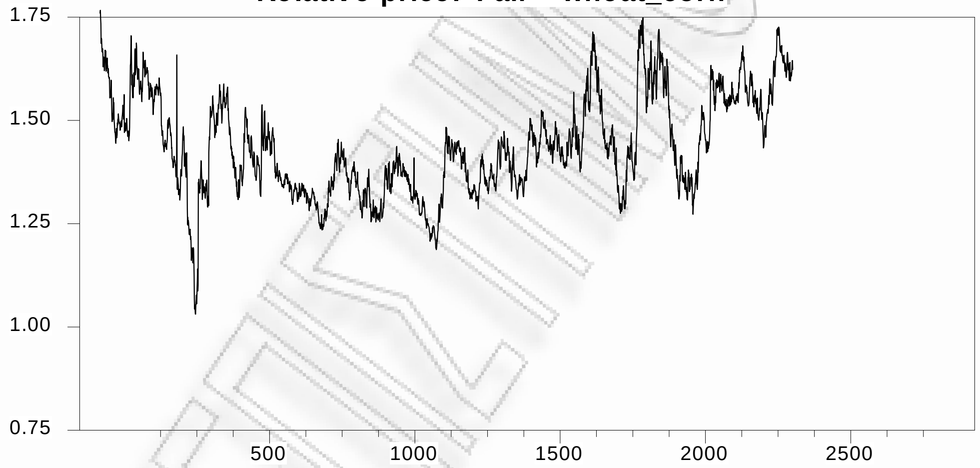
Minimum	0.855755	Maximum	1.478675
01-%ile	0.888075	99-%ile	1.340574
05-%ile	0.916334	95-%ile	1.155851
10-%ile	0.934075	90-%ile	1.094244
25-%ile	0.957854	75-%ile	1.027838
Median	0.995009		

-5-

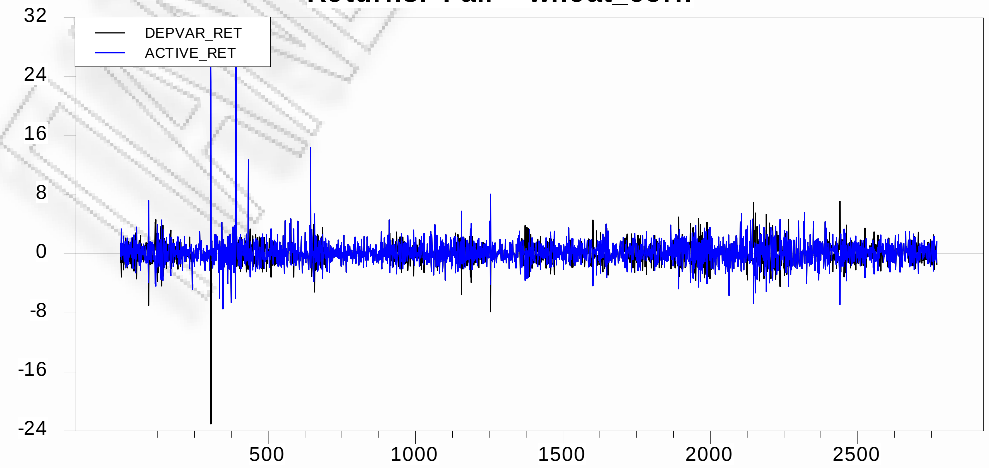
Deviation of rel price from MA. Pair = wheat_corn



Relative price. Pair = wheat_corn



Returns. Pair = wheat_corn



****

******************** Pair = wheat_corn

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.011072	Variance	2.974005
Standard Error	1.724530	of Sample Mean	0.032761
t-Statistic (Mean=0)	0.337962	Signif Level	0.735418
Skewness	2.730782	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	68.283882	Signif Level (Ku=0)	0.000000
Jarque-Bera	541790.217454	Signif Level (JB=0)	0.000000
Minimum	-23.187712	Maximum	30.020972
01-%ile	-3.476776	99-%ile	4.173708
05-%ile	-2.166937	95-%ile	2.260124
10-%ile	-1.689766	90-%ile	1.697152
25-%ile	-0.893765	75-%ile	0.853195
Median	-0.039146		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.01 1.72 -2.17 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.069642	Variance	2.969275
Standard Error	1.723159	of Sample Mean	0.032735
t-Statistic (Mean=0)	2.127475	Signif Level	0.033469

Skewness	4.364575	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	67.865415	Signif Level (Ku=0)	0.000000
Jarque-Bera	540565.828712	Signif Level (JB=0)	0.000000

Minimum	-7.588072	Maximum	30.020972
01-%ile	-3.793053	99-%ile	3.946379
05-%ile	-2.168151	95-%ile	2.274485
10-%ile	-1.637712	90-%ile	1.748440
25-%ile	-0.829154	75-%ile	0.920195
Median	0.031319		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.07 1.72 -2.17 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.002932	Variance	0.007169
Standard Error	0.084671	of Sample Mean	0.001653
t-Statistic (Mean=0)	606.649253	Signif Level	0.000000
Skewness	0.060771	Signif Level (Sk=0)	0.204120
Kurtosis (excess)	0.612228	Signif Level (Ku=0)	0.000000
Jarque-Bera	42.579569	Signif Level (JB=0)	0.000000

Minimum	0.685029	Maximum	1.269669
01-%ile	0.800838	99-%ile	1.210767
05-%ile	0.864691	95-%ile	1.151296
10-%ile	0.904852	90-%ile	1.109713
25-%ile	0.949840	75-%ile	1.053803
Median	1.000987		

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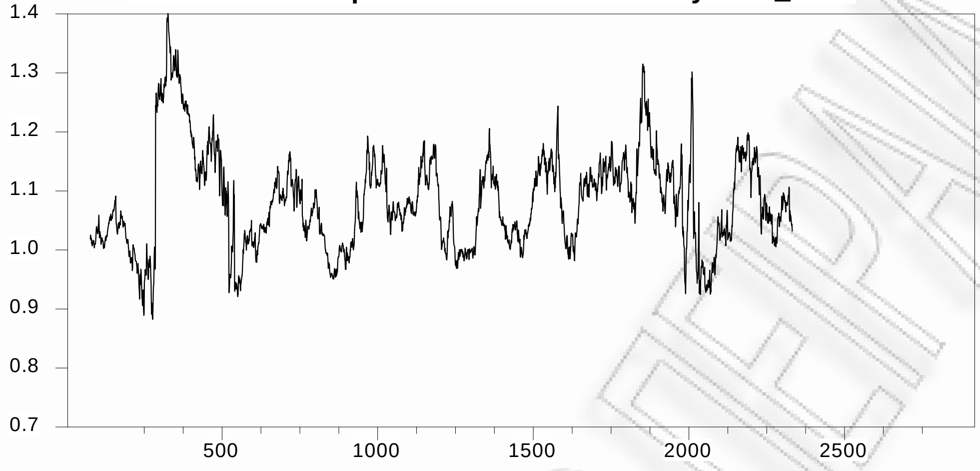
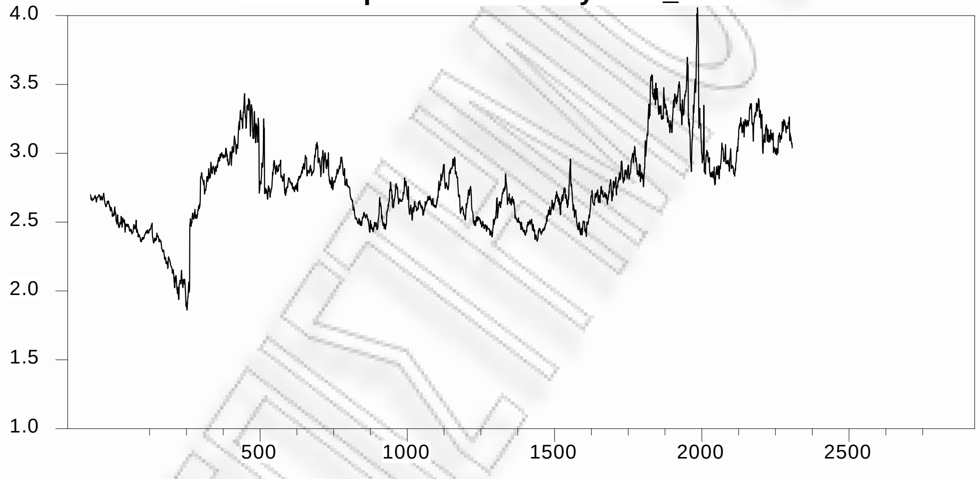
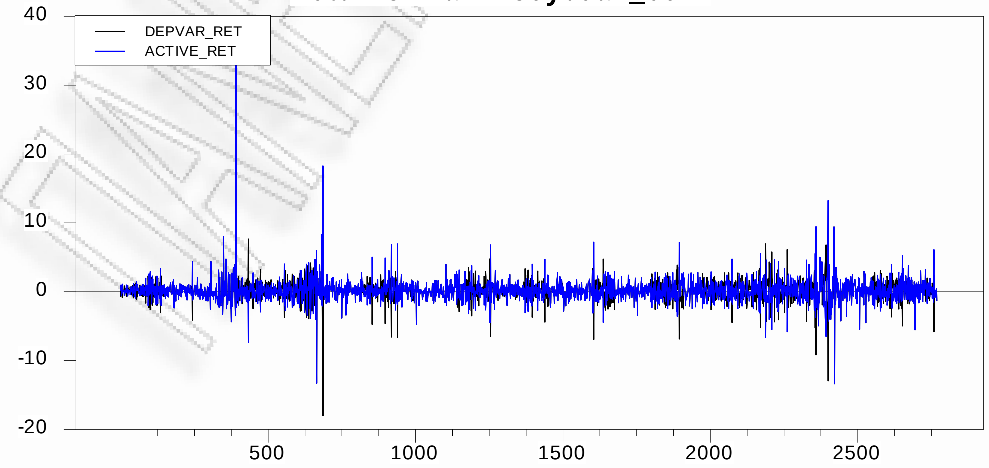
Deviation of rel price from MA. Pair = soybean_corn



Relative price. Pair = soybean_corn



Returns. Pair = soybean_corn



****

******************** Pair = soybean_corn

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018639	Variance	2.666566
Standard Error	1.632962	of Sample Mean	0.031021
t-Statistic (Mean=0)	0.600843	Signif Level	0.547994
Skewness	1.968128	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	76.216099	Signif Level (Ku=0)	0.000000
Jarque-Bera	672474.116889	Signif Level (JB=0)	0.000000
Minimum	-18.156908	Maximum	33.572249
01-%ile	-4.518416	99-%ile	3.746851
05-%ile	-2.138780	95-%ile	2.141820
10-%ile	-1.496651	90-%ile	1.566307
25-%ile	-0.654477	75-%ile	0.760979
Median	0.016422		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.63 -2.14 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.031196	Variance	2.665940
Standard Error	1.632771	of Sample Mean	0.031018
t-Statistic (Mean=0)	1.005760	Signif Level	0.314619
Skewness	3.701029	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	76.058667	Signif Level (Ku=0)	0.000000
Jarque-Bera	674243.326856	Signif Level (JB=0)	0.000000

Minimum	-13.520310	Maximum	33.572249
01-%ile	-3.657329	99-%ile	4.490669
05-%ile	-2.076268	95-%ile	2.237165
10-%ile	-1.509723	90-%ile	1.539011
25-%ile	-0.717233	75-%ile	0.691525
Median	-0.023923		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.63 -2.08 0.48 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.009598	Variance	0.009382
Standard Error	0.096859	of Sample Mean	0.001891
t-Statistic (Mean=0)	533.834339	Signif Level	0.000000
Skewness	0.622289	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.581505	Signif Level (Ku=0)	0.000000
Jarque-Bera	206.246818	Signif Level (JB=0)	0.000000

Minimum	0.777405	Maximum	1.380257
01-%ile	0.830594	99-%ile	1.279495
05-%ile	0.865699	95-%ile	1.197570
10-%ile	0.896939	90-%ile	1.120000
25-%ile	0.938979	75-%ile	1.069229
Median	1.001304		

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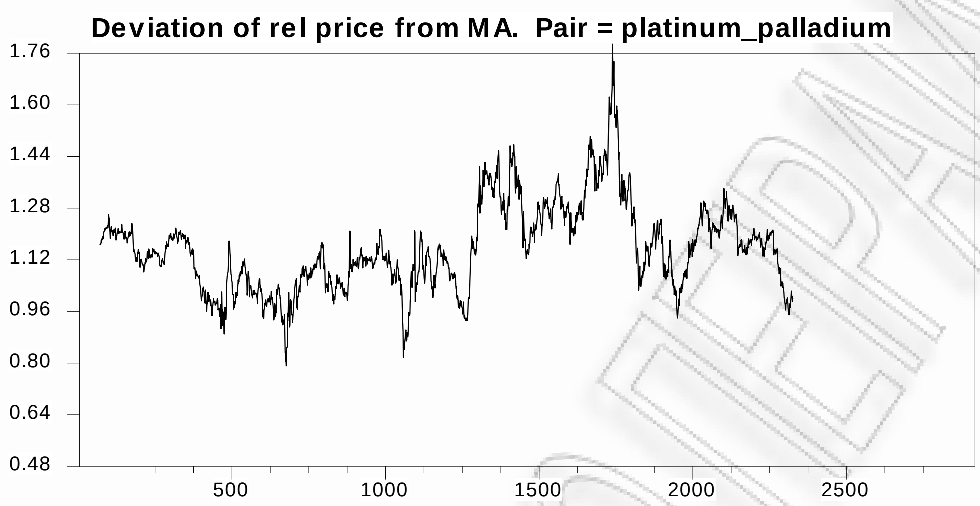
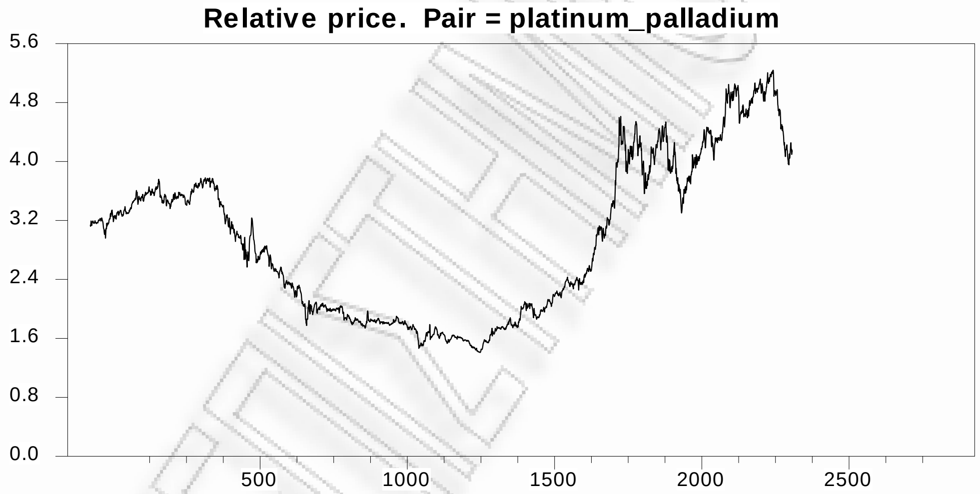
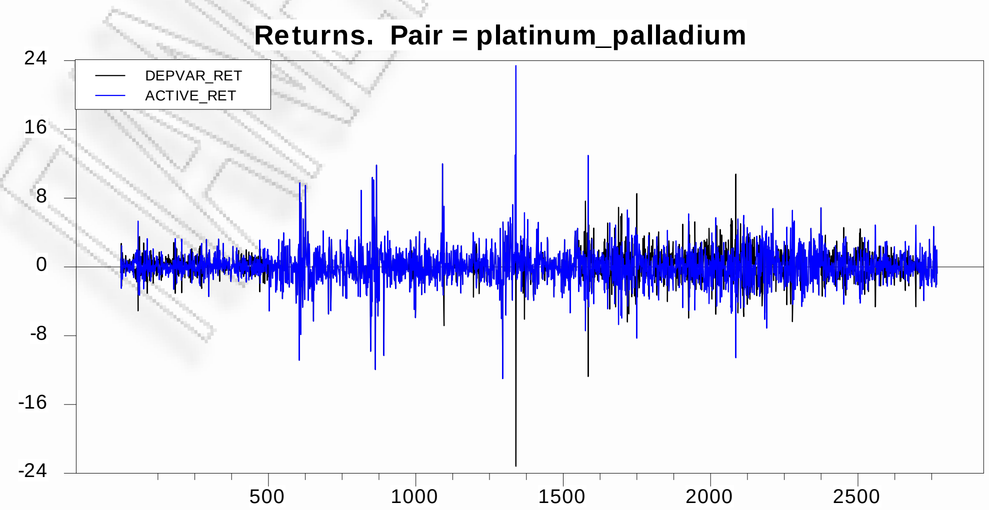

Deviation of rel price from MA. Pair = platinum_palladium
1.76
1.60
1.44
1.28
1.12
0.96
0.80
0.64
0.48
500
1000
1500
2000
2500


Relative price. Pair = platinum_palladium
5.6
4.8
4.0
3.2
2.4
1.6
0.8
0.0
500
1000
1500
2000
2500


Returns. Pair = platinum_palladium
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = platinum_palladium

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.033564	Variance	4.011642
Standard Error	2.002908	of Sample Mean	0.038049
t-Statistic (Mean=0)	0.882115	Signif Level	0.377791
Skewness	-0.535602	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	12.067461	Signif Level (Ku=0)	0.000000
Jarque-Bera	16945.945198	Signif Level (JB=0)	0.000000
Minimum	-23.298456	Maximum	12.896863
01-%ile	-5.453415	99-%ile	5.149221
05-%ile	-2.875062	95-%ile	3.038467
10-%ile	-2.047033	90-%ile	2.165283
25-%ile	-0.927409	75-%ile	0.984723
Median	0.026603		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.00 -2.88 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.042556	Variance	4.010957
Standard Error	2.002737	of Sample Mean	0.038046
t-Statistic (Mean=0)	-1.118548	Signif Level	0.263430
Skewness	0.697475	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	12.094983	Signif Level (Ku=0)	0.000000
Jarque-Bera	17114.909206	Signif Level (JB=0)	0.000000

Minimum	-13.105920	Maximum	23.298456
01-%ile	-5.243329	99-%ile	5.382605
05-%ile	-3.006558	95-%ile	2.992355
10-%ile	-2.114008	90-%ile	2.063246
25-%ile	-1.003274	75-%ile	0.891341
Median	-0.064997		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.04 2.00 -3.01 0.49 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.018752	Variance	0.024744
Standard Error	0.157303	of Sample Mean	0.003071
t-Statistic (Mean=0)	331.689167	Signif Level	0.000000
Skewness	0.676917	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.972196	Signif Level (Ku=0)	0.000000
Jarque-Bera	303.615867	Signif Level (JB=0)	0.000000

Minimum	0.595147	Maximum	1.755342
01-%ile	0.715764	99-%ile	1.496568
05-%ile	0.796983	95-%ile	1.297751
10-%ile	0.829769	90-%ile	1.230619
25-%ile	0.911139	75-%ile	1.097279
Median	1.005462		

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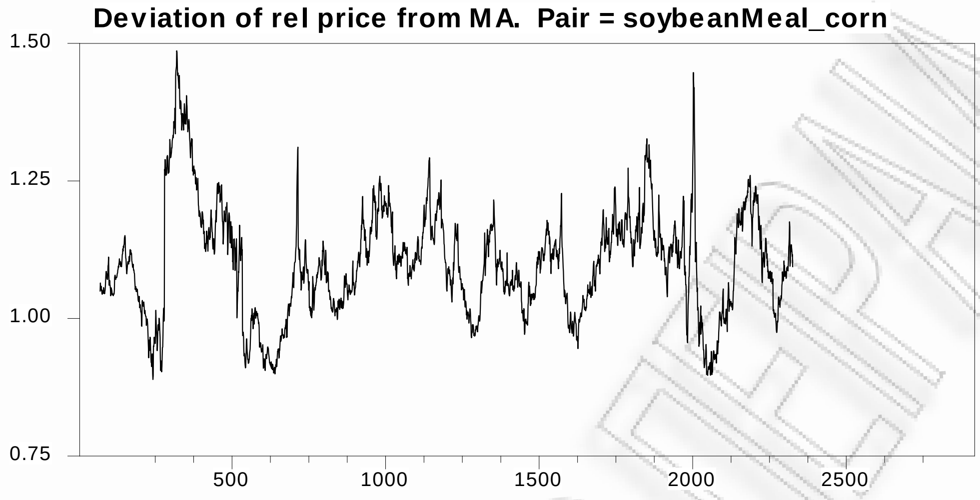
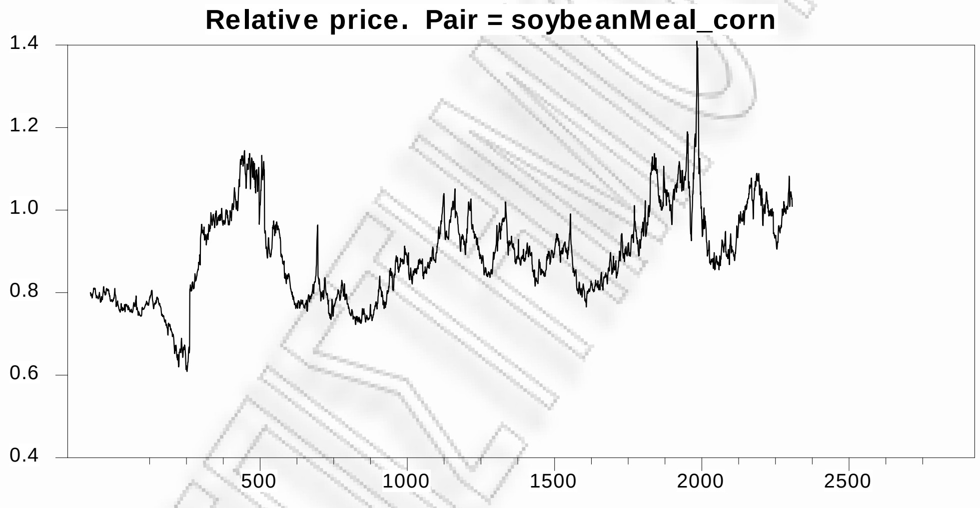
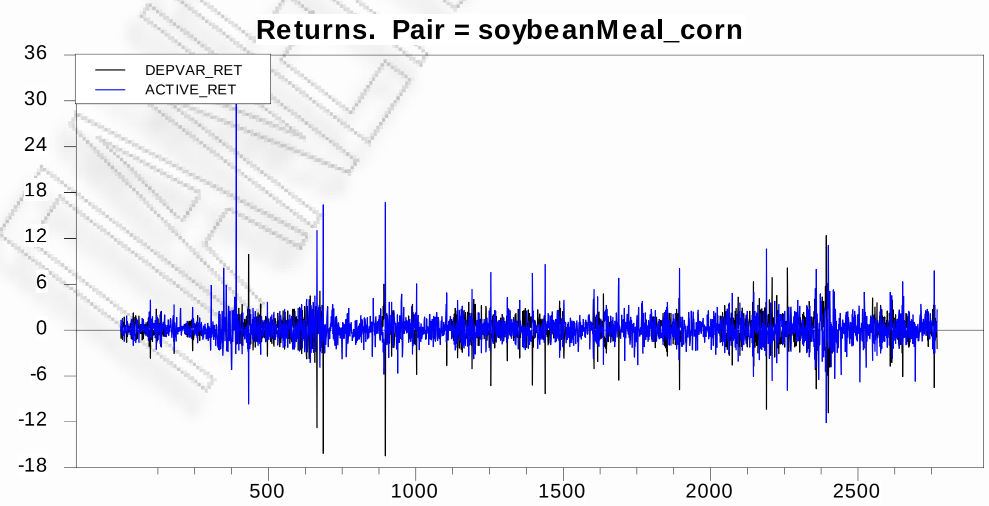

Deviation of rel price from MA. Pair = soybeanMeal_corn
1.50
1.25
1.00
0.75
500
1000
1500
2000
2500


Relative price. Pair = soybeanMeal_corn
1.4
1.2
1.0
0.8
0.6
0.4
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_corn
DEPVAR_RET
ACTIVE_RET
36
30
24
18
12
6
0
-6
-12
-18
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_corn

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.027405	Variance	3.271722
Standard Error	1.808790	of Sample Mean	0.034361
t-Statistic (Mean=0)	0.797547	Signif Level	0.425202
Skewness	1.327603	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	48.245724	Signif Level (Ku=0)	0.000000
Jarque-Bera	269560.575111	Signif Level (JB=0)	0.000000

Minimum	-16.583341	Maximum	32.997932
01-%ile	-4.941308	99-%ile	4.050668
05-%ile	-2.455365	95-%ile	2.457314
10-%ile	-1.728488	90-%ile	1.860235
25-%ile	-0.824091	75-%ile	0.906750
Median	0.052865		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.03 1.81 -2.46 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.010278	Variance	3.272367
Standard Error	1.808969	of Sample Mean	0.034365
t-Statistic (Mean=0)	0.299088	Signif Level	0.764895
Skewness	2.963844	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	48.239775	Signif Level (Ku=0)	0.000000
Jarque-Bera	272737.224768	Signif Level (JB=0)	0.000000

Minimum	-12.235515	Maximum	32.997932
01-%ile	-4.012165	99-%ile	4.844995
05-%ile	-2.485278	95-%ile	2.449984
10-%ile	-1.785270	90-%ile	1.812090
25-%ile	-0.913081	75-%ile	0.839582
Median	-0.035946		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 1.81 -2.49 0.49 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.012350	Variance	0.013500
Standard Error	0.116188	of Sample Mean	0.002269
t-Statistic (Mean=0)	446.238406	Signif Level	0.000000
Skewness	0.506449	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.658475	Signif Level (Ku=0)	0.000000
Jarque-Bera	159.516985	Signif Level (JB=0)	0.000000

Minimum	0.767270	Maximum	1.462176
01-%ile	0.789456	99-%ile	1.343803
05-%ile	0.824718	95-%ile	1.214333
10-%ile	0.866229	90-%ile	1.151080
25-%ile	0.933562	75-%ile	1.079667
Median	1.010804		

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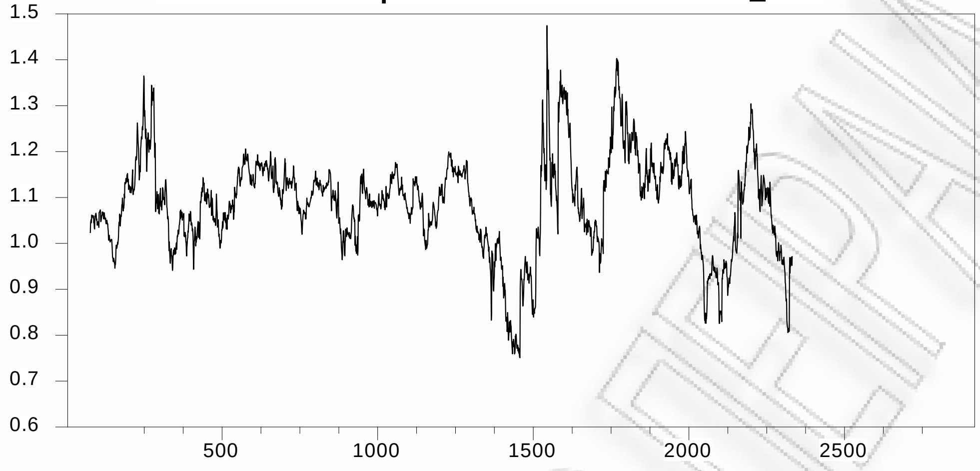
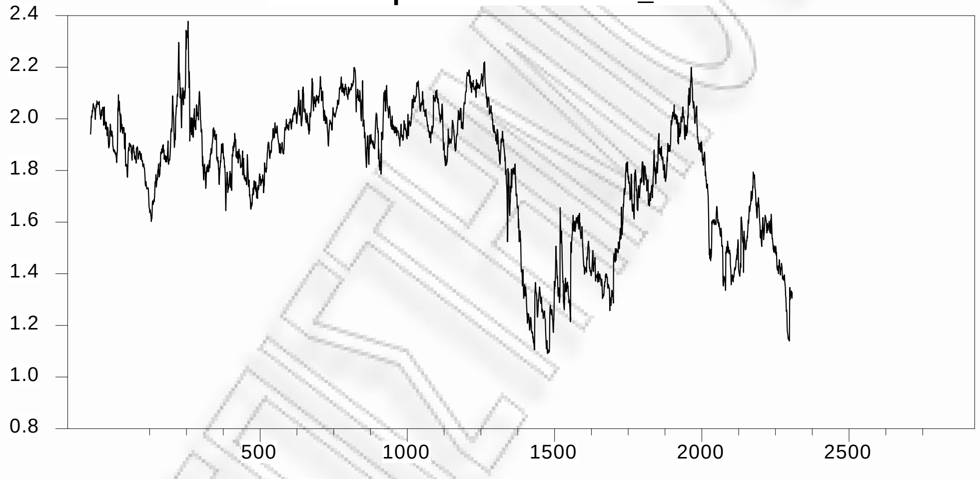
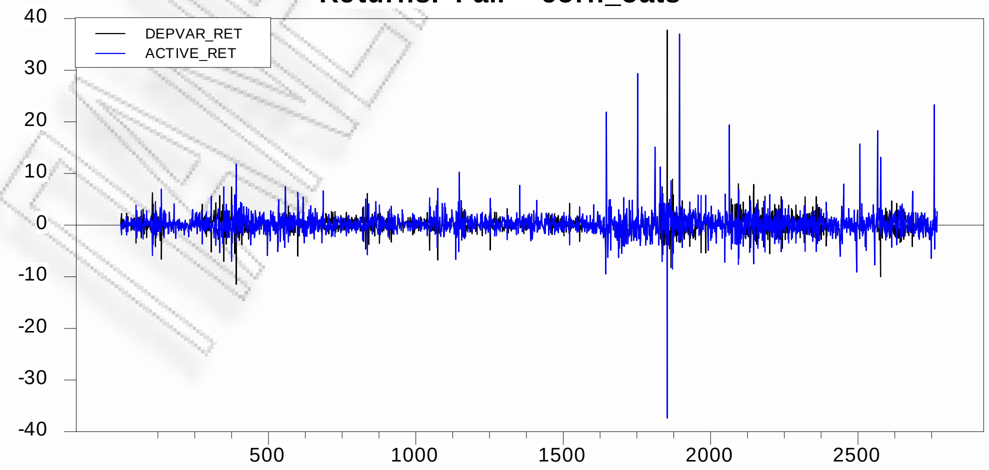
Deviation of rel price from MA. Pair = corn_oats



Relative price. Pair = corn_oats



Returns. Pair = corn_oats



****

******************** Pair = corn_oats

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.007345	Variance	5.392940
Standard Error	2.322270	of Sample Mean	0.044116
t-Statistic (Mean=0)	0.166487	Signif Level	0.867786
Skewness	4.890516	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	67.317399	Signif Level (Ku=0)	0.000000
Jarque-Bera	534260.441385	Signif Level (JB=0)	0.000000
Minimum	-11.661956	Maximum	37.584567
01-%ile	-5.104269	99-%ile	5.655687
05-%ile	-2.839969	95-%ile	2.742127
10-%ile	-1.999840	90-%ile	1.900938
25-%ile	-0.981165	75-%ile	0.864683
Median	-0.068176		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 2.32 -2.84 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.043451	Variance	5.391105
Standard Error	2.321875	of Sample Mean	0.044108
t-Statistic (Mean=0)	0.985086	Signif Level	0.324668
Skewness	1.922308	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	67.281124	Signif Level (Ku=0)	0.000000
Jarque-Bera	524357.569258	Signif Level (JB=0)	0.000000
Minimum	-37.584567	Maximum	36.816434
01-%ile	-5.301155	99-%ile	5.701292
05-%ile	-2.783165	95-%ile	2.790927
10-%ile	-1.893743	90-%ile	1.992722
25-%ile	-0.937002	75-%ile	0.896382
Median	-0.008937		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.04 2.32 -2.78 0.48 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	0.992013	Variance	0.015244
Standard Error	0.123465	of Sample Mean	0.002411
t-Statistic (Mean=0)	411.502645	Signif Level	0.000000
Skewness	-0.258047	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.802480	Signif Level (Ku=0)	0.000000
Jarque-Bera	99.491045	Signif Level (JB=0)	0.000000
Minimum	0.601990	Maximum	1.443634
01-%ile	0.646690	99-%ile	1.287044
05-%ile	0.783418	95-%ile	1.185548
10-%ile	0.839316	90-%ile	1.131654
25-%ile	0.920650	75-%ile	1.065633
Median	1.002261		

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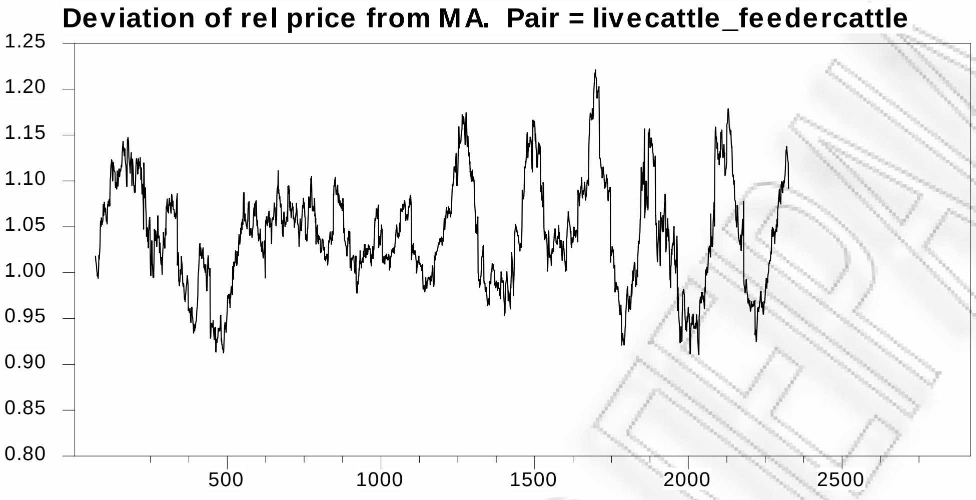
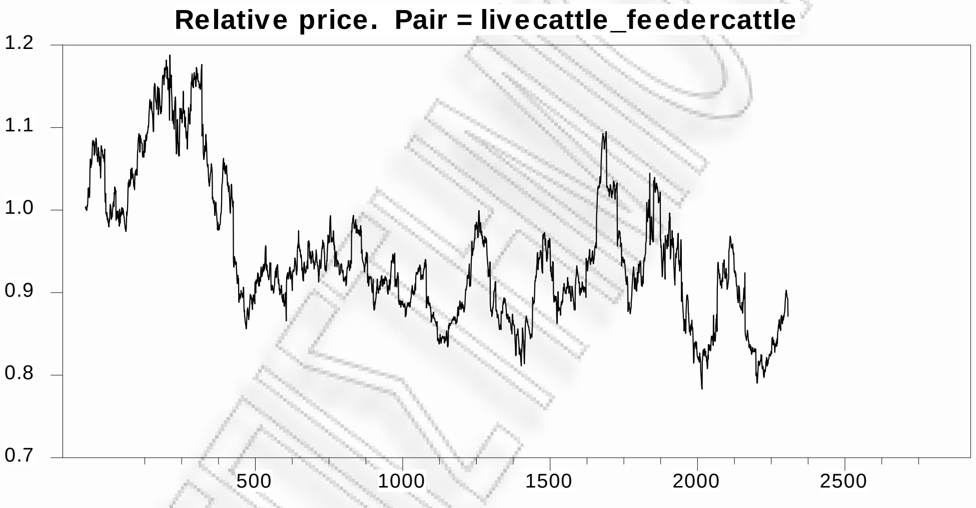
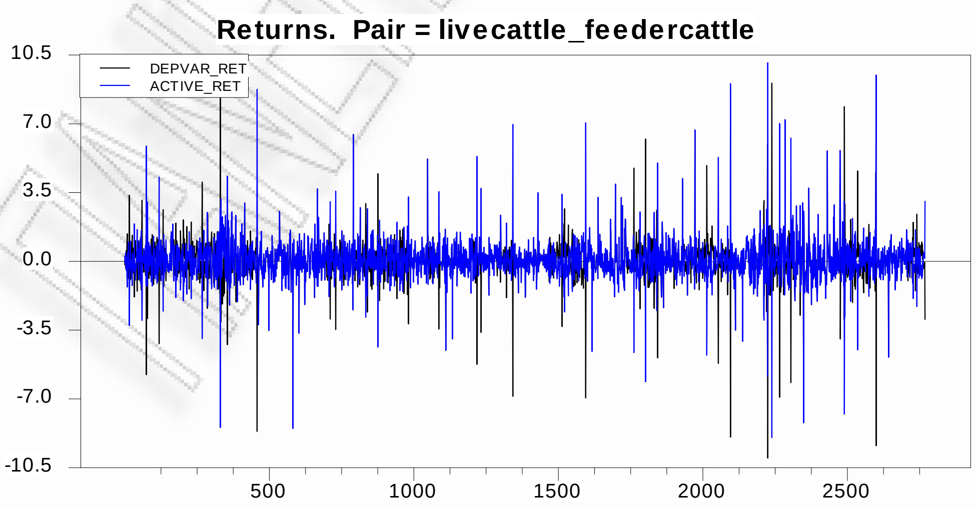

Deviation of rel price from MA. Pair = livecattle_feedercattle
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
500
1000
1500
2000
2500


Relative price. Pair = livecattle_feedercattle
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Returns. Pair = livecattle_feedercattle
DEPVAR_RET
ACTIVE_RET
10.5
7.0
3.5
0.0
-3.5
-7.0
-10.5
500
1000
1500
2000
2500

****

******************** Pair = livecattle_feedercattle

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000245	Variance	1.223698
Standard Error	1.106209	of Sample Mean	0.021014
t-Statistic (Mean=0)	-0.011655	Signif Level	0.990702
Skewness	-0.699388	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.182778	Signif Level (Ku=0)	0.000000
Jarque-Bera	42712.139854	Signif Level (JB=0)	0.000000

Minimum	-10.059802	Maximum	9.021523
01-%ile	-3.406924	99-%ile	2.927325
05-%ile	-1.363140	95-%ile	1.311686
10-%ile	-0.933457	90-%ile	0.970670
25-%ile	-0.444826	75-%ile	0.471812
Median	0.003105		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 1.11 -1.36 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.034040	Variance	1.222539
Standard Error	1.105685	of Sample Mean	0.021005
t-Statistic (Mean=0)	1.620584	Signif Level	0.105221
Skewness	0.731618	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	19.129563	Signif Level (Ku=0)	0.000000
Jarque-Bera	42498.045285	Signif Level (JB=0)	0.000000

Minimum	-9.021523	Maximum	10.059802
01-%ile	-2.597155	99-%ile	3.504194
05-%ile	-1.278029	95-%ile	1.379904
10-%ile	-0.926408	90-%ile	0.983573
25-%ile	-0.456399	75-%ile	0.457666
	Median	0.005177	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 1.11 -1.28 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	0.994659	Variance	0.004542
Standard Error	0.067391	of Sample Mean	0.001316
t-Statistic (Mean=0)	755.906766	Signif Level	0.000000
Skewness	0.214908	Signif Level (Sk=0)	0.000007
Kurtosis (excess)	-0.245999	Signif Level (Ku=0)	0.010220
Jarque-Bera	26.804654	Signif Level (JB=0)	0.000002

Minimum	0.841757	Maximum	1.203319
01-%ile	0.858547	99-%ile	1.149124
05-%ile	0.881590	95-%ile	1.111828
10-%ile	0.907100	90-%ile	1.086610
25-%ile	0.949877	75-%ile	1.036938
	Median	0.990946	

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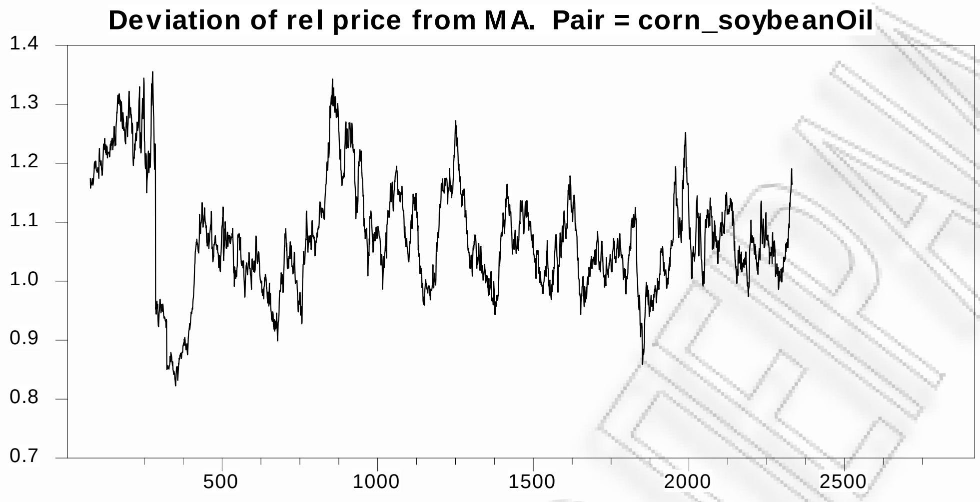
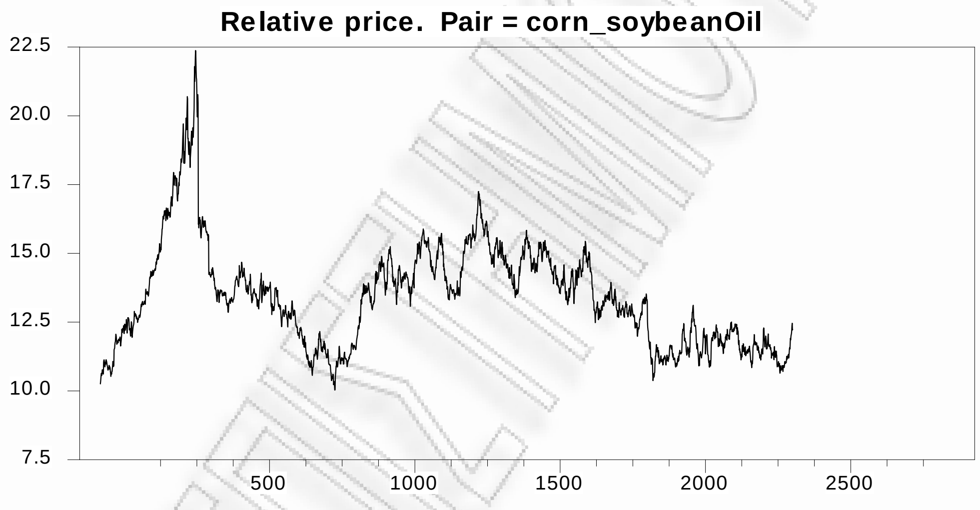
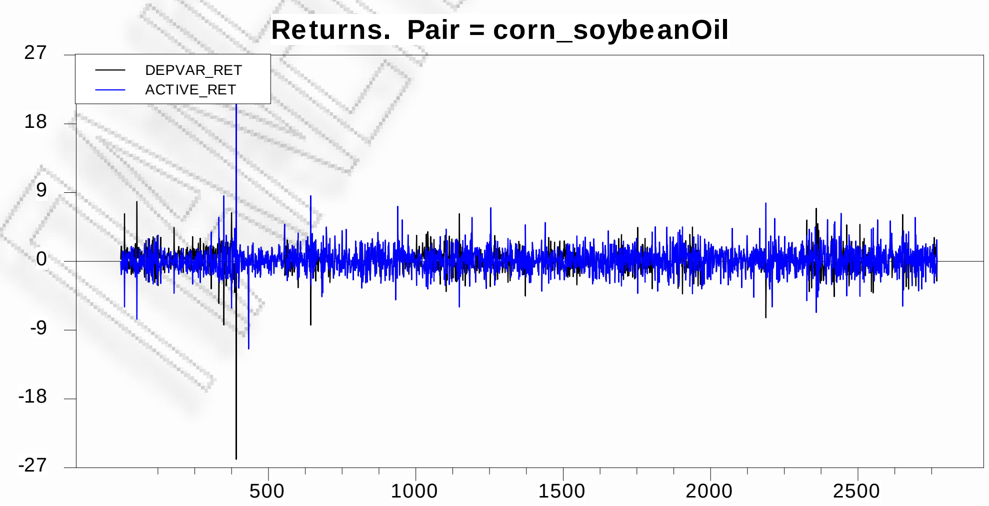

Deviation of rel price from MA. Pair = corn_soybeanOil
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = corn_soybeanOil
22.5
20.0
17.5
15.0
12.5
10.0
7.5
500
1000
1500
2000
2500


Returns. Pair = corn_soybeanOil
DEPVAR_RET
ACTIVE_RET
27
18
9
0
-9
-18
-27
500
1000
1500
2000
2500

****

********************** Pair = corn_soybeanOil

********************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022716	Variance	2.607125
Standard Error	1.614659	of Sample Mean	0.030673
t-Statistic (Mean=0)	0.740579	Signif Level	0.459012
Skewness	-1.541697	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	26.658832	Signif Level (Ku=0)	0.000000
Jarque-Bera	83153.165661	Signif Level (JB=0)	0.000000

Minimum	-26.029427	Maximum	7.705406
01-%ile	-3.723503	99-%ile	4.328790
05-%ile	-2.408582	95-%ile	2.408979
10-%ile	-1.733030	90-%ile	1.805792
25-%ile	-0.894354	75-%ile	0.925156
Median	0.043607		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.61 -2.41 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.029825	Variance	2.606751
Standard Error	1.614544	of Sample Mean	0.030671
t-Statistic (Mean=0)	0.972413	Signif Level	0.330930
Skewness	1.515094	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	26.467452	Signif Level (Ku=0)	0.000000
Jarque-Bera	81941.709812	Signif Level (JB=0)	0.000000

Minimum	-11.591903	Maximum	26.029427
01-%ile	-3.640812	99-%ile	4.186589
05-%ile	-2.408896	95-%ile	2.404382
10-%ile	-1.737620	90-%ile	1.803838
25-%ile	-0.882602	75-%ile	0.931395
	Median	-0.000000	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.61 -2.41 0.47 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.000439	Variance	0.012239
Standard Error	0.110628	of Sample Mean	0.002160
t-Statistic (Mean=0)	463.153967	Signif Level	0.000000
Skewness	0.370085	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.173069	Signif Level (Ku=0)	0.070779
Jarque-Bera	63.149144	Signif Level (JB=0)	0.000000

Minimum	0.707520	Maximum	1.327434
01-%ile	0.744127	99-%ile	1.274516
05-%ile	0.835657	95-%ile	1.212956
10-%ile	0.878186	90-%ile	1.165312
25-%ile	0.930931	75-%ile	1.060773
	Median	0.987049	

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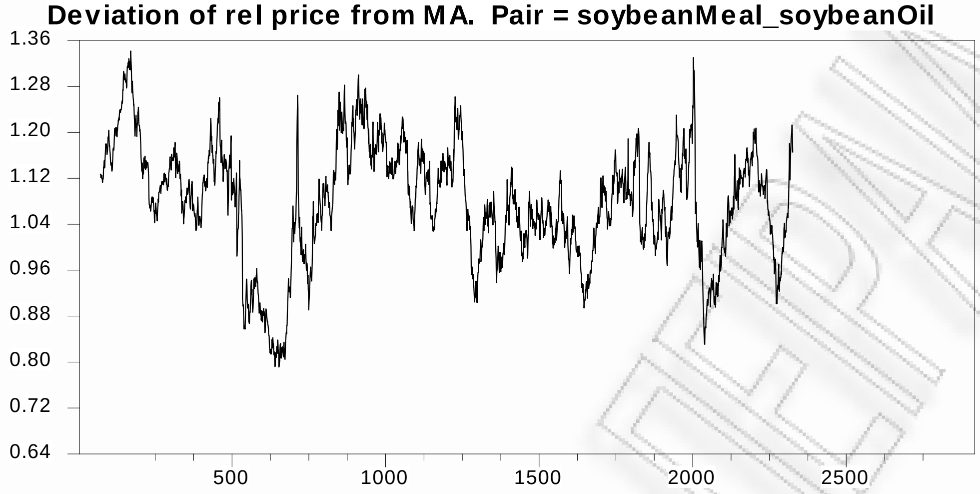
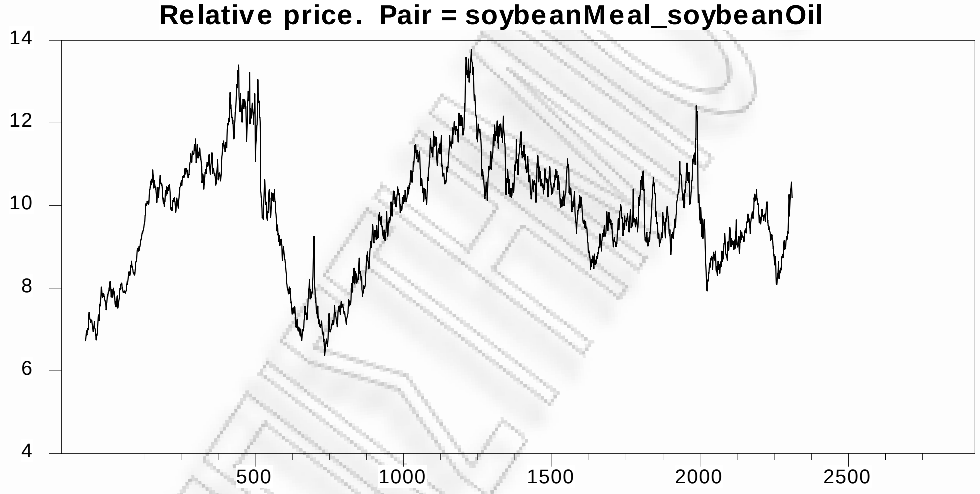
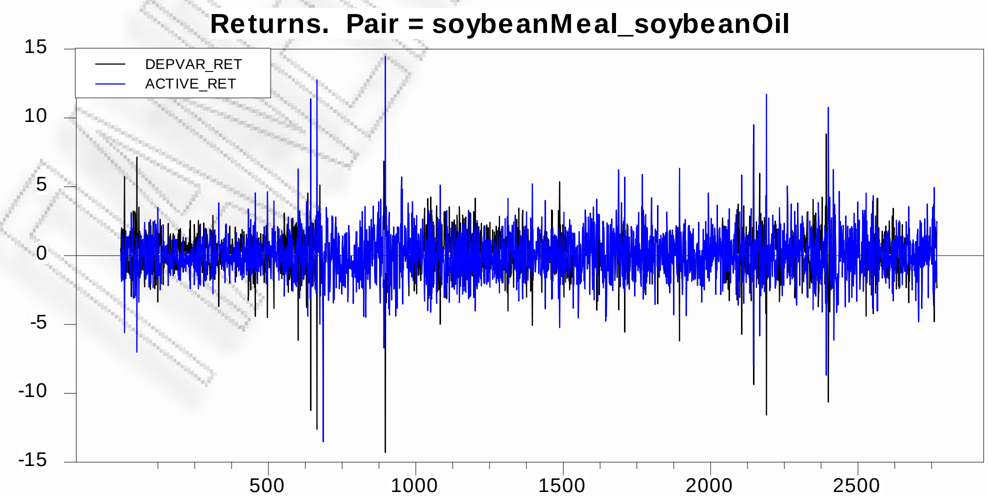

Deviation of rel price from MA. Pair = soybeanMeal_soybeanOil
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
0.64
500
1000
1500
2000
2500


Relative price. Pair = soybeanMeal_soybeanOil
14
12
10
8
6
4
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_soybeanOil
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_soybeanOil

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.036021	Variance	3.051191
Standard Error	1.746766	of Sample Mean	0.033183
t-Statistic (Mean=0)	1.085531	Signif Level	0.277781
Skewness	-0.785063	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.398734	Signif Level (Ku=0)	0.000000
Jarque-Bera	5011.941007	Signif Level (JB=0)	0.000000
Minimum	-14.377052	Maximum	8.763069
01-%ile	-4.373552	99-%ile	3.957606
05-%ile	-2.568975	95-%ile	2.622996
10-%ile	-1.985613	90-%ile	2.051847
25-%ile	-0.976966	75-%ile	1.107380
Median	0.071895		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.04 1.75 -2.57 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.004234	Variance	3.052471
Standard Error	1.747132	of Sample Mean	0.033190
t-Statistic (Mean=0)	-0.127578	Signif Level	0.898492
Skewness	0.448051	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	6.332923	Signif Level (Ku=0)	0.000000
Jarque-Bera	4723.274621	Signif Level (JB=0)	0.000000

Minimum	-13.588306	Maximum	14.377052
01-%ile	-4.075539	99-%ile	4.201838
05-%ile	-2.600392	95-%ile	2.613541
10-%ile	-2.027700	90-%ile	2.002920
25-%ile	-1.061514	75-%ile	1.049243
	Median	-0.047505	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.00 1.75 -2.60 0.48 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.010332	Variance	0.013988
Standard Error	0.118270	of Sample Mean	0.002309
t-Statistic (Mean=0)	437.508953	Signif Level	0.000000
Skewness	-0.366986	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.019307	Signif Level (Ku=0)	0.840253
Jarque-Bera	58.917826	Signif Level (JB=0)	0.000000

Minimum	0.677273	Maximum	1.317383
01-%ile	0.706766	99-%ile	1.265332
05-%ile	0.793068	95-%ile	1.191285
10-%ile	0.842478	90-%ile	1.155823
25-%ile	0.944608	75-%ile	1.090088
	Median	1.017848	

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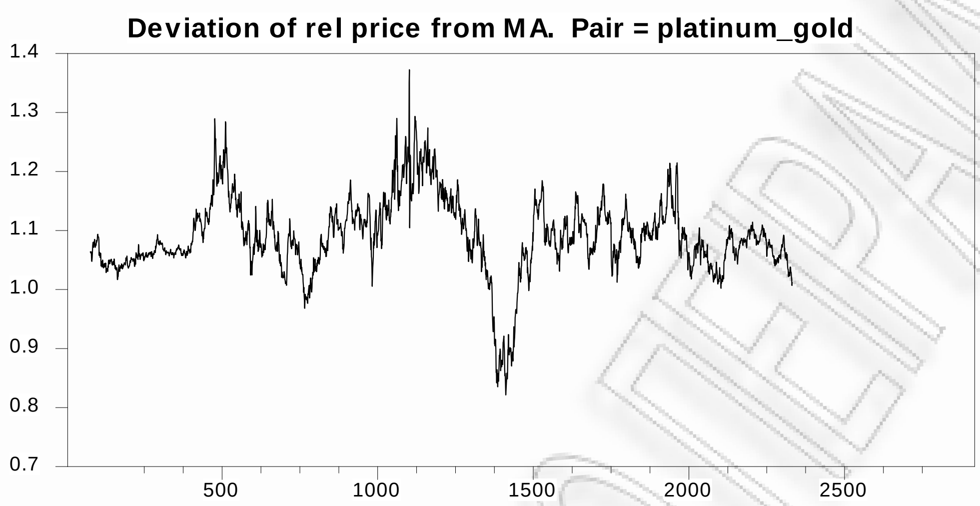
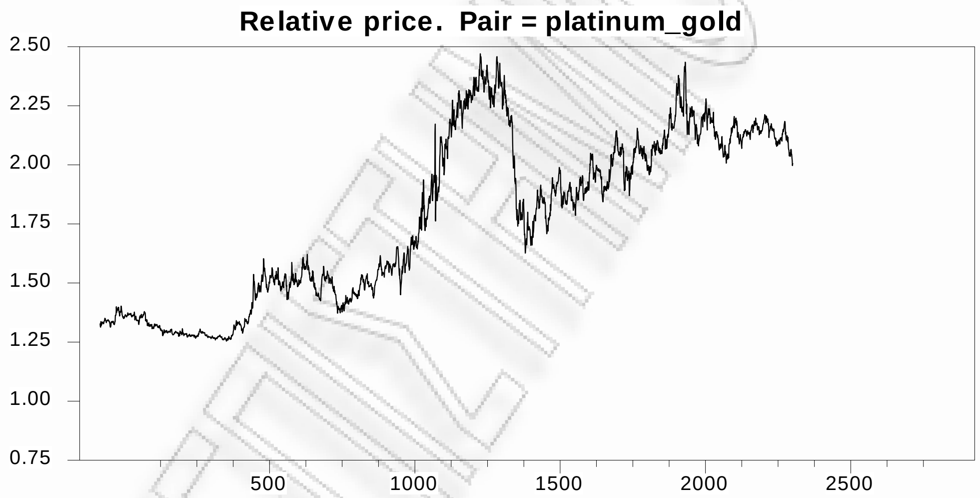
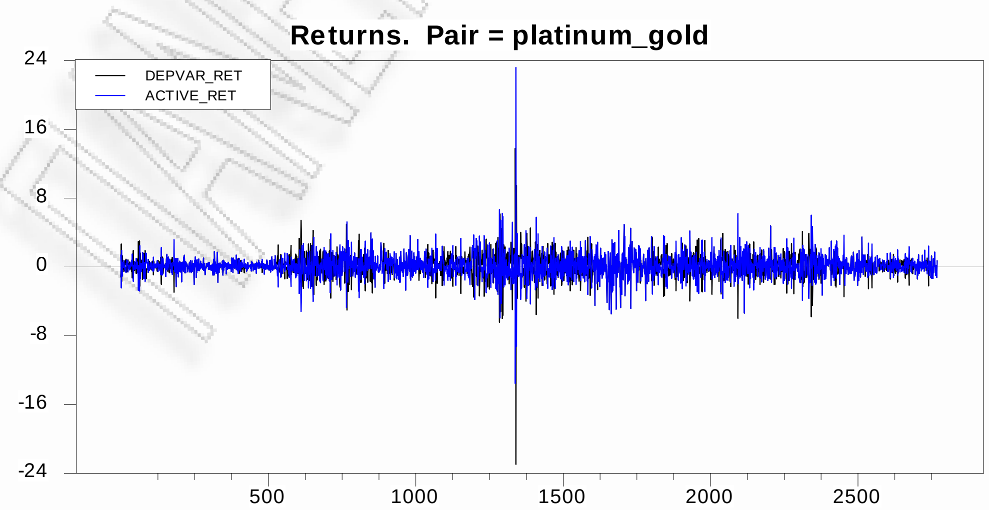

Deviation of rel price from MA. Pair = platinum_gold
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = platinum_gold
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
500
1000
1500
2000
2500


Returns. Pair = platinum_gold
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = platinum_gold

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.029221	Variance	1.866778
Standard Error	1.366301	of Sample Mean	0.025955
t-Statistic (Mean=0)	1.125805	Signif Level	0.260346
Skewness	-1.514723	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	35.323129	Signif Level (Ku=0)	0.000000
Jarque-Bera	145119.694952	Signif Level (JB=0)	0.000000
Minimum	-23.089649	Maximum	13.681595
01-%ile	-3.604782	99-%ile	3.355483
05-%ile	-1.984238	95-%ile	2.061826
10-%ile	-1.404106	90-%ile	1.421705
25-%ile	-0.579246	75-%ile	0.686800
	Median	0.031917	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.37 -1.98 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.013276	Variance	1.867456
Standard Error	1.366549	of Sample Mean	0.025960
t-Statistic (Mean=0)	0.511416	Signif Level	0.609101

Skewness	1.329786	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	35.116068	Signif Level (Ku=0)	0.000000
Jarque-Bera	143192.756636	Signif Level (JB=0)	0.000000

Minimum	-13.681595	Maximum	23.089649
01-%ile	-3.477424	99-%ile	3.458042
05-%ile	-1.936215	95-%ile	2.073624
10-%ile	-1.391813	90-%ile	1.425952
25-%ile	-0.642585	75-%ile	0.630351
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.01 1.37 -1.94 0.47 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.017955	Variance	0.005805
Standard Error	0.076189	of Sample Mean	0.001488
t-Statistic (Mean=0)	684.285942	Signif Level	0.000000
Skewness	-0.331368	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.381144	Signif Level (Ku=0)	0.000000
Jarque-Bera	667.669641	Signif Level (JB=0)	0.000000

Minimum	0.706233	Maximum	1.347343
01-%ile	0.763029	99-%ile	1.204024
05-%ile	0.920501	95-%ile	1.151720
10-%ile	0.948018	90-%ile	1.109654
25-%ile	0.979731	75-%ile	1.057515
Median	1.011006		

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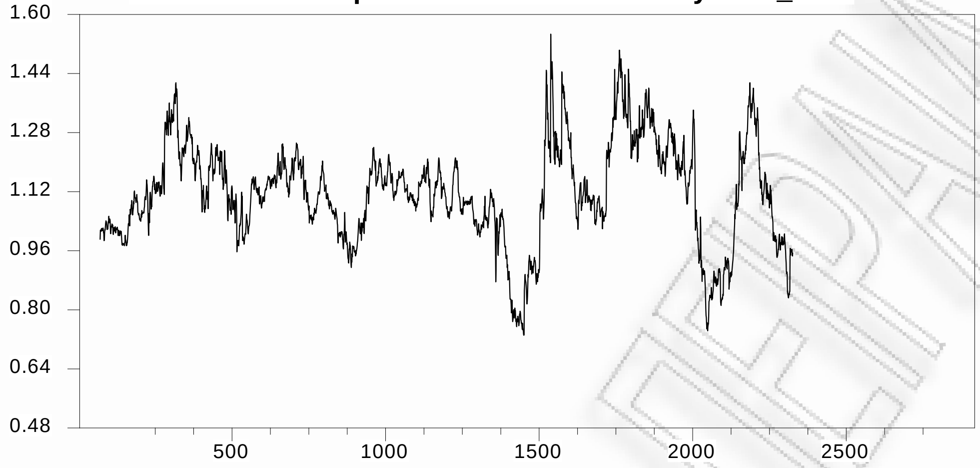
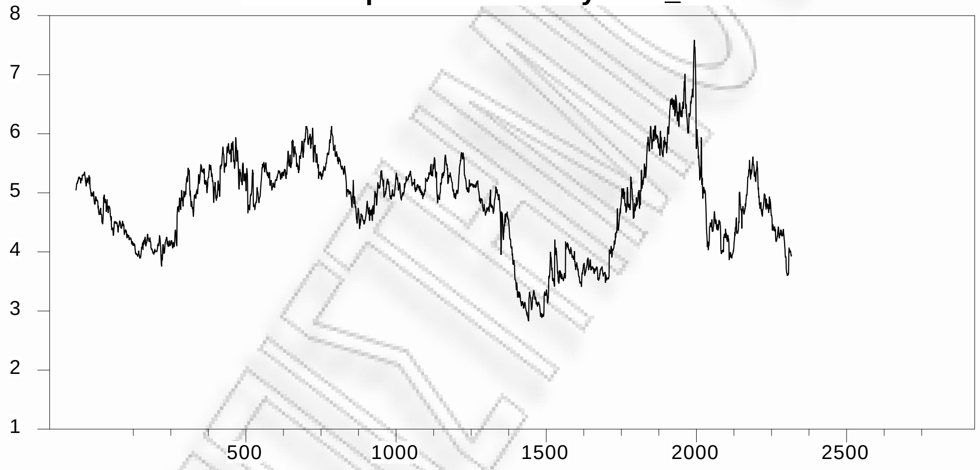
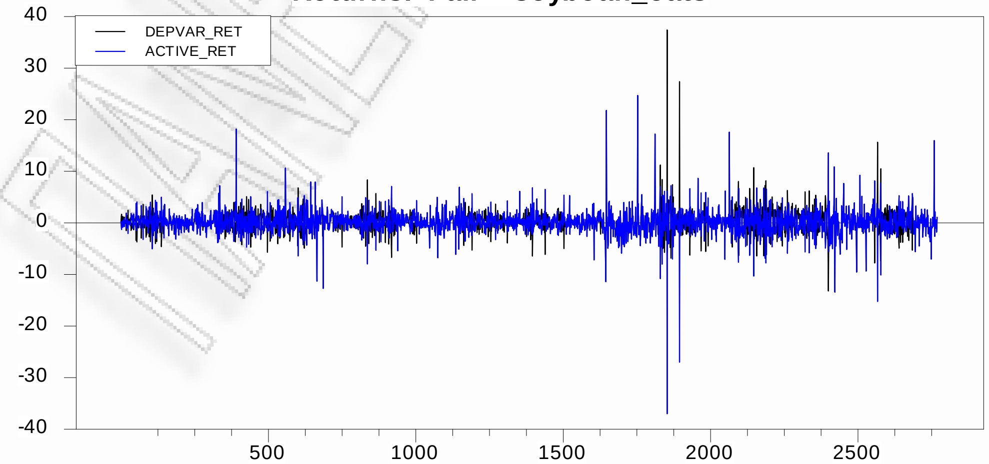
Deviation of rel price from MA. Pair = soybean_oats



Relative price. Pair = soybean_oats



Returns. Pair = soybean_oats



****

******************** Pair = soybean_oats

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.016252	Variance	5.964254
Standard Error	2.442182	of Sample Mean	0.046394
t-Statistic (Mean=0)	0.350311	Signif Level	0.726132
Skewness	2.767555	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	36.111552	Signif Level (Ku=0)	0.000000
Jarque-Bera	154100.116052	Signif Level (JB=0)	0.000000

Minimum	-13.618441	Maximum	37.210784
01-%ile	-5.903439	99-%ile	6.642461
05-%ile	-3.293106	95-%ile	3.106230
10-%ile	-2.314150	90-%ile	2.209474
25-%ile	-1.084896	75-%ile	1.037507
Median	-0.027660		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.44 -3.29 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.001071	Variance	5.964517
Standard Error	2.442236	of Sample Mean	0.046395
t-Statistic (Mean=0)	-0.023082	Signif Level	0.981587
Skewness	-0.909736	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	36.180539	Signif Level (Ku=0)	0.000000

Jarque-Bera	151520.803743	Signif Level (JB=0)	0.000000
Minimum	-37.210784	Maximum	24.508021
01-%ile	-6.085803	99-%ile	6.084492
05-%ile	-3.114765	95-%ile	3.253728
10-%ile	-2.209852	90-%ile	2.313304
25-%ile	-1.070504	75-%ile	1.052933
Median	-0.018538		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.00 2.44 -3.11 0.48 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.002226	Variance	0.024860
Standard Error	0.157670	of Sample Mean	0.003079
t-Statistic (Mean=0)	325.548293	Signif Level	0.000000
Skewness	-0.139469	Signif Level (Sk=0)	0.003563
Kurtosis (excess)	0.197753	Signif Level (Ku=0)	0.038960
Jarque-Bera	12.777644	Signif Level (JB=0)	0.001680

Minimum	0.556104	Maximum	1.504973
01-%ile	0.600011	99-%ile	1.367190
05-%ile	0.724435	95-%ile	1.266140
10-%ile	0.795119	90-%ile	1.208666
25-%ile	0.912246	75-%ile	1.100455
Median	1.001986		

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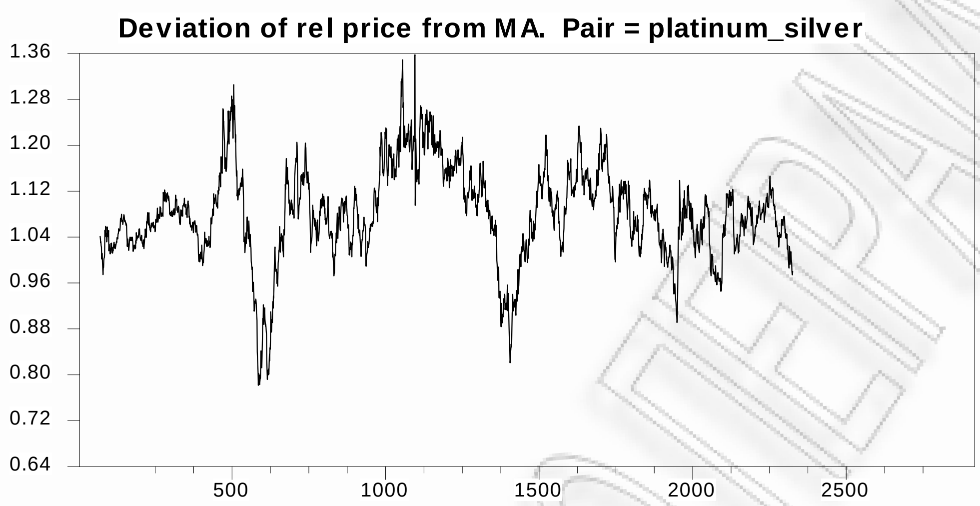
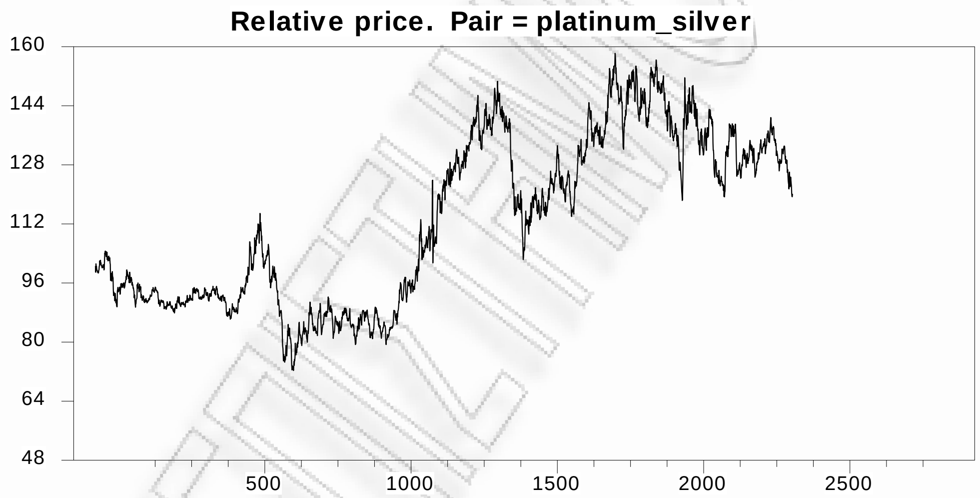
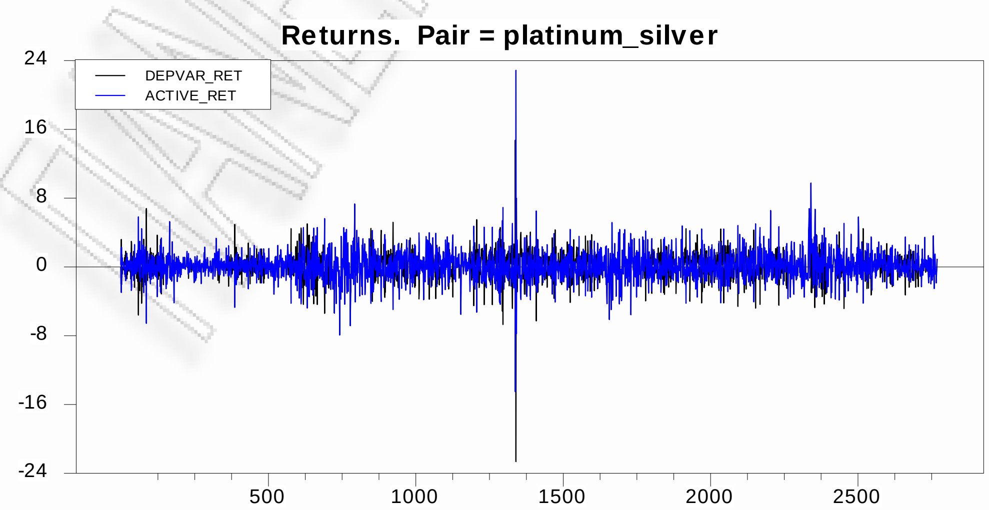

Deviation of rel price from MA. Pair = platinum_silver
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
0.64
500
1000
1500
2000
2500


Relative price. Pair = platinum_silver
160
144
128
112
96
80
64
48
500
1000
1500
2000
2500


Returns. Pair = platinum_silver
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

********************* Pair = platinum_silver

********************* SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022861	Variance	2.880563
Standard Error	1.697222	of Sample Mean	0.032242
t-Statistic (Mean=0)	0.709052	Signif Level	0.478352
Skewness	-0.607325	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	15.038889	Signif Level (Ku=0)	0.000000
Jarque-Bera	26283.346343	Signif Level (JB=0)	0.000000
Minimum	-22.761392	Maximum	14.637253
01-%ile	-4.405745	99-%ile	4.262631
05-%ile	-2.595632	95-%ile	2.679068
10-%ile	-1.844801	90-%ile	1.922779
25-%ile	-0.871783	75-%ile	0.924093
Median	0.006132		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.70 -2.60 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030604	Variance	2.880149
Standard Error	1.697100	of Sample Mean	0.032240
t-Statistic (Mean=0)	0.949269	Signif Level	0.342567

Skewness	0.740114	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	14.956972	Signif Level (Ku=0)	0.000000
Jarque-Bera	26082.276646	Signif Level (JB=0)	0.000000

Minimum	-14.637253	Maximum	22.761392
01-%ile	-4.228688	99-%ile	4.475054
05-%ile	-2.549330	95-%ile	2.702331
10-%ile	-1.805816	90-%ile	1.941063
25-%ile	-0.906204	75-%ile	0.891396
	Median	-0.003057	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.70 -2.55 0.47 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.012995	Variance	0.008993
Standard Error	0.094830	of Sample Mean	0.001852
t-Statistic (Mean=0)	547.089776	Signif Level	0.000000
Skewness	-0.358733	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.160328	Signif Level (Ku=0)	0.000000
Jarque-Bera	203.404864	Signif Level (JB=0)	0.000000

Minimum	0.665853	Maximum	1.336204
01-%ile	0.719124	99-%ile	1.221207
05-%ile	0.839640	95-%ile	1.167701
10-%ile	0.911623	90-%ile	1.136194
25-%ile	0.961315	75-%ile	1.068224
	Median	1.012107	

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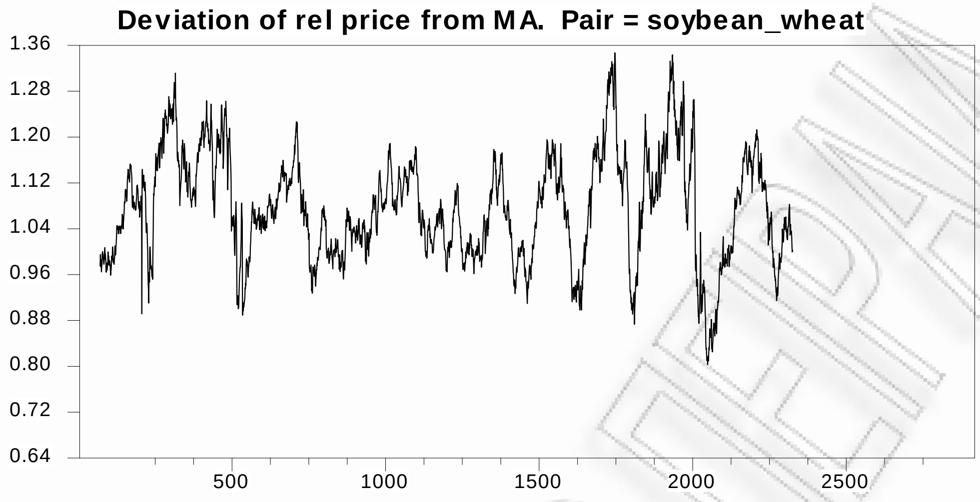
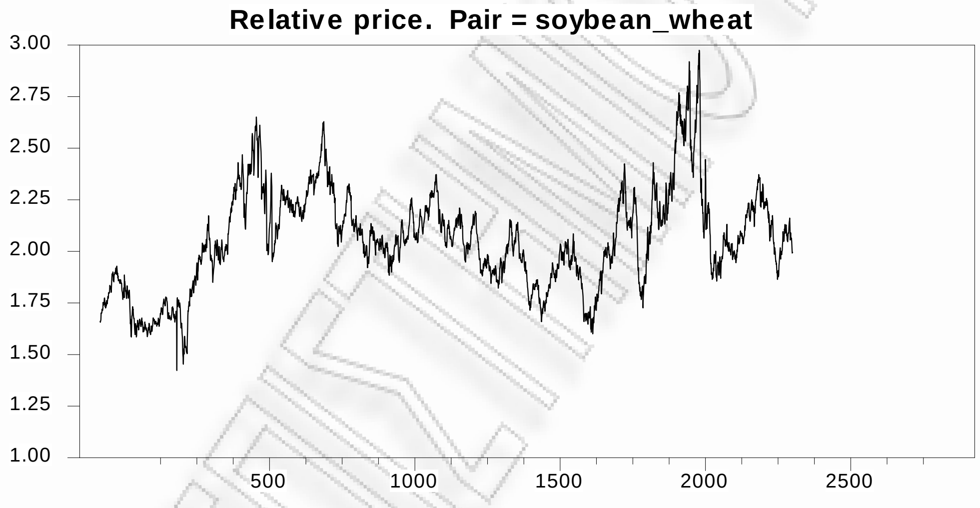
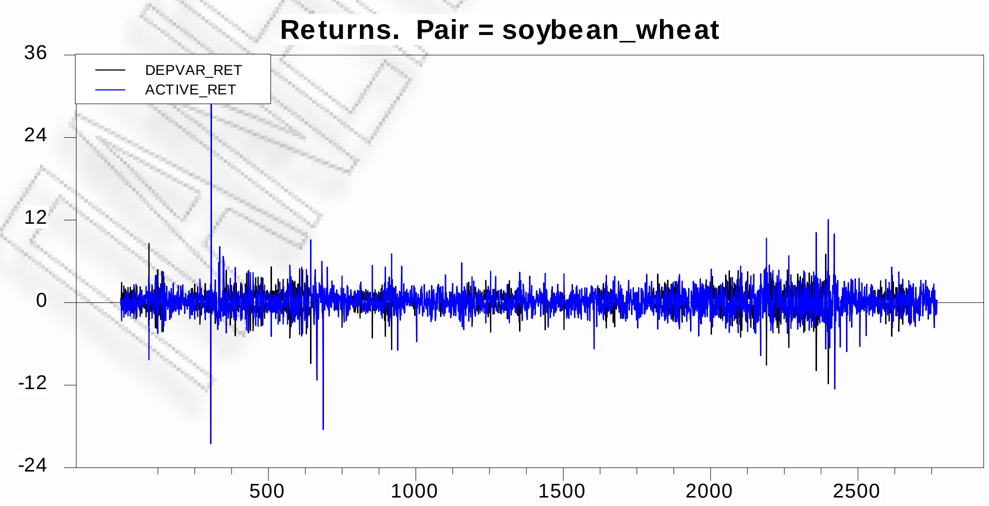

Deviation of rel price from MA. Pair = soybean_wheat
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
0.64
500
1000
1500
2000
2500


Relative price. Pair = soybean_wheat
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
500
1000
1500
2000
2500


Returns. Pair = soybean_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
500
1000
1500
2000
2500

****

******************** Pair = soybean_wheat

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.028673	Variance	3.966073
Standard Error	1.991500	of Sample Mean	0.037832
t-Statistic (Mean=0)	0.757906	Signif Level	0.448572
Skewness	0.962669	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	45.991872	Signif Level (Ku=0)	0.000000
Jarque-Bera	244651.496642	Signif Level (JB=0)	0.000000
Minimum	-20.641139	Maximum	35.710739
01-%ile	-4.993450	99-%ile	4.316930
05-%ile	-2.784960	95-%ile	2.681696
10-%ile	-2.030549	90-%ile	2.107653
25-%ile	-0.987005	75-%ile	1.119243
Median	0.067765		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.99 -2.78 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.013752	Variance	3.966706
Standard Error	1.991659	of Sample Mean	0.037835
t-Statistic (Mean=0)	0.363457	Signif Level	0.716291
Skewness	1.412673	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	45.993620	Signif Level (Ku=0)	0.000000
Jarque-Bera	245163.727118	Signif Level (JB=0)	0.000000
Minimum	-20.641139	Maximum	35.710739
01-%ile	-4.476765	99-%ile	4.674021
05-%ile	-2.747964	95-%ile	2.714252
10-%ile	-2.063300	90-%ile	2.053783
25-%ile	-1.042004	75-%ile	1.067214
Median	0.030593		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 1.99 -2.75 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.008447	Variance	0.011853
Standard Error	0.108873	of Sample Mean	0.002126
t-Statistic (Mean=0)	474.384750	Signif Level	0.000000
Skewness	0.078297	Signif Level (Sk=0)	0.101811
Kurtosis (excess)	-0.167497	Signif Level (Ku=0)	0.080339
Jarque-Bera	5.746217	Signif Level (JB=0)	0.056523
Minimum	0.690933	Maximum	1.323756
01-%ile	0.760501	99-%ile	1.269214
05-%ile	0.836159	95-%ile	1.190608
10-%ile	0.878546	90-%ile	1.146588
25-%ile	0.926402	75-%ile	1.085140
Median	1.005338		

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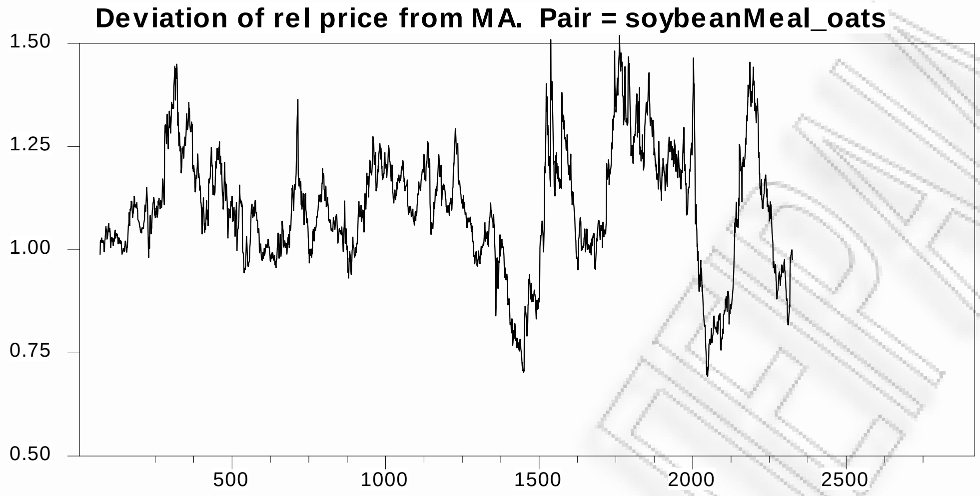
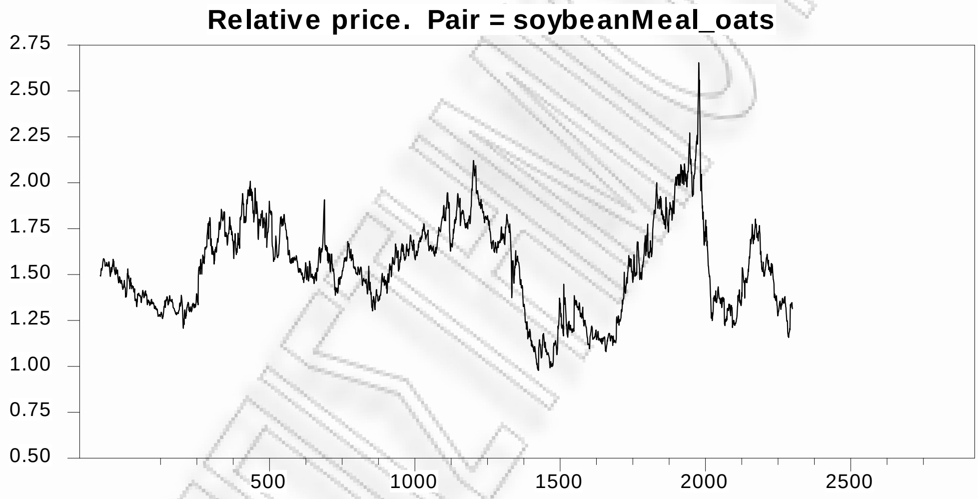
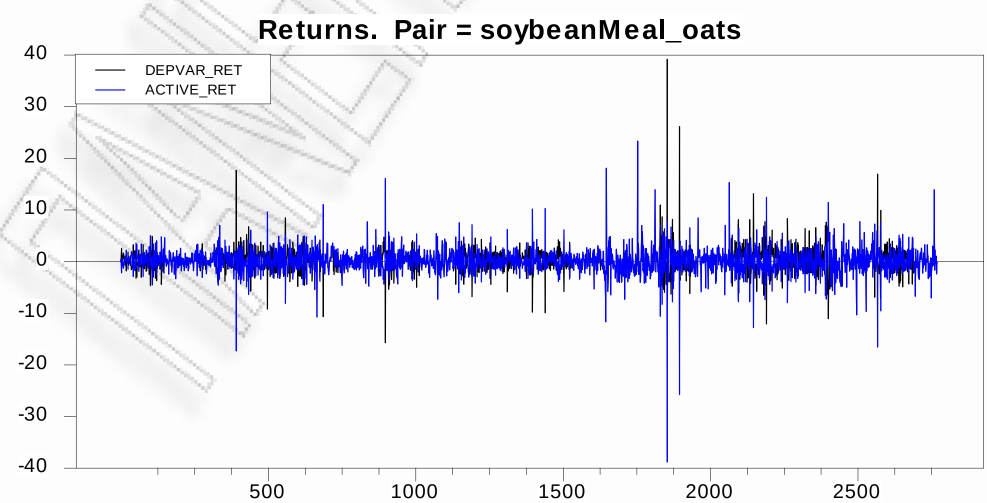

Deviation of rel price from MA. Pair = soybeanMeal_oats
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Relative price. Pair = soybeanMeal_oats
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
-30
-40
500
1000
1500
2000
2500

****

********************* Pair = soybeanMeal_oats

********************* SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.024126	Variance	6.367407
Standard Error	2.523372	of Sample Mean	0.047936
t-Statistic (Mean=0)	0.503303	Signif Level	0.614791
Skewness	2.251131	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	31.992886	Signif Level (Ku=0)	0.000000
Jarque-Bera	120517.156797	Signif Level (JB=0)	0.000000
Minimum	-15.914524	Maximum	39.009537
01-%ile	-6.214759	99-%ile	6.812070
05-%ile	-3.479263	95-%ile	3.280542
10-%ile	-2.455063	90-%ile	2.408699
25-%ile	-1.209037	75-%ile	1.229352
Median	-0.003729		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.52 -3.48 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.029231	Variance	6.367135
Standard Error	2.523318	of Sample Mean	0.047935
t-Statistic (Mean=0)	-0.609808	Signif Level	0.542039
Skewness	-1.303455	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	32.021364	Signif Level (Ku=0)	0.000000
Jarque-Bera	119171.902486	Signif Level (JB=0)	0.000000

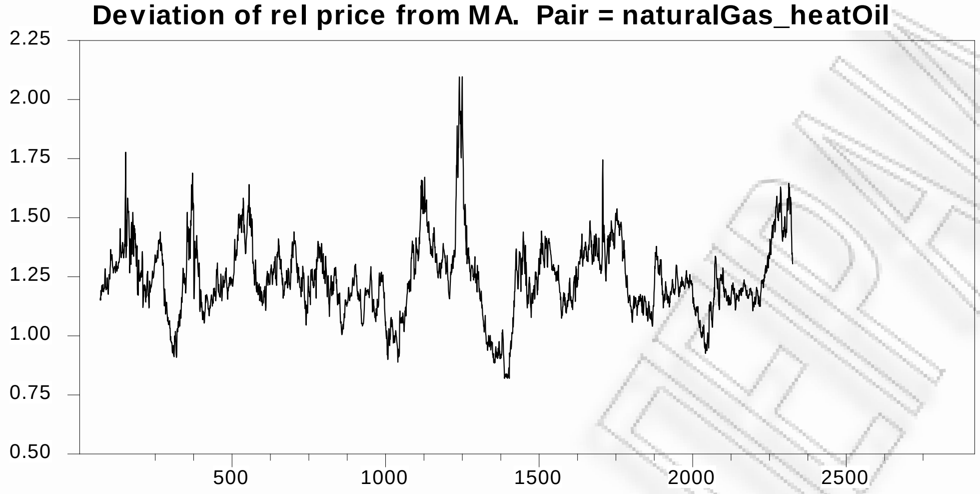
Minimum	-39.009537	Maximum	23.141413
01-%ile	-6.587705	99-%ile	6.412119
05-%ile	-3.382259	95-%ile	3.419574
10-%ile	-2.492186	90-%ile	2.388549
25-%ile	-1.252070	75-%ile	1.186317
Median	0.000000		

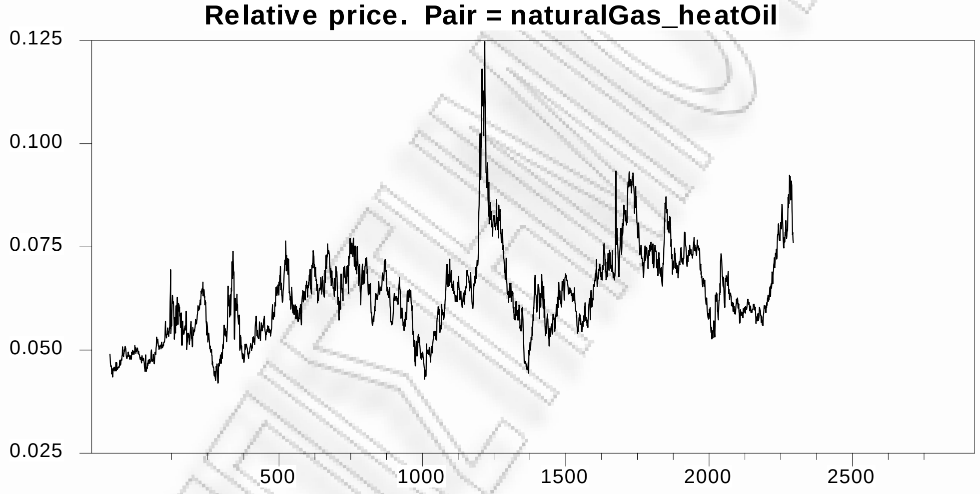
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.03 2.52 -3.38 0.47 %

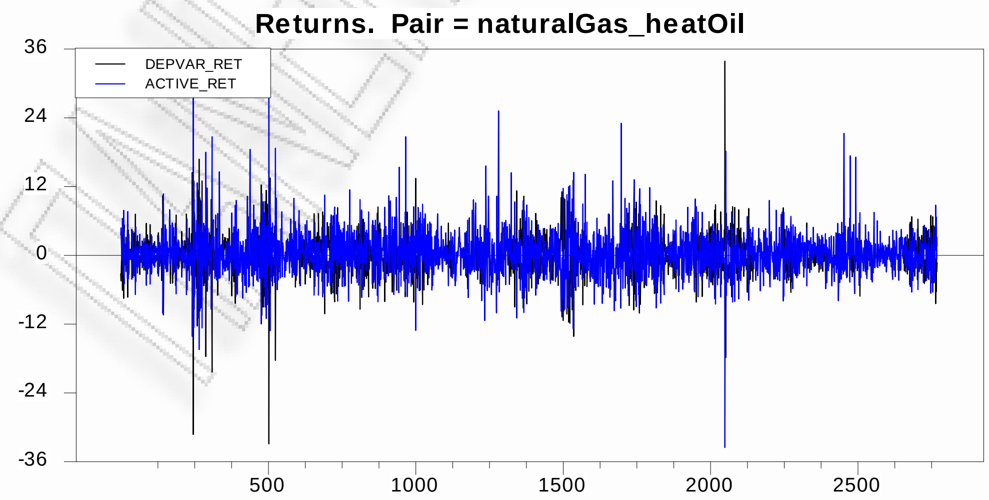
Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.004877	Variance	0.028674
Standard Error	0.169334	of Sample Mean	0.003306
t-Statistic (Mean=0)	303.926616	Signif Level	0.000000
Skewness	-0.075747	Signif Level (Sk=0)	0.113456
Kurtosis (excess)	0.070517	Signif Level (Ku=0)	0.461595
Jarque-Bera	3.051756	Signif Level (JB=0)	0.217430

Minimum	0.531956	Maximum	1.492558
01-%ile	0.607253	99-%ile	1.396068
05-%ile	0.691110	95-%ile	1.292660
10-%ile	0.784549	90-%ile	1.226755
25-%ile	0.901184	75-%ile	1.116245
Median	1.002602		


Deviation of rel price from MA. Pair = naturalGas_heatOil
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Relative price. Pair = naturalGas_heatOil
0.125
0.100
0.075
0.050
0.025
500
1000
1500
2000
2500


Returns. Pair = naturalGas_heatOil
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = naturalGas_heatOil

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.101100	Variance	15.483541
Standard Error	3.934913	of Sample Mean	0.074751
t-Statistic (Mean=0)	1.352489	Signif Level	0.176329
Skewness	0.274805	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	8.000125	Signif Level (Ku=0)	0.000000
Jarque-Bera	7424.440841	Signif Level (JB=0)	0.000000
Minimum	-33.060497	Maximum	33.706014
01-%ile	-9.182690	99-%ile	11.200996
05-%ile	-5.472645	95-%ile	6.195050
10-%ile	-4.120209	90-%ile	4.473757
25-%ile	-2.137703	75-%ile	2.063937
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = 0.10 3.93 -5.47 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.181807	Variance	15.460700
Standard Error	3.932010	of Sample Mean	0.074696
t-Statistic (Mean=0)	2.433969	Signif Level	0.014997
Skewness	0.684481	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.925371	Signif Level (Ku=0)	0.000000
Jarque-Bera	7468.486707	Signif Level (JB=0)	0.000000

Minimum	-33.706014	Maximum	33.060497
01-%ile	-9.147027	99-%ile	11.318147
05-%ile	-5.499020	95-%ile	6.016766
10-%ile	-4.199662	90-%ile	4.432866
25-%ile	-2.017323	75-%ile	2.177723
Median	0.062771		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.18 3.93 -5.50 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.025866	Variance	0.034893
Standard Error	0.186795	of Sample Mean	0.003647
t-Statistic (Mean=0)	281.270077	Signif Level	0.000000
Skewness	0.620281	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.157877	Signif Level (Ku=0)	0.000000
Jarque-Bera	677.108690	Signif Level (JB=0)	0.000000

Minimum	0.534702	Maximum	2.019718
01-%ile	0.618583	99-%ile	1.560559
05-%ile	0.716160	95-%ile	1.344407
10-%ile	0.806969	90-%ile	1.253199
25-%ile	0.918468	75-%ile	1.131283
Median	1.010721		

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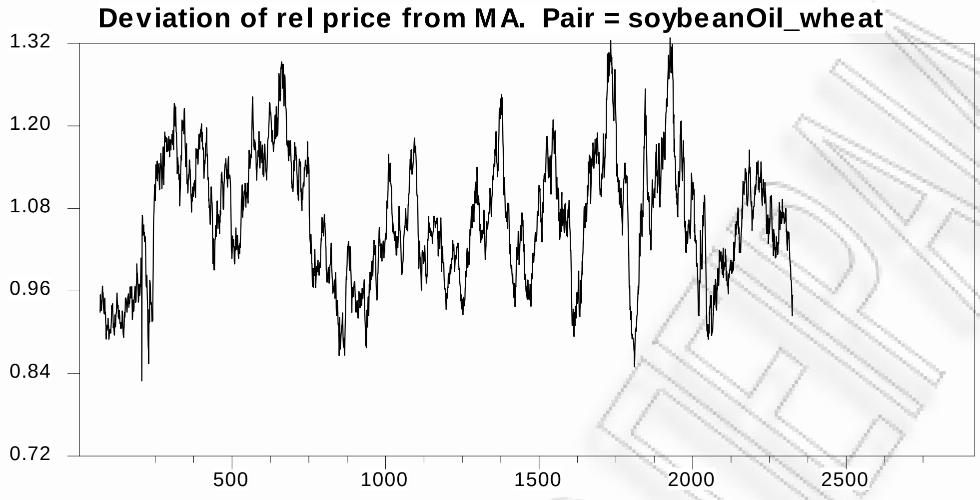
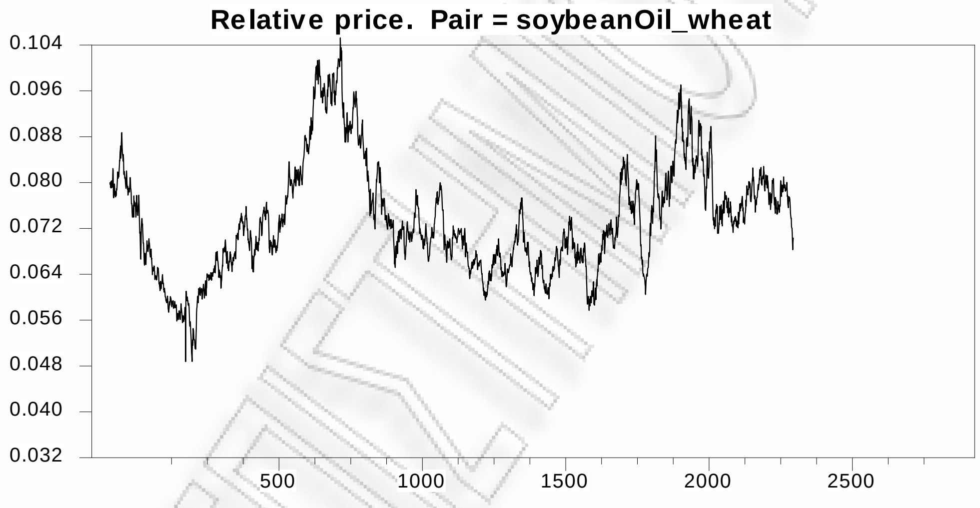
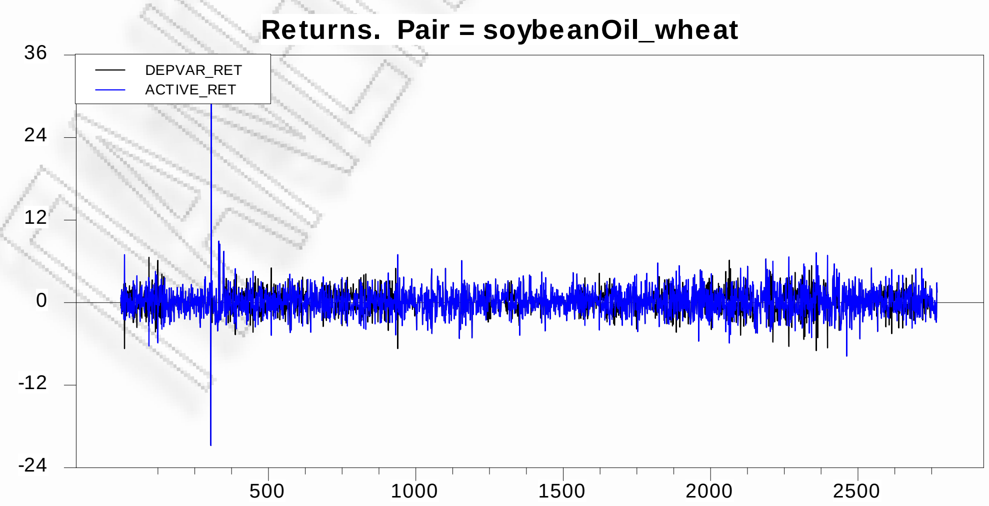

Deviation of rel price from MA. Pair = soybeanOil_wheat
1.32
1.20
1.08
0.96
0.84
0.72
500
1000
1500
2000
2500


Relative price. Pair = soybeanOil_wheat
0.104
0.096
0.088
0.080
0.072
0.064
0.056
0.048
0.040
0.032
500
1000
1500
2000
2500


Returns. Pair = soybeanOil_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
500
1000
1500
2000
2500

****

******************** Pair = soybeanOil_wheat

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.012711	Variance	3.790040
Standard Error	1.946803	of Sample Mean	0.036983
t-Statistic (Mean=0)	0.343705	Signif Level	0.731095
Skewness	1.712860	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	43.379645	Signif Level (Ku=0)	0.000000
Jarque-Bera	218623.719817	Signif Level (JB=0)	0.000000

Minimum	-20.912624	Maximum	35.226140
01-%ile	-4.337912	99-%ile	4.503759
05-%ile	-2.908811	95-%ile	2.899991
10-%ile	-2.192702	90-%ile	2.240235
25-%ile	-1.144355	75-%ile	1.123596
Median	0.018198		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.95 -2.91 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.026899	Variance	3.789478
Standard Error	1.946658	of Sample Mean	0.036980
t-Statistic (Mean=0)	0.727391	Signif Level	0.467048
Skewness	1.812425	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	43.337008	Signif Level (Ku=0)	0.000000
Jarque-Bera	218358.928786	Signif Level (JB=0)	0.000000

Minimum	-20.912624	Maximum	35.226140
01-%ile	-4.190818	99-%ile	4.697441
05-%ile	-2.854922	95-%ile	2.913204
10-%ile	-2.177513	90-%ile	2.273450
25-%ile	-1.139143	75-%ile	1.124896
Median	0.003204		

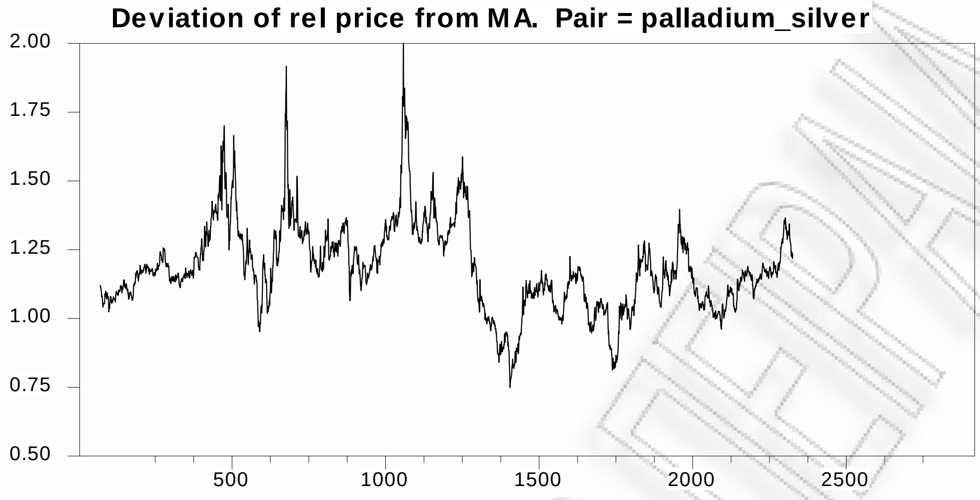
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.95 -2.85 0.47 %

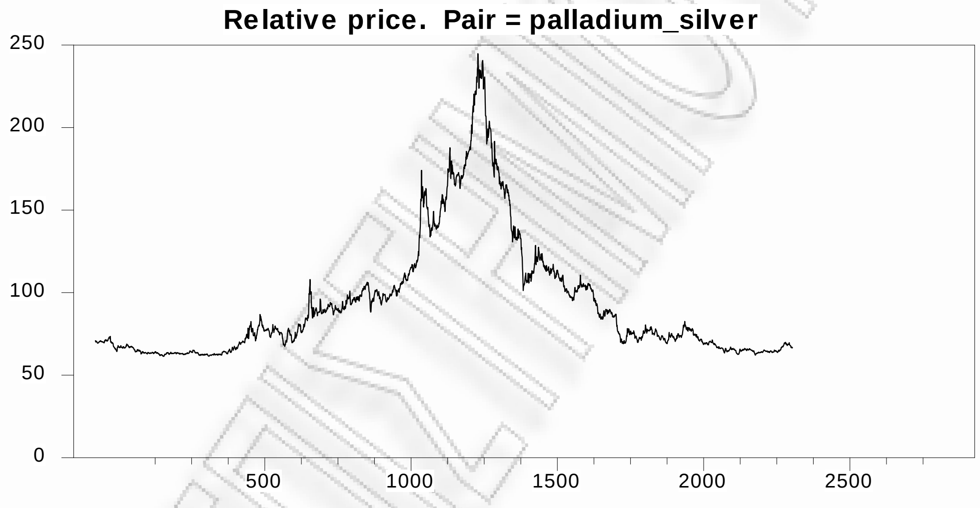
Statistics on Series MA_REL

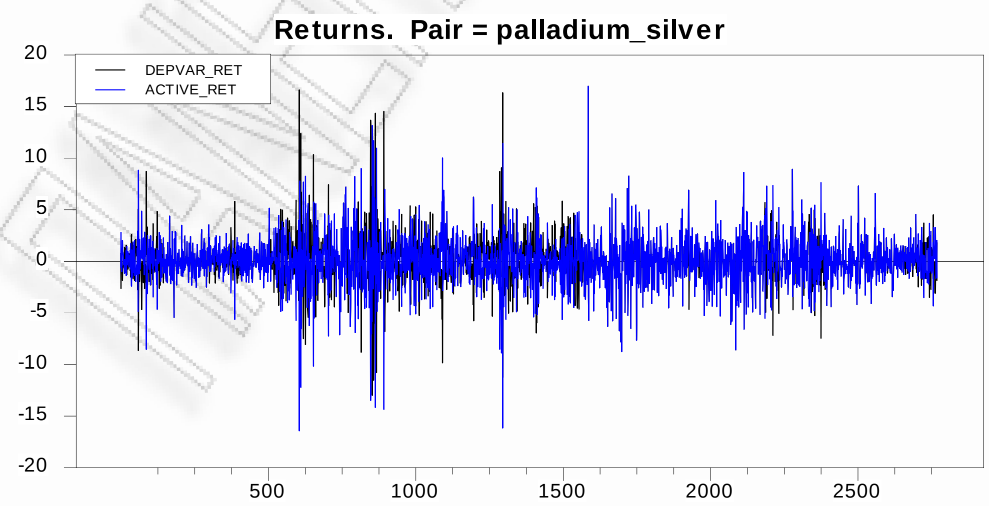
Observations	2623	Skipped/Missing	149
Sample Mean	1.003493	Variance	0.011449
Standard Error	0.107000	of Sample Mean	0.002089
t-Statistic (Mean=0)	480.321196	Signif Level	0.000000
Skewness	0.155005	Signif Level (Sk=0)	0.001199
Kurtosis (excess)	-0.525466	Signif Level (Ku=0)	0.000000
Jarque-Bera	40.680659	Signif Level (JB=0)	0.000000

Minimum	0.731388	Maximum	1.311814
01-%ile	0.801775	99-%ile	1.260872
05-%ile	0.835178	95-%ile	1.177895
10-%ile	0.861041	90-%ile	1.136419
25-%ile	0.921984	75-%ile	1.084403
Median	1.000777		

-20-


Deviation of rel price from MA. Pair = palladium_silver
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Relative price. Pair = palladium_silver
250
200
150
100
50
0
500
1000
1500
2000
2500


Returns. Pair = palladium_silver
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

********************* Pair = palladium_silver

********************* SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022754	Variance	5.581679
Standard Error	2.362558	of Sample Mean	0.044881
t-Statistic (Mean=0)	0.506984	Signif Level	0.612207
Skewness	0.497065	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.120386	Signif Level (Ku=0)	0.000000
Jarque-Bera	4439.074638	Signif Level (JB=0)	0.000000

Minimum	-13.081972	Maximum	16.880296
01-%ile	-6.143306	99-%ile	6.456501
05-%ile	-3.590127	95-%ile	3.614580
10-%ile	-2.445802	90-%ile	2.544375
25-%ile	-1.141549	75-%ile	1.165808
Median	-0.023274		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = 0.02 2.36 -3.59 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.035749	Variance	5.580919
Standard Error	2.362397	of Sample Mean	0.044878
t-Statistic (Mean=0)	-0.796571	Signif Level	0.425768
Skewness	-0.214265	Signif Level (Sk=0)	0.000004

Kurtosis (excess)	6.128247	Signif Level (Ku=0)	0.000000
Jarque-Bera	4357.288081	Signif Level (JB=0)	0.000000

Minimum	-16.526643	Maximum	16.880296
01-%ile	-6.352240	99-%ile	6.384691
05-%ile	-3.702167	95-%ile	3.485521
10-%ile	-2.514350	90-%ile	2.492869
25-%ile	-1.182952	75-%ile	1.135487
	Median	-0.036955	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.04 2.36 -3.70 0.48 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.006944	Variance	0.034081
Standard Error	0.184609	of Sample Mean	0.003605
t-Statistic (Mean=0)	279.351758	Signif Level	0.000000
Skewness	0.643101	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.534984	Signif Level (Ku=0)	0.000000
Jarque-Bera	438.313583	Signif Level (JB=0)	0.000000

Minimum	0.500610	Maximum	1.954879
01-%ile	0.600064	99-%ile	1.595819
05-%ile	0.731108	95-%ile	1.325214
10-%ile	0.801067	90-%ile	1.226177
25-%ile	0.888036	75-%ile	1.118103
	Median	0.987034	

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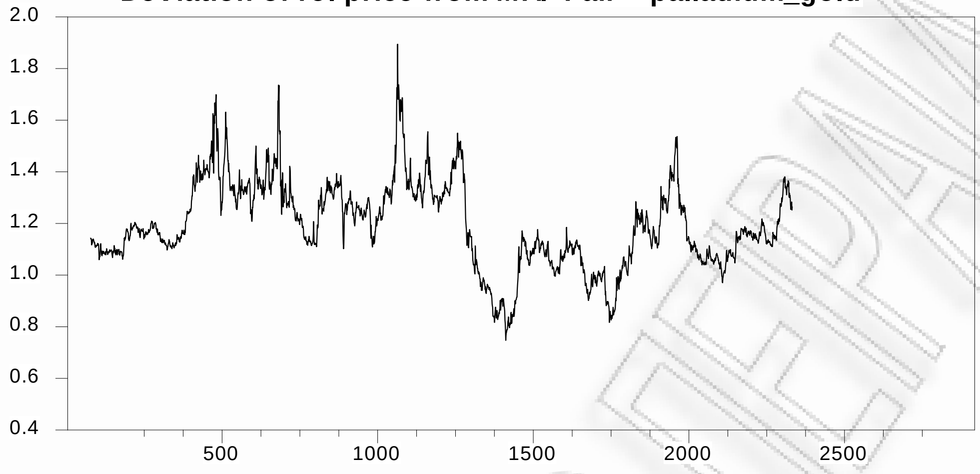
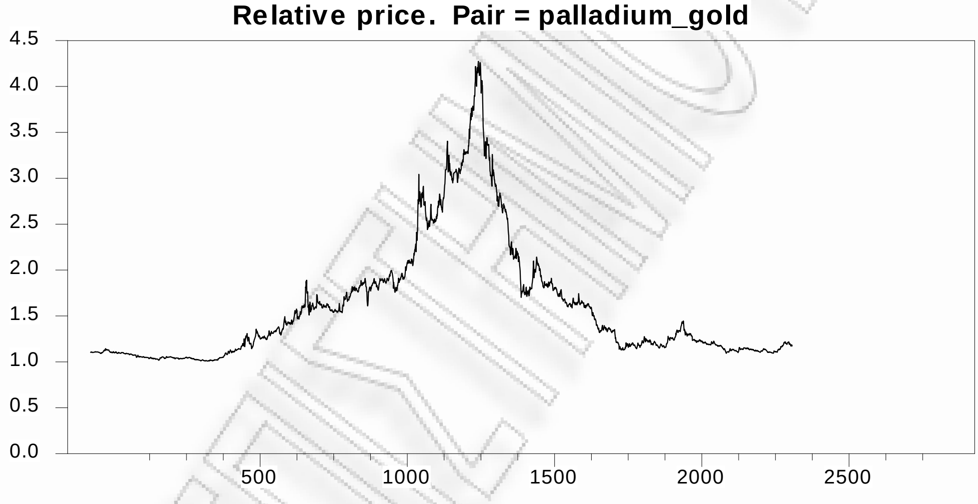
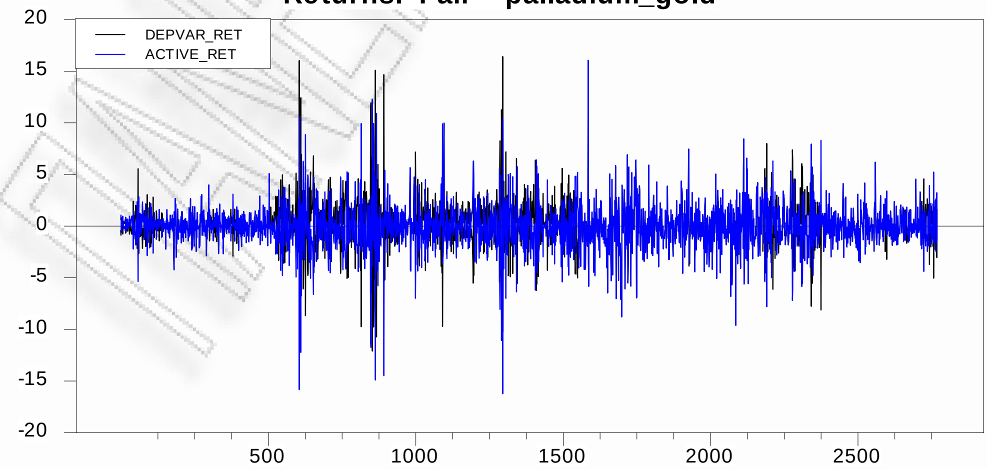
Deviation of rel price from MA. Pair = palladium_gold



Relative price. Pair = palladium_gold



Returns. Pair = palladium_gold



****

******************** Pair = palladium_gold

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030282	Variance	4.805463
Standard Error	2.192137	of Sample Mean	0.041644
t-Statistic (Mean=0)	0.727176	Signif Level	0.467180
Skewness	0.567981	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.728753	Signif Level (Ku=0)	0.000000
Jarque-Bera	7045.732800	Signif Level (JB=0)	0.000000

Minimum	-12.194106	Maximum	16.325261
01-%ile	-5.734283	99-%ile	6.200432
05-%ile	-3.221750	95-%ile	3.260593
10-%ile	-2.172185	90-%ile	2.310960
25-%ile	-1.006343	75-%ile	1.081906
Median	-0.001154		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.19 -3.22 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.125515	Variance	4.790621
Standard Error	2.188749	of Sample Mean	0.041579
t-Statistic (Mean=0)	-3.018679	Signif Level	0.002562
Skewness	-0.269896	Signif Level (Sk=0)	0.000000

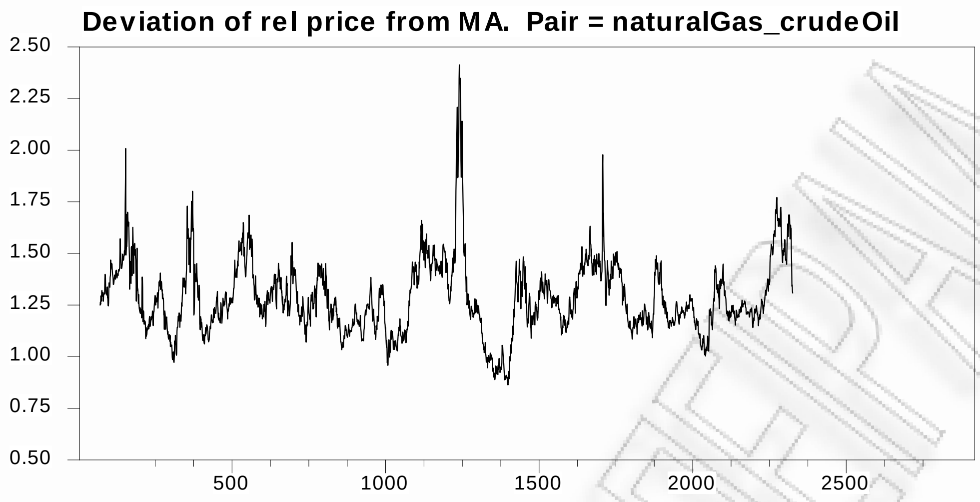
Kurtosis (excess)	7.746352	Signif Level (Ku=0)	0.000000
Jarque-Bera	6961.830661	Signif Level (JB=0)	0.000000
Minimum	-16.325261	Maximum	15.953790
01-%ile	-6.280931	99-%ile	5.723784
05-%ile	-3.332543	95-%ile	3.151805
10-%ile	-2.319998	90-%ile	2.155986
25-%ile	-1.167164	75-%ile	0.869735
	Median	-0.084809	

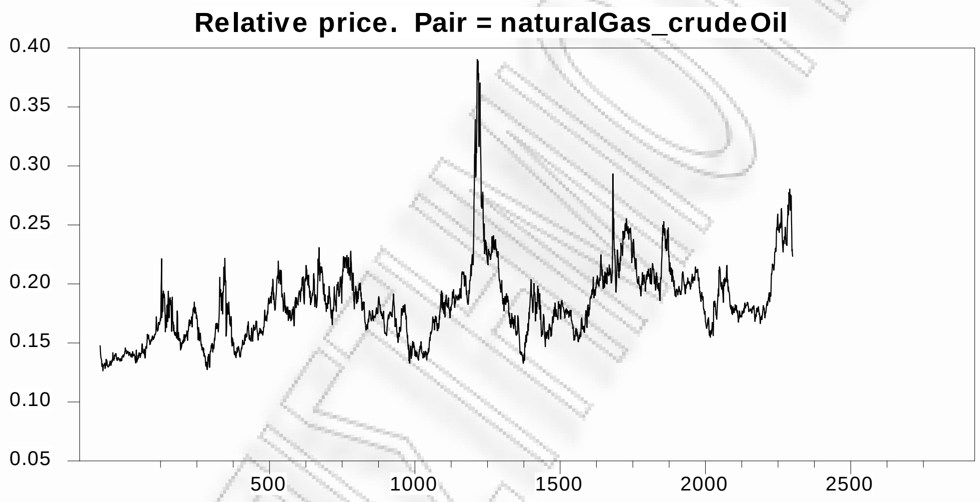
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

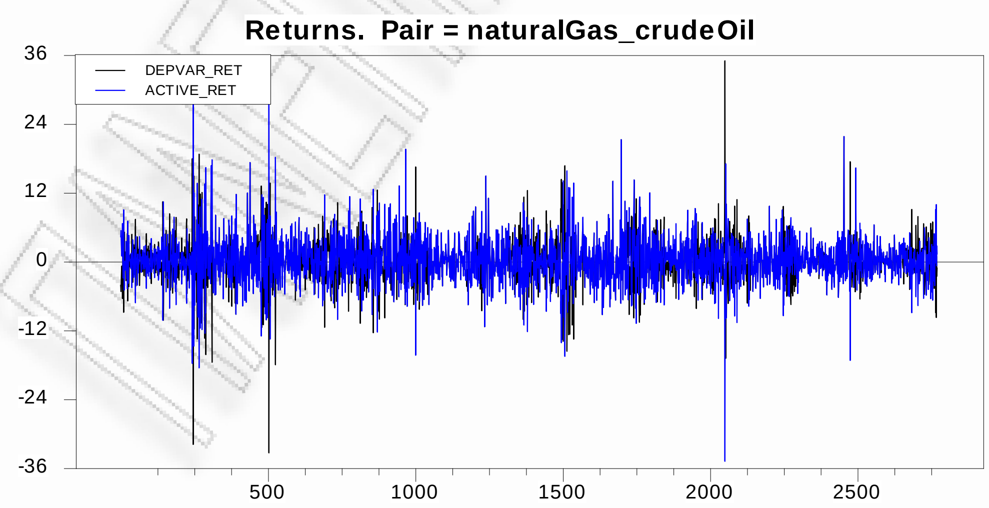
Active_Performance = -0.13 2.19 -3.33 0.50 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.014084	Variance	0.036709
Standard Error	0.191597	of Sample Mean	0.003741
t-Statistic (Mean=0)	271.071650	Signif Level	0.000000
Skewness	0.204812	Signif Level (Sk=0)	0.000019
Kurtosis (excess)	0.259992	Signif Level (Ku=0)	0.006640
Jarque-Bera	25.725918	Signif Level (JB=0)	0.000003
Minimum	0.495348	Maximum	1.829935
01-%ile	0.588329	99-%ile	1.525871
05-%ile	0.684683	95-%ile	1.320936
10-%ile	0.786026	90-%ile	1.252225
25-%ile	0.893592	75-%ile	1.152926
	Median	0.987084	


Deviation of rel price from MA. Pair = naturalGas_crudeOil
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Relative price. Pair = naturalGas_crudeOil
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
500
1000
1500
2000
2500


Returns. Pair = naturalGas_crudeOil
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = naturalGas_crudeOil

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.105483	Variance	16.414342
Standard Error	4.051462	of Sample Mean	0.076965
t-Statistic (Mean=0)	1.370533	Signif Level	0.170632
Skewness	0.195499	Signif Level (Sk=0)	0.000027
Kurtosis (excess)	7.194324	Signif Level (Ku=0)	0.000000
Jarque-Bera	5993.578412	Signif Level (JB=0)	0.000000

Minimum	-33.437412	Maximum	34.901311
01-%ile	-9.868484	99-%ile	11.743784
05-%ile	-5.764741	95-%ile	6.493298
10-%ile	-4.318486	90-%ile	4.725616
25-%ile	-2.085847	75-%ile	2.132210
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.11 4.05 -5.76 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.169265	Variance	16.396812
Standard Error	4.049298	of Sample Mean	0.076924
t-Statistic (Mean=0)	2.200422	Signif Level	0.027859
Skewness	0.376009	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.167188	Signif Level (Ku=0)	0.000000

Jarque-Bera	5996.226531	Signif Level (JB=0)	0.000000

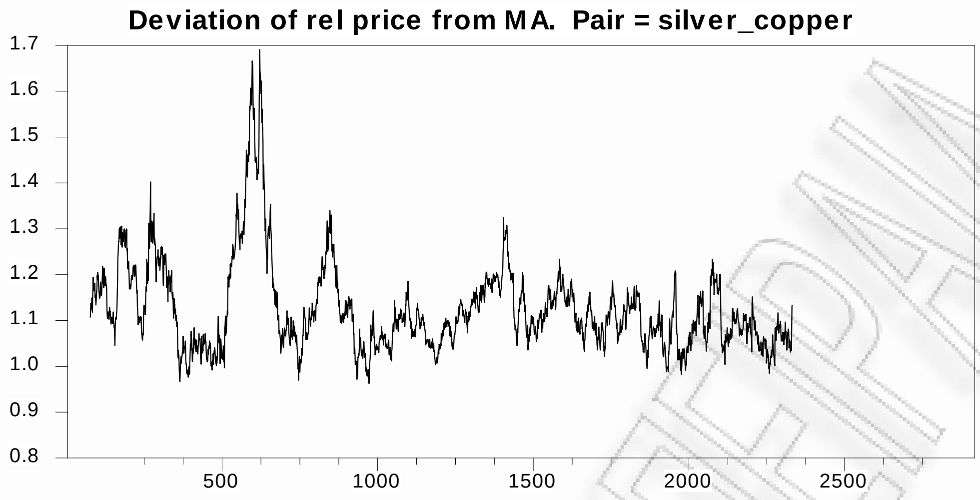
Minimum	-34.901311	Maximum	33.437412
01-%ile	-9.830191	99-%ile	11.577428
05-%ile	-5.900156	95-%ile	6.352065
10-%ile	-4.372021	90-%ile	4.666494
25-%ile	-2.008963	75-%ile	2.204982
	Median	0.005843	

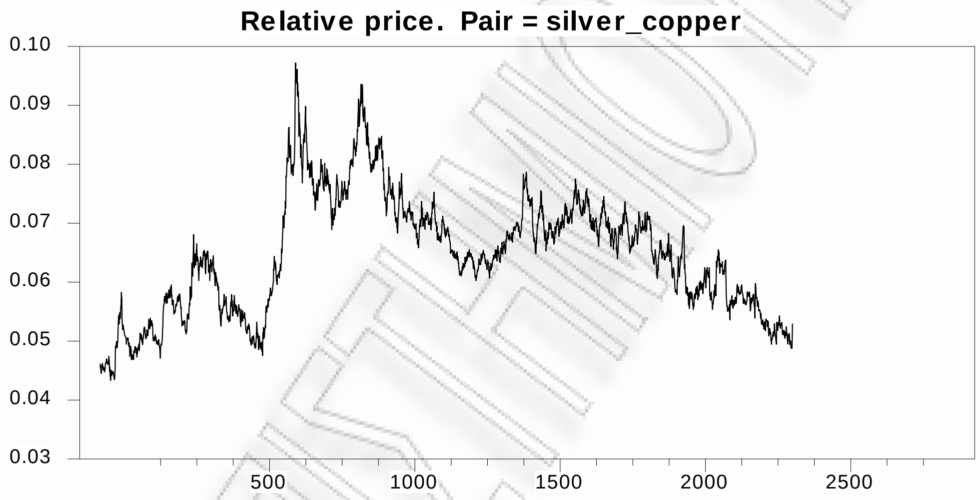
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.17 4.05 -5.90 0.46 %

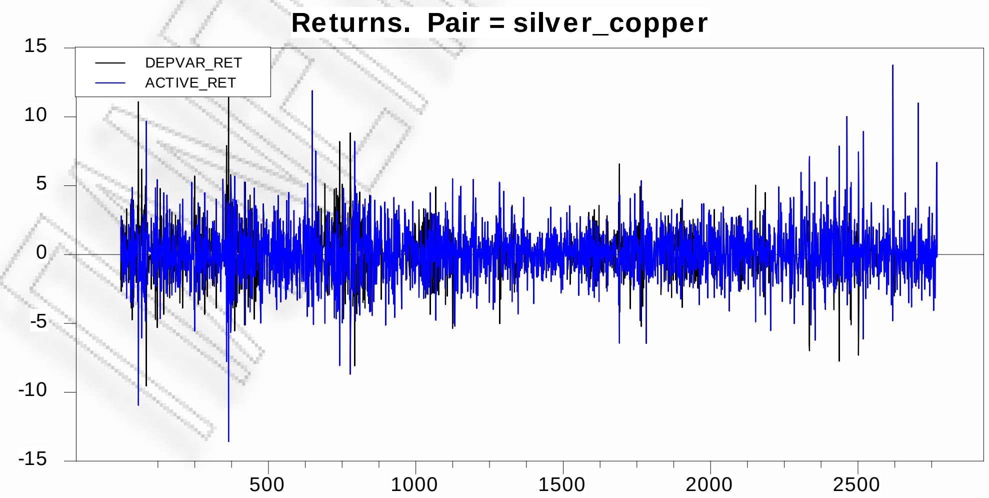
Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.030981	Variance	0.043531
Standard Error	0.208641	of Sample Mean	0.004074
t-Statistic (Mean=0)	253.075220	Signif Level	0.000000
Skewness	1.133024	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.066260	Signif Level (Ku=0)	0.000000
Jarque-Bera	2368.290093	Signif Level (JB=0)	0.000000

Minimum	0.537019	Maximum	2.340370
01-%ile	0.601524	99-%ile	1.704138
05-%ile	0.736462	95-%ile	1.364166
10-%ile	0.801025	90-%ile	1.278798
25-%ile	0.900058	75-%ile	1.155037
	Median	0.998704	


Deviation of rel price from MA. Pair = silver_copper
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
500
1000
1500
2000
2500


Relative price. Pair = silver_copper
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
500
1000
1500
2000
2500


Returns. Pair = silver_copper
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = silver_copper

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.025844	Variance	3.736357
Standard Error	1.932966	of Sample Mean	0.036720
t-Statistic (Mean=0)	0.703819	Signif Level	0.481605
Skewness	0.499363	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.173754	Signif Level (Ku=0)	0.000000
Jarque-Bera	2126.473768	Signif Level (JB=0)	0.000000

Minimum	-9.616879	Maximum	13.690975
01-%ile	-4.809632	99-%ile	5.049778
05-%ile	-2.954076	95-%ile	2.996497
10-%ile	-2.202539	90-%ile	2.279886
25-%ile	-1.068965	75-%ile	1.108465
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.03 1.93 -2.95 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.031457	Variance	3.736035
Standard Error	1.932883	of Sample Mean	0.036719
t-Statistic (Mean=0)	0.856699	Signif Level	0.391685
Skewness	0.202198	Signif Level (Sk=0)	0.000014
Kurtosis (excess)	4.188040	Signif Level (Ku=0)	0.000000

Jarque-Bera	2043.983999	Signif Level (JB=0)	0.000000

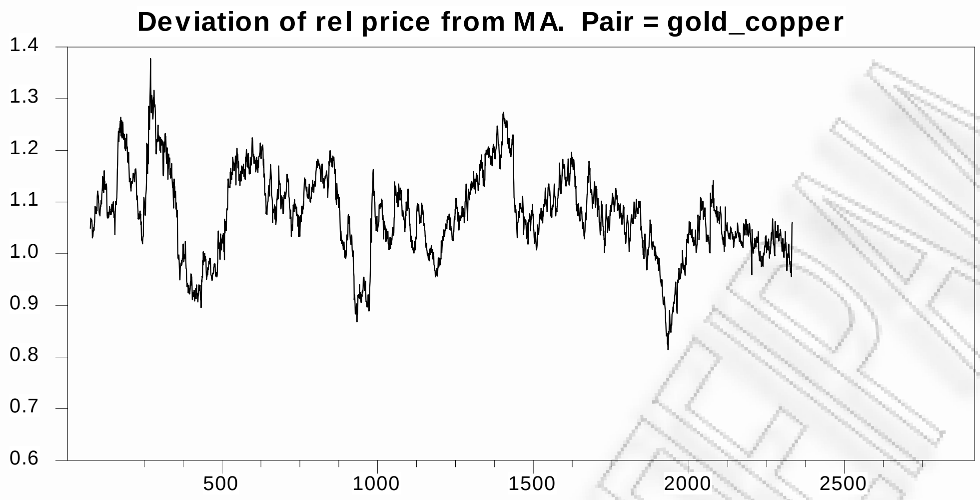
Minimum	-13.655939	Maximum	13.690975
01-%ile	-4.889511	99-%ile	5.129116
05-%ile	-2.912309	95-%ile	3.054222
10-%ile	-2.226318	90-%ile	2.244535
25-%ile	-1.075696	75-%ile	1.098341
Median	0.002079		

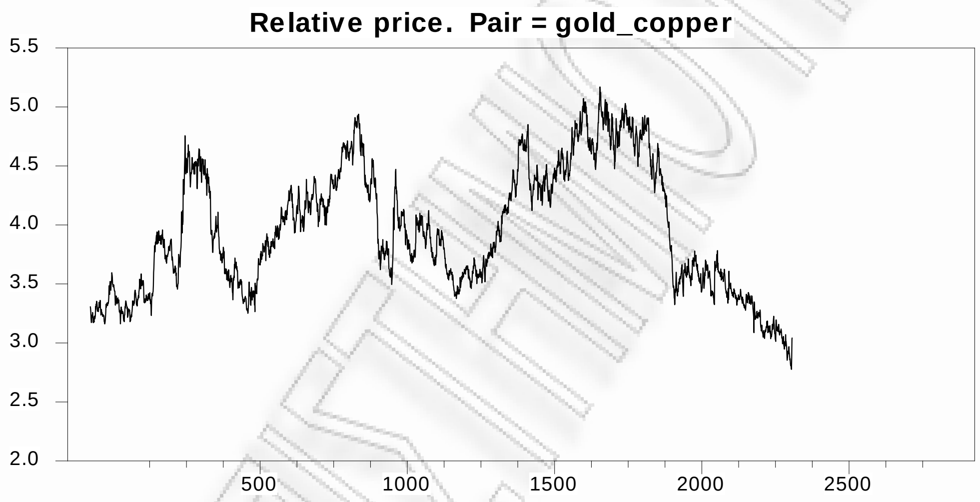
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 1.93 -2.91 0.47 %

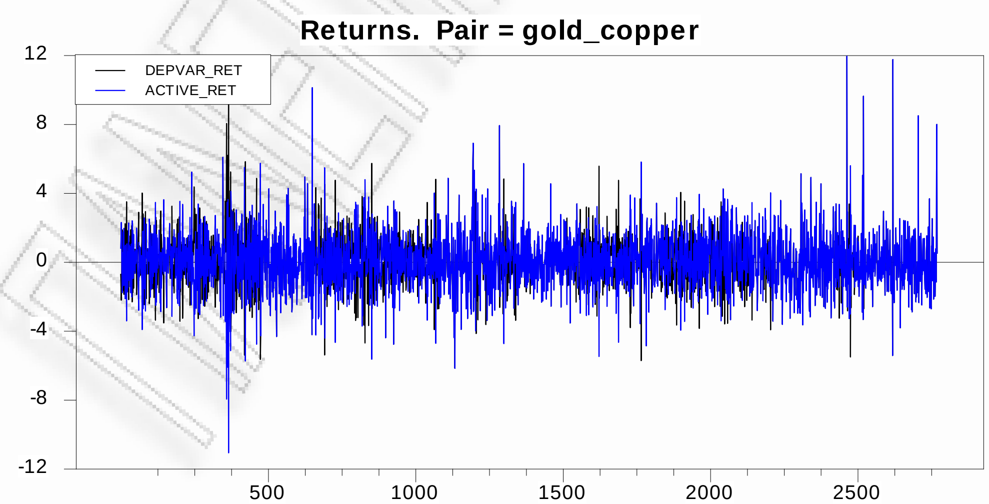
Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.004750	Variance	0.013310
Standard Error	0.115370	of Sample Mean	0.002253
t-Statistic (Mean=0)	446.031246	Signif Level	0.000000
Skewness	1.971644	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	5.962695	Signif Level (Ku=0)	0.000000
Jarque-Bera	5585.159256	Signif Level (JB=0)	0.000000

Minimum	0.815651	Maximum	1.662990
01-%ile	0.845065	99-%ile	1.503058
05-%ile	0.875784	95-%ile	1.204925
10-%ile	0.896053	90-%ile	1.139364
25-%ile	0.930294	75-%ile	1.050593
Median	0.978816		


Deviation of rel price from MA. Pair = gold_copper
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
1000
1500
2000
2500


Relative price. Pair = gold_copper
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
500
1000
1500
2000
2500


Returns. Pair = gold_copper
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = gold_copper

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.009399	Variance	2.727470
Standard Error	1.651505	of Sample Mean	0.031373
t-Statistic (Mean=0)	0.299573	Signif Level	0.764525
Skewness	0.795047	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.562394	Signif Level (Ku=0)	0.000000
Jarque-Bera	2695.240057	Signif Level (JB=0)	0.000000

Minimum	-6.211499	Maximum	11.907779
01-%ile	-3.666504	99-%ile	4.767870
05-%ile	-2.535768	95-%ile	2.598472
10-%ile	-1.929285	90-%ile	1.872203
25-%ile	-0.957426	75-%ile	0.945133
Median	-0.043587		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = 0.01 1.65 -2.54 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.035111	Variance	2.726326
Standard Error	1.651159	of Sample Mean	0.031367
t-Statistic (Mean=0)	1.119356	Signif Level	0.263086
Skewness	0.428361	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.547877	Signif Level (Ku=0)	0.000000

Jarque-Bera	2472.788716	Signif Level (JB=0)	0.000000

Minimum	-11.119383	Maximum	11.907779
01-%ile	-3.956237	99-%ile	4.316188
05-%ile	-2.548827	95-%ile	2.614991
10-%ile	-1.859113	90-%ile	1.937091
25-%ile	-0.951077	75-%ile	0.957961
Median	0.032399		

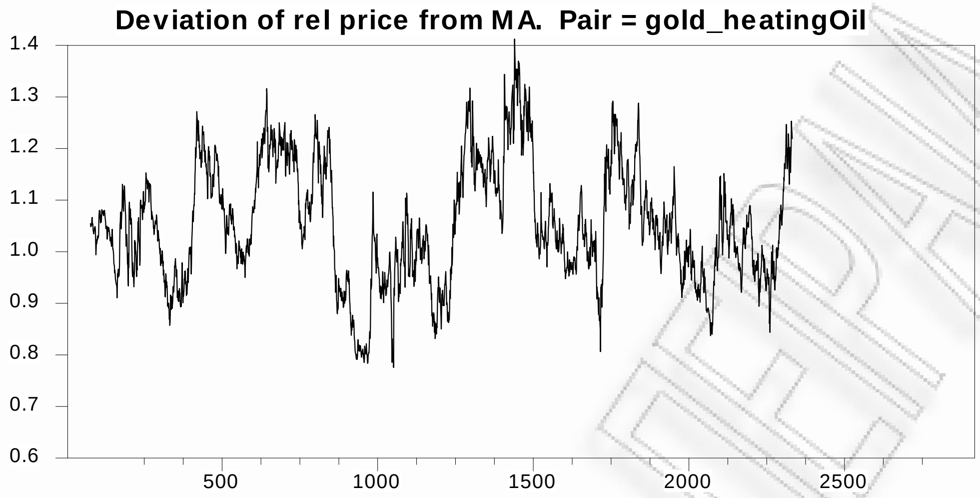
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.04 1.65 -2.55 0.46 %

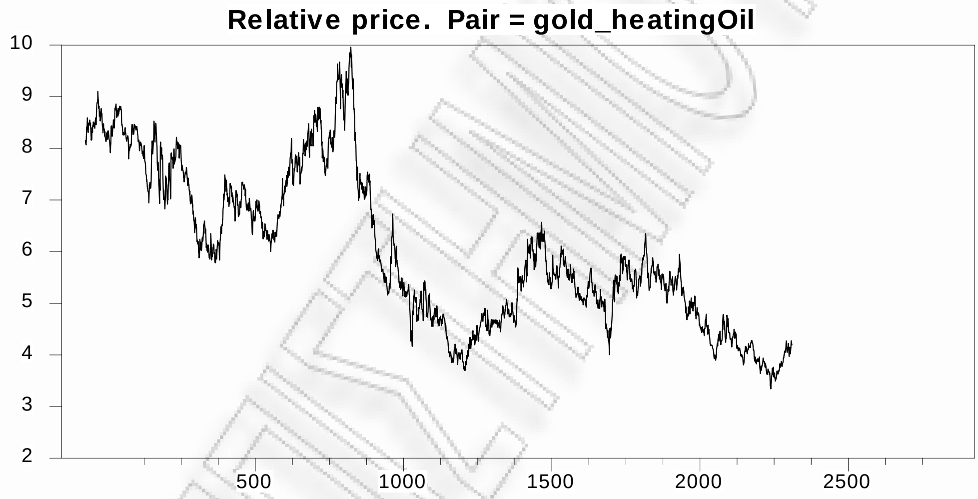
Statistics on Series MA_REL

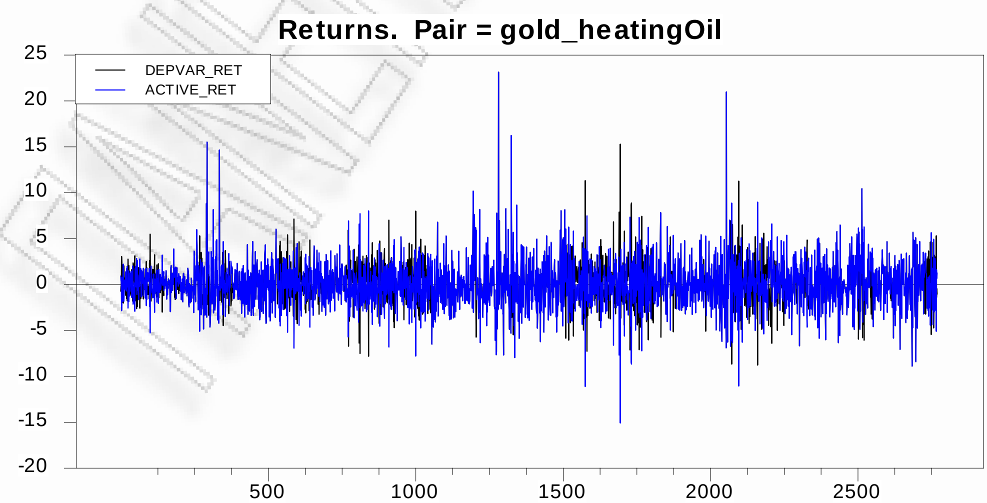
Observations	2623	Skipped/Missing	149
Sample Mean	0.998727	Variance	0.009191
Standard Error	0.095870	of Sample Mean	0.001872
t-Statistic (Mean=0)	533.535381	Signif Level	0.000000
Skewness	-0.037236	Signif Level (Sk=0)	0.436504
Kurtosis (excess)	0.081289	Signif Level (Ku=0)	0.396057
Jarque-Bera	1.328339	Signif Level (JB=0)	0.514701

Minimum	0.695090	Maximum	1.350349
01-%ile	0.775219	99-%ile	1.217598
05-%ile	0.828340	95-%ile	1.155550
10-%ile	0.879083	90-%ile	1.125564
25-%ile	0.938951	75-%ile	1.063134
Median	0.997640		

-25-


Deviation of rel price from MA. Pair = gold_heatingOil
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
1000
1500
2000
2500


Relative price. Pair = gold_heatingOil
10
9
8
7
6
5
4
3
2
500
1000
1500
2000
2500


Returns. Pair = gold_heatingOil
DEPVAR_RET
ACTIVE_RET
25
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = gold_heatingOil

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.002381	Variance	6.335453
Standard Error	2.517033	of Sample Mean	0.047816
t-Statistic (Mean=0)	-0.049799	Signif Level	0.960286
Skewness	0.938446	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.761241	Signif Level (Ku=0)	0.000000
Jarque-Bera	5684.833674	Signif Level (JB=0)	0.000000

Minimum	-8.996379	Maximum	23.027192
01-%ile	-6.144760	99-%ile	6.886765
05-%ile	-3.696523	95-%ile	4.011560
10-%ile	-2.866694	90-%ile	2.910929
25-%ile	-1.471758	75-%ile	1.321581
Median	-0.072420		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 2.52 -3.70 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.013330	Variance	6.335281
Standard Error	2.516998	of Sample Mean	0.047815
t-Statistic (Mean=0)	0.278772	Signif Level	0.780441
Skewness	0.667093	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	6.743900	Signif Level (Ku=0)	0.000000
Jarque-Bera	5456.588307	Signif Level (JB=0)	0.000000

Minimum	-15.191394	Maximum	23.027192
01-%ile	-6.343467	99-%ile	6.728190
05-%ile	-3.687187	95-%ile	3.958793
10-%ile	-2.870849	90-%ile	2.901914
25-%ile	-1.398885	75-%ile	1.382177
	Median	-0.002655	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 2.52 -3.69 0.47 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	0.972856	Variance	0.017846
Standard Error	0.133588	of Sample Mean	0.002608
t-Statistic (Mean=0)	372.976282	Signif Level	0.000000
Skewness	0.179357	Signif Level (Sk=0)	0.000178
Kurtosis (excess)	-0.431170	Signif Level (Ku=0)	0.000007
Jarque-Bera	34.381319	Signif Level (JB=0)	0.000000

Minimum	0.650002	Maximum	1.390806
01-%ile	0.680123	99-%ile	1.278722
05-%ile	0.767967	95-%ile	1.196122
10-%ile	0.813880	90-%ile	1.156420
25-%ile	0.876782	75-%ile	1.071594
	Median	0.960535	

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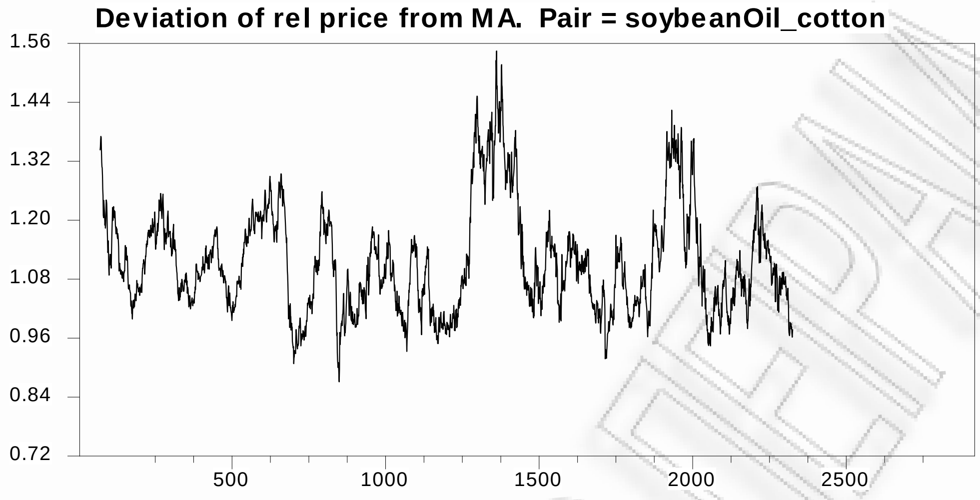
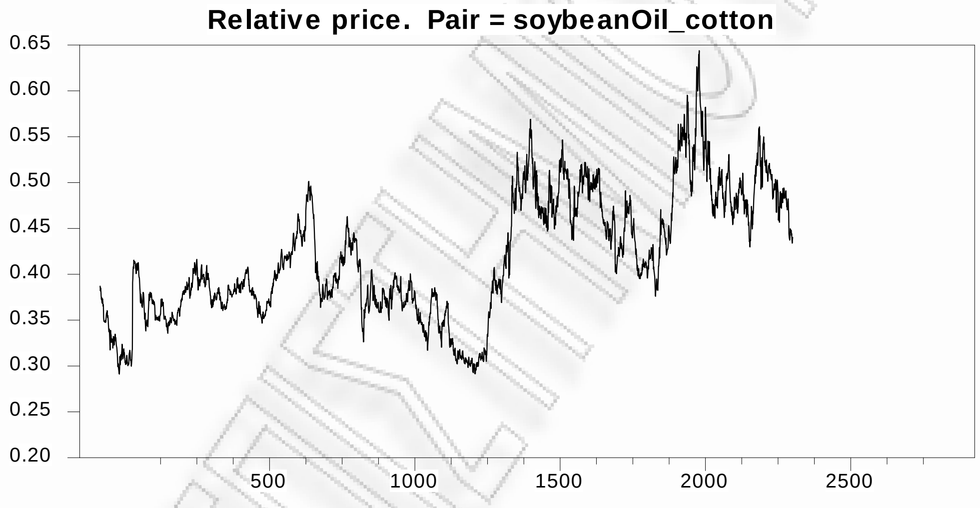
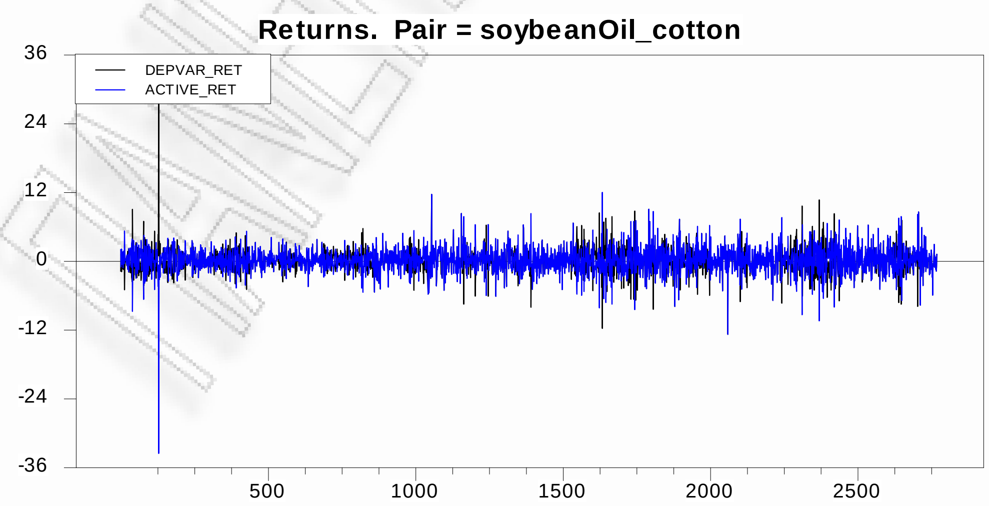

Deviation of rel price from MA. Pair = soybeanOil_cotton
1.56
1.44
1.32
1.20
1.08
0.96
0.84
0.72
500
1000
1500
2000
2500


Relative price. Pair = soybeanOil_cotton
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
500
1000
1500
2000
2500


Returns. Pair = soybeanOil_cotton
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = soybeanOil_cotton

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030510	Variance	4.940965
Standard Error	2.222828	of Sample Mean	0.042227
t-Statistic (Mean=0)	0.722520	Signif Level	0.470036
Skewness	1.241976	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.840276	Signif Level (Ku=0)	0.000000
Jarque-Bera	50857.908473	Signif Level (JB=0)	0.000000

Minimum	-12.906913	Maximum	33.687823
01-%ile	-5.723046	99-%ile	5.641720
05-%ile	-3.179187	95-%ile	3.414347
10-%ile	-2.394339	90-%ile	2.484422
25-%ile	-1.168966	75-%ile	1.209437
Median	-0.011833		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.22 -3.18 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.058039	Variance	4.938526
Standard Error	2.222279	of Sample Mean	0.042216
t-Statistic (Mean=0)	1.374810	Signif Level	0.169301
Skewness	-1.226555	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	21.057536	Signif Level (Ku=0)	0.000000
Jarque-Bera	51891.313182	Signif Level (JB=0)	0.000000
Minimum	-33.687823	Maximum	11.863640
01-%ile	-5.509720	99-%ile	6.022092
05-%ile	-3.228055	95-%ile	3.414347
10-%ile	-2.357155	90-%ile	2.511995
25-%ile	-1.121592	75-%ile	1.276334
Median	0.039356		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.06 2.22 -3.23 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.016913	Variance	0.015602
Standard Error	0.124908	of Sample Mean	0.002439
t-Statistic (Mean=0)	416.959291	Signif Level	0.000000
Skewness	0.856024	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.558309	Signif Level (Ku=0)	0.000000
Jarque-Bera	354.412721	Signif Level (JB=0)	0.000000
Minimum	0.733820	Maximum	1.517302
01-%ile	0.814388	99-%ile	1.366989
05-%ile	0.855672	95-%ile	1.276785
10-%ile	0.874595	90-%ile	1.195279
25-%ile	0.924298	75-%ile	1.085598
Median	0.997131		

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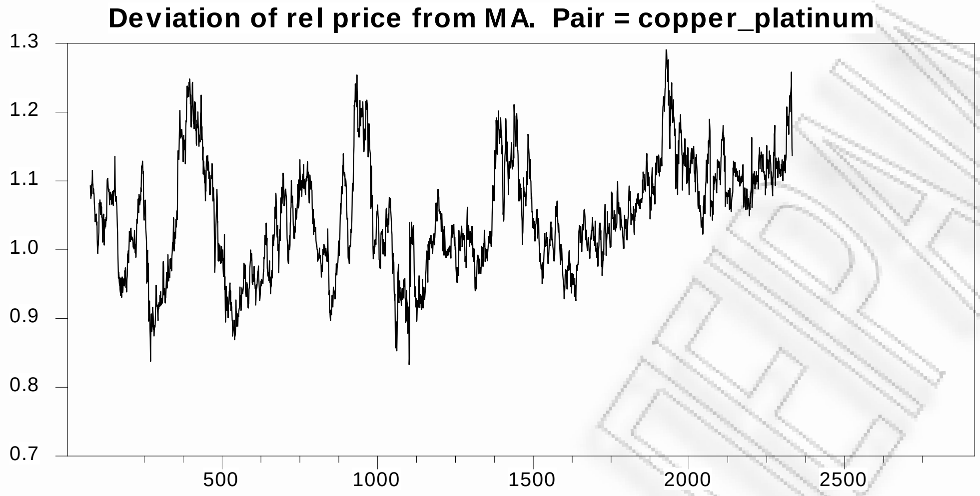
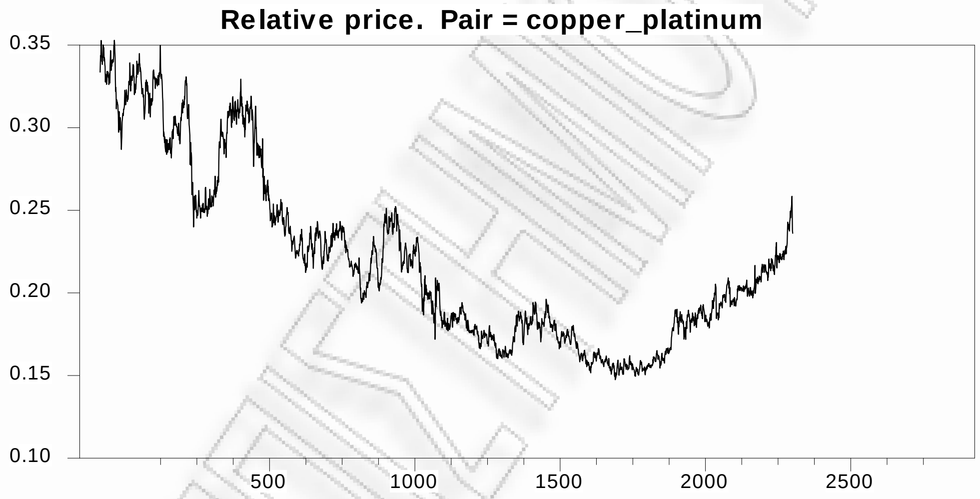
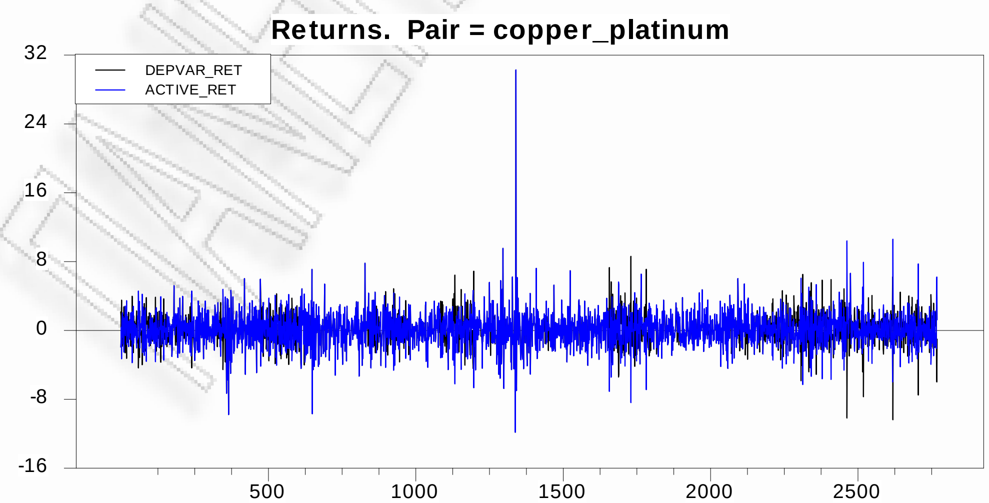

Deviation of rel price from MA. Pair = copper_platinum
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = copper_platinum
0.35
0.30
0.25
0.20
0.15
0.10
500
1000
1500
2000
2500


Returns. Pair = copper_platinum
DEPVAR_RET
ACTIVE_RET
32
24
16
8
0
-8
-16
500
1000
1500
2000
2500

****

********************* Pair = copper_platinum

********************* SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.003913	Variance	3.946900
Standard Error	1.986681	of Sample Mean	0.037741
t-Statistic (Mean=0)	0.103671	Signif Level	0.917438
Skewness	1.129054	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.101568	Signif Level (Ku=0)	0.000000
Jarque-Bera	51999.573891	Signif Level (JB=0)	0.000000

Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.686501	99-%ile	5.193363
05-%ile	-2.915807	95-%ile	3.048069
10-%ile	-2.167735	90-%ile	2.208645
25-%ile	-1.080073	75-%ile	1.108897
Median	-0.006923		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.00 1.99 -2.92 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.017018	Variance	3.946626
Standard Error	1.986612	of Sample Mean	0.037739
t-Statistic (Mean=0)	0.450929	Signif Level	0.652076
Skewness	1.173256	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.073151	Signif Level (Ku=0)	0.000000

Jarque-Bera	51908.198876	Signif Level (JB=0)	0.000000
Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.734103	99-%ile	4.977155
05-%ile	-3.034916	95-%ile	2.973015
10-%ile	-2.205937	90-%ile	2.177148
25-%ile	-1.061153	75-%ile	1.119885
	Median	0.014140	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.02 1.99 -3.03 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	0.989376	Variance	0.008799
Standard Error	0.093802	of Sample Mean	0.001832
t-Statistic (Mean=0)	540.192272	Signif Level	0.000000
Skewness	0.190991	Signif Level (Sk=0)	0.000066
Kurtosis (excess)	-0.415359	Signif Level (Ku=0)	0.000014
Jarque-Bera	34.802161	Signif Level (JB=0)	0.000000
Minimum	0.739028	Maximum	1.271652
01-%ile	0.802054	99-%ile	1.202327
05-%ile	0.842433	95-%ile	1.152944
10-%ile	0.866589	90-%ile	1.115215
25-%ile	0.922968	75-%ile	1.055739
	Median	0.983757	

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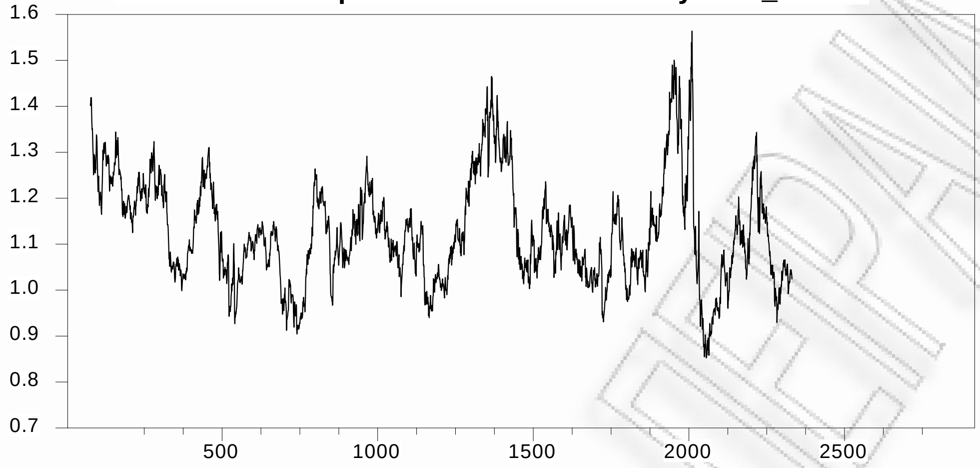
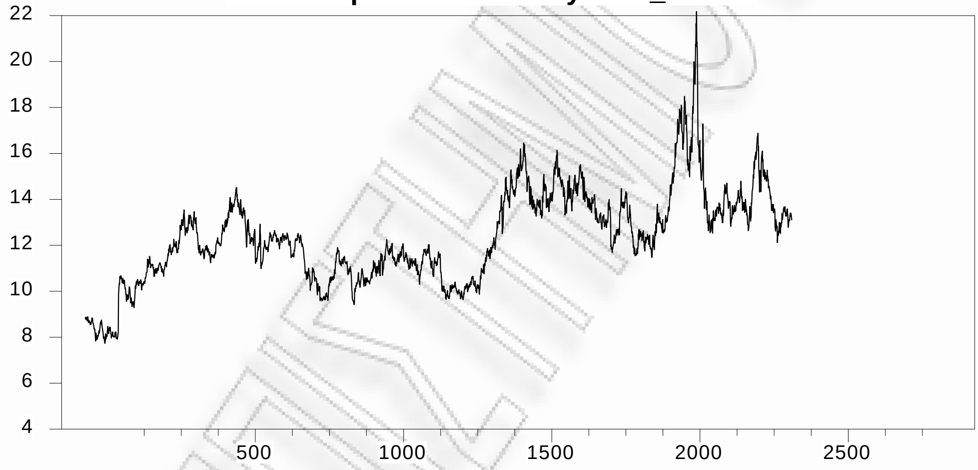
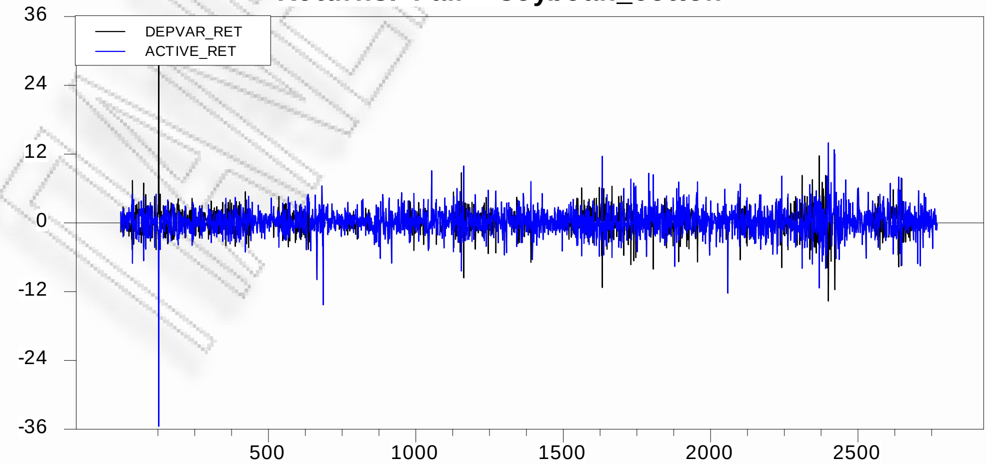
Deviation of rel price from MA. Pair = soybean_cotton



Relative price. Pair = soybean_cotton



Returns. Pair = soybean_cotton



****

******************** Pair = soybean_cotton

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.047598	Variance	5.364722
Standard Error	2.316187	of Sample Mean	0.044000
t-Statistic (Mean=0)	1.081777	Signif Level	0.279446
Skewness	0.979271	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	22.892304	Signif Level (Ku=0)	0.000000
Jarque-Bera	60949.698417	Signif Level (JB=0)	0.000000
Minimum	-14.465433	Maximum	35.687245
01-%ile	-6.359115	99-%ile	5.642728
05-%ile	-3.508506	95-%ile	3.427508
10-%ile	-2.444753	90-%ile	2.638881
25-%ile	-1.161338	75-%ile	1.277983
Median	0.093618		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.05 2.32 -3.51 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.057370	Variance	5.363696
Standard Error	2.315966	of Sample Mean	0.043996
t-Statistic (Mean=0)	1.303986	Signif Level	0.192347
Skewness	-1.253854	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	23.106127	Signif Level (Ku=0)	0.000000
Jarque-Bera	62368.480131	Signif Level (JB=0)	0.000000

Minimum	-35.687245	Maximum	13.811521
01-%ile	-5.854537	99-%ile	5.865923
05-%ile	-3.314442	95-%ile	3.591169
10-%ile	-2.470542	90-%ile	2.591310
25-%ile	-1.175178	75-%ile	1.258566
	Median	0.078989	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.06 2.32 -3.31 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.022632	Variance	0.017813
Standard Error	0.133467	of Sample Mean	0.002606
t-Statistic (Mean=0)	392.414353	Signif Level	0.000000
Skewness	0.553360	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.185763	Signif Level (Ku=0)	0.052449
Jarque-Bera	137.635104	Signif Level (JB=0)	0.000000

Minimum	0.703781	Maximum	1.531506
01-%ile	0.763813	99-%ile	1.384657
05-%ile	0.826523	95-%ile	1.263126
10-%ile	0.863856	90-%ile	1.207838
25-%ile	0.928937	75-%ile	1.103163
	Median	1.004777	

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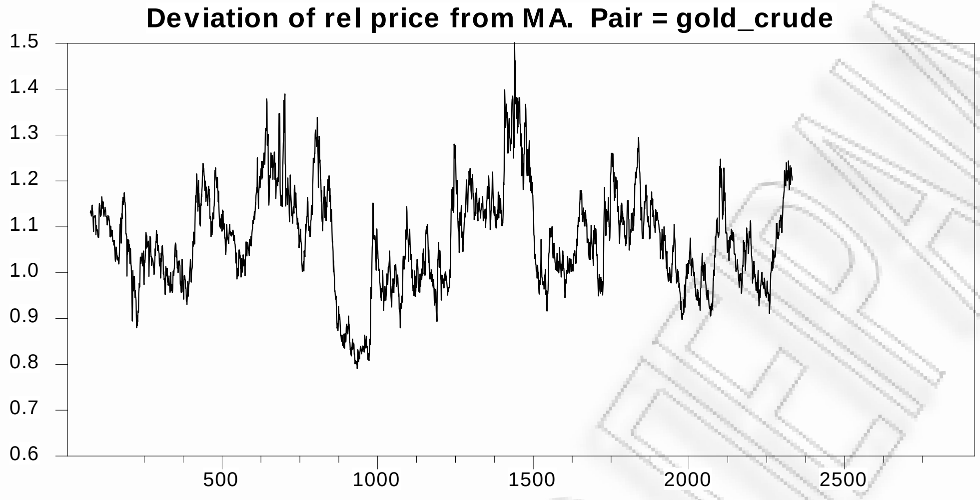
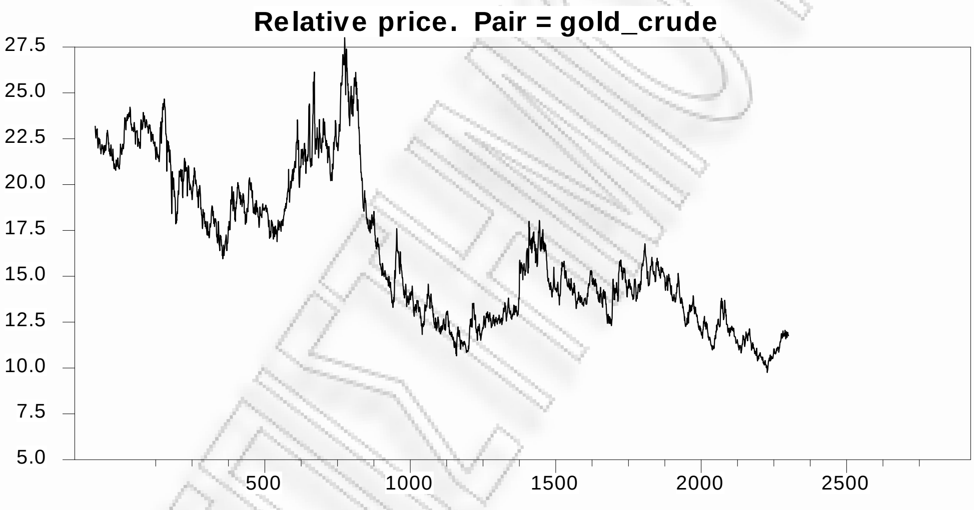
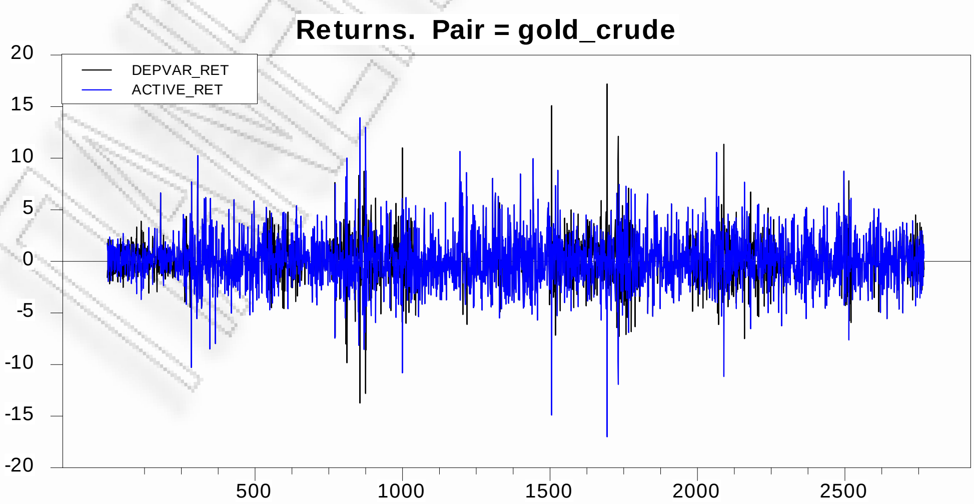

Deviation of rel price from MA. Pair = gold_crude
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
1000
1500
2000
2500


Relative price. Pair = gold_crude
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
500
1000
1500
2000
2500


Returns. Pair = gold_crude
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = gold_crude

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.004970	Variance	5.845049
Standard Error	2.417654	of Sample Mean	0.045928
t-Statistic (Mean=0)	-0.108224	Signif Level	0.913826
Skewness	0.402744	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.451779	Signif Level (Ku=0)	0.000000
Jarque-Bera	1450.571046	Signif Level (JB=0)	0.000000

Minimum	-13.833198	Maximum	17.102538
01-%ile	-5.574459	99-%ile	6.277606
05-%ile	-3.729054	95-%ile	3.931820
10-%ile	-2.737744	90-%ile	2.933108
25-%ile	-1.420837	75-%ile	1.294938
Median	-0.118586		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.00 2.42 -3.73 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.034142	Variance	5.843908
Standard Error	2.417418	of Sample Mean	0.045923
t-Statistic (Mean=0)	0.743447	Signif Level	0.457274
Skewness	0.058935	Signif Level (Sk=0)	0.205566

Kurtosis (excess)	3.446474	Signif Level (Ku=0)	0.000000
Jarque-Bera	1373.039595	Signif Level (JB=0)	0.000000

Minimum	-17.102538	Maximum	13.833198
01-%ile	-5.418678	99-%ile	6.279803
05-%ile	-3.690071	95-%ile	4.052056
10-%ile	-2.763981	90-%ile	2.908604
25-%ile	-1.363381	75-%ile	1.325767
	Median	-0.009083	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 2.42 -3.69 0.48 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	0.975936	Variance	0.016130
Standard Error	0.127005	of Sample Mean	0.002480
t-Statistic (Mean=0)	393.549696	Signif Level	0.000000
Skewness	0.240457	Signif Level (Sk=0)	0.000001
Kurtosis (excess)	0.257429	Signif Level (Ku=0)	0.007196
Jarque-Bera	32.519443	Signif Level (JB=0)	0.000000

Minimum	0.648487	Maximum	1.475367
01-%ile	0.686477	99-%ile	1.319420
05-%ile	0.775972	95-%ile	1.193901
10-%ile	0.833900	90-%ile	1.137528
25-%ile	0.888381	75-%ile	1.054087
	Median	0.972127	

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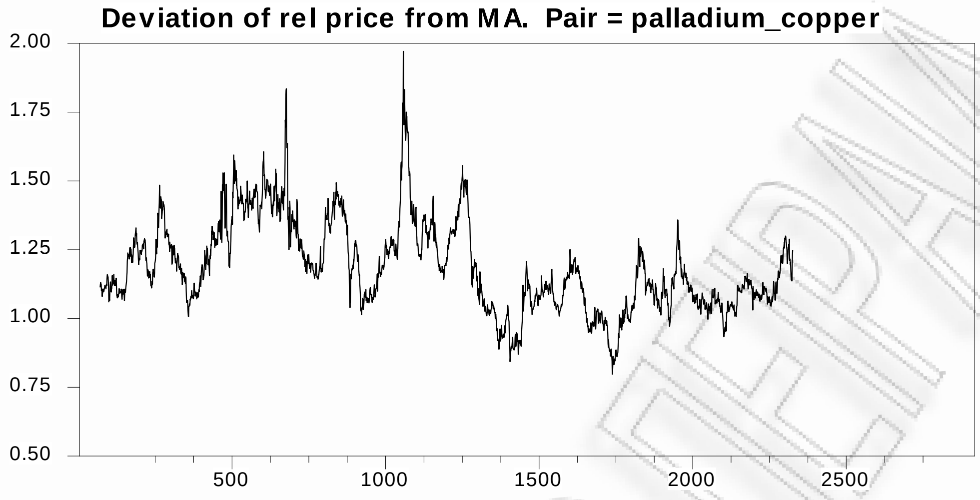
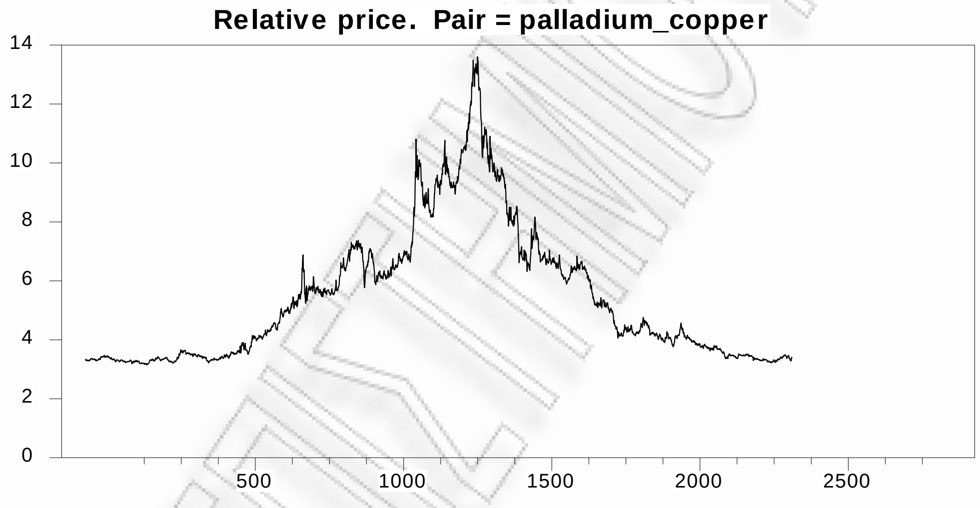
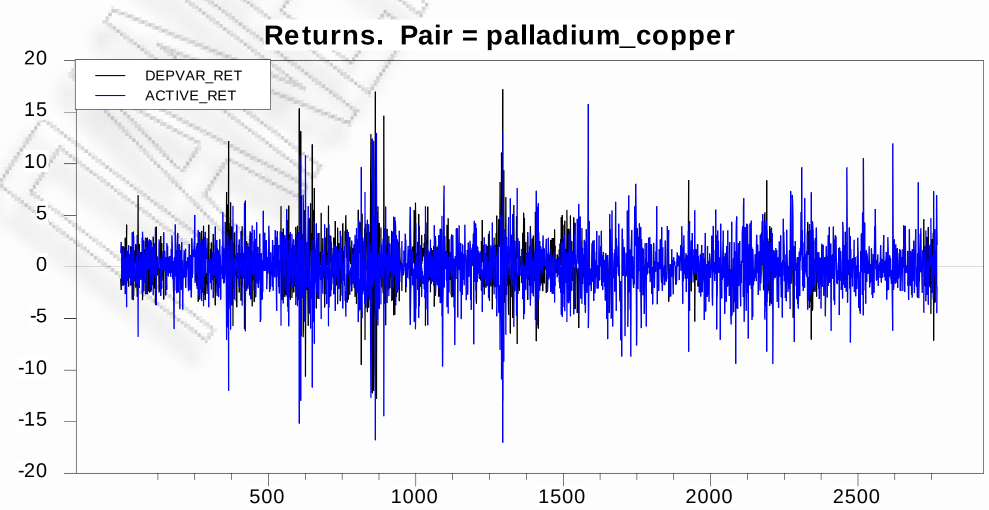

Deviation of rel price from MA. Pair = palladium_copper
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Relative price. Pair = palladium_copper
14
12
10
8
6
4
2
0
500
1000
1500
2000
2500


Returns. Pair = palladium_copper
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

```
******************************************************************************************
                    ********************  Pair = palladium_copper
                   ********************  SMA --->  1   LMA --->  150
******************************************************************************************

                              Performance

                    Statistics on Series DEPVAR_RET
     Observations              2771     Skipped/Missing          1
     Sample Mean           0.035091      Variance           6.600882
     Standard Error        2.569218     of Sample Mean      0.048807
     t-Statistic (Mean=0)  0.718982      Signif Level       0.472213
     Skewness              0.452895     Signif Level (Sk=0) 0.000000
     Kurtosis (excess)     4.976839     Signif Level (Ku=0) 0.000000
     Jarque-Bera        2954.507552     Signif Level (JB=0) 0.000000

     Minimum             -13.059365     Maximum            17.111132
     01-%ile              -6.799694     99-%ile             7.038010
     05-%ile              -3.724911     95-%ile             3.963386
     10-%ile              -2.732144     90-%ile             2.918848
     25-%ile              -1.364029     75-%ile             1.317172
                    Median              0.000000


Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
          BuyHold_Performance = 0.04 2.57 -3.72 0.47 %


                    Statistics on Series ACTIVE_RET
     Observations              2771     Skipped/Missing          1
     Sample Mean          -0.083327      Variance           6.595168
     Standard Error        2.568106     of Sample Mean      0.048786
     t-Statistic (Mean=0) -1.708009      Signif Level       0.087747
     Skewness             -0.262510     Signif Level (Sk=0) 0.000000
```

Kurtosis (excess)	4.976168	Signif Level (Ku=0)	0.000000
Jarque-Bera	2890.832877	Signif Level (JB=0)	0.000000

Minimum	-17.111132	Maximum	15.661764
01-%ile	-7.224870	99-%ile	6.526822
05-%ile	-4.094226	95-%ile	3.725859
10-%ile	-2.881400	90-%ile	2.746998
25-%ile	-1.392864	75-%ile	1.305637
	Median	-0.035632	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.08 2.57 -4.09 0.48 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.009239	Variance	0.035898
Standard Error	0.189467	of Sample Mean	0.003699
t-Statistic (Mean=0)	272.809761	Signif Level	0.000000
Skewness	0.659333	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.499312	Signif Level (Ku=0)	0.000000
Jarque-Bera	217.292630	Signif Level (JB=0)	0.000000

Minimum	0.556807	Maximum	1.922024
01-%ile	0.650711	99-%ile	1.546371
05-%ile	0.743153	95-%ile	1.338178
10-%ile	0.804109	90-%ile	1.281145
25-%ile	0.876186	75-%ile	1.127527
	Median	0.974376	

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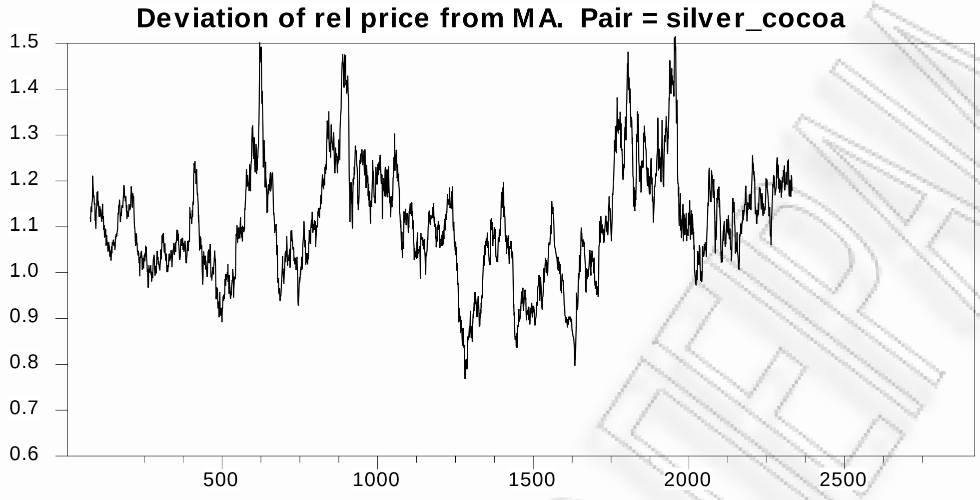
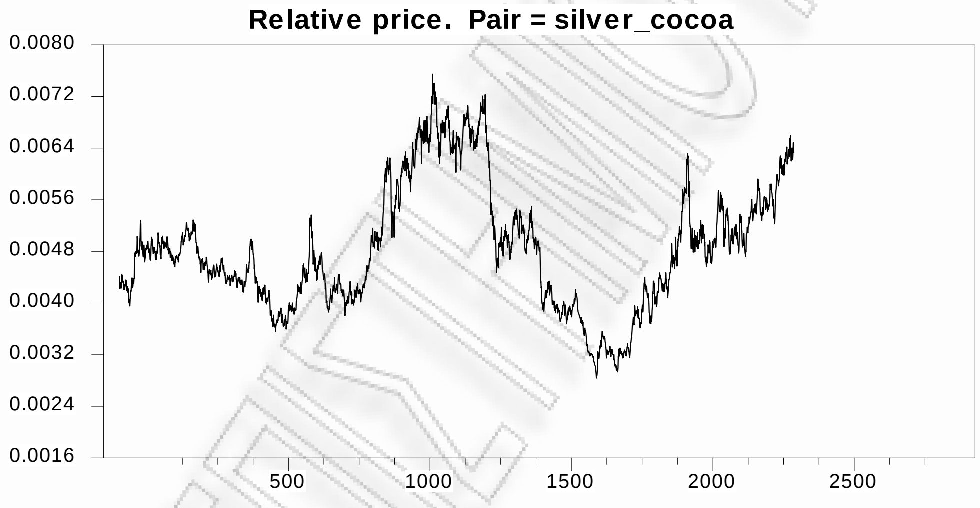
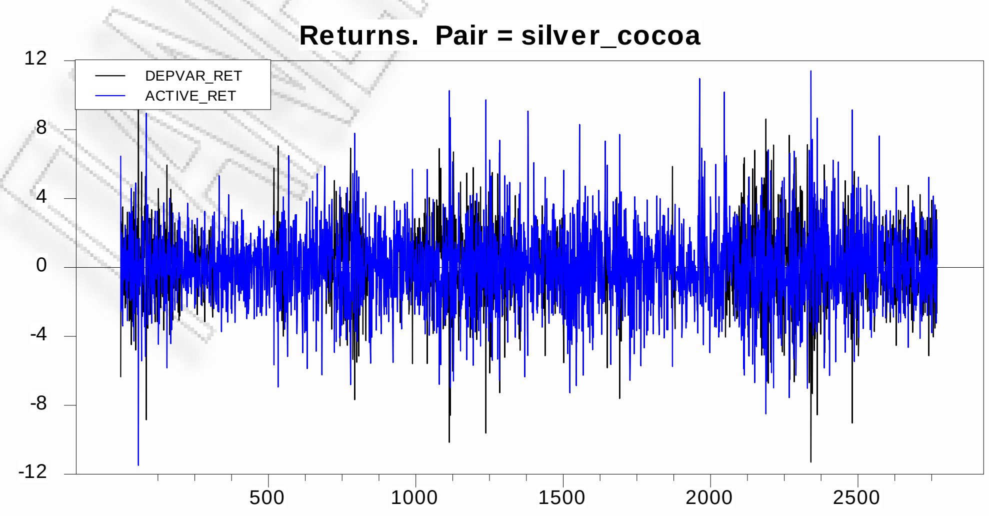

Deviation of rel price from MA. Pair = silver_cocoa
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
1000
1500
2000
2500


Relative price. Pair = silver_cocoa
0.0080
0.0072
0.0064
0.0056
0.0048
0.0040
0.0032
0.0024
0.0016
500
1000
1500
2000
2500


Returns. Pair = silver_cocoa
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = silver_cocoa

******************** SMA ---> 1 LMA ---> 150

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.043966	Variance	5.366252
Standard Error	2.316517	of Sample Mean	0.044007
t-Statistic (Mean=0)	0.999090	Signif Level	0.317839
Skewness	0.003227	Signif Level (Sk=0)	0.944743
Kurtosis (excess)	1.494435	Signif Level (Ku=0)	0.000000
Jarque-Bera	257.862042	Signif Level (JB=0)	0.000000

Minimum	-11.358750	Maximum	11.546872
01-%ile	-5.801129	99-%ile	6.035727
05-%ile	-3.641816	95-%ile	3.732680
10-%ile	-2.738549	90-%ile	2.826347
25-%ile	-1.351866	75-%ile	1.445741
	Median	0.004736	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.04 2.32 -3.64 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.005544	Variance	5.368155
Standard Error	2.316928	of Sample Mean	0.044014
t-Statistic (Mean=0)	0.125965	Signif Level	0.899769
Skewness	0.144414	Signif Level (Sk=0)	0.001923

Kurtosis (excess)	1.492238	Signif Level (Ku=0)	0.000000
Jarque-Bera	266.731251	Signif Level (JB=0)	0.000000

Minimum	-11.546872	Maximum	11.358750
01-%ile	-5.777433	99-%ile	6.125081
05-%ile	-3.734665	95-%ile	3.634095
10-%ile	-2.807408	90-%ile	2.768184
25-%ile	-1.423213	75-%ile	1.377794
	Median	0.013020	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.01 2.32 -3.73 0.46 %

Statistics on Series MA_REL

Observations	2623	Skipped/Missing	149
Sample Mean	1.013863	Variance	0.020299
Standard Error	0.142476	of Sample Mean	0.002782
t-Statistic (Mean=0)	364.449611	Signif Level	0.000000
Skewness	0.353579	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.387653	Signif Level (Ku=0)	0.000052
Jarque-Bera	71.077441	Signif Level (JB=0)	0.000000

Minimum	0.622560	Maximum	1.490944
01-%ile	0.718344	99-%ile	1.410015
05-%ile	0.779833	95-%ile	1.259871
10-%ile	0.832021	90-%ile	1.188639
25-%ile	0.925330	75-%ile	1.103563
	Median	1.002998	

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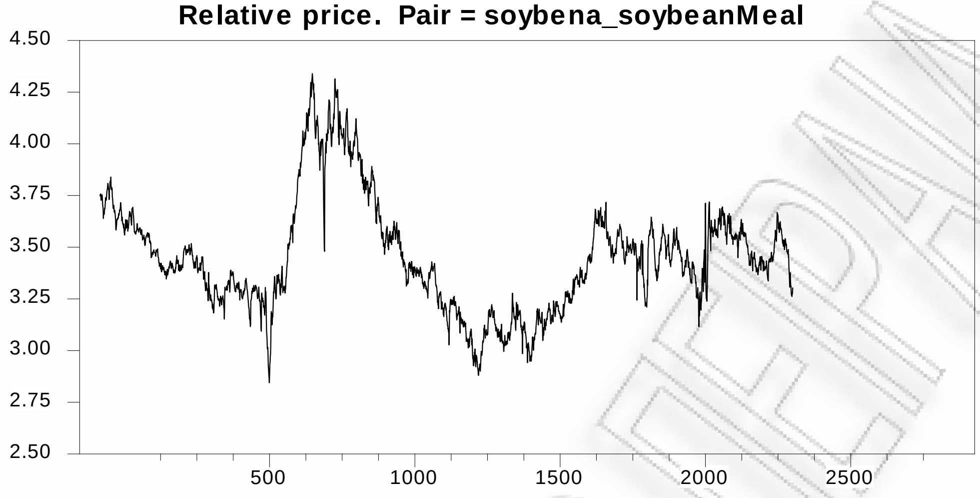
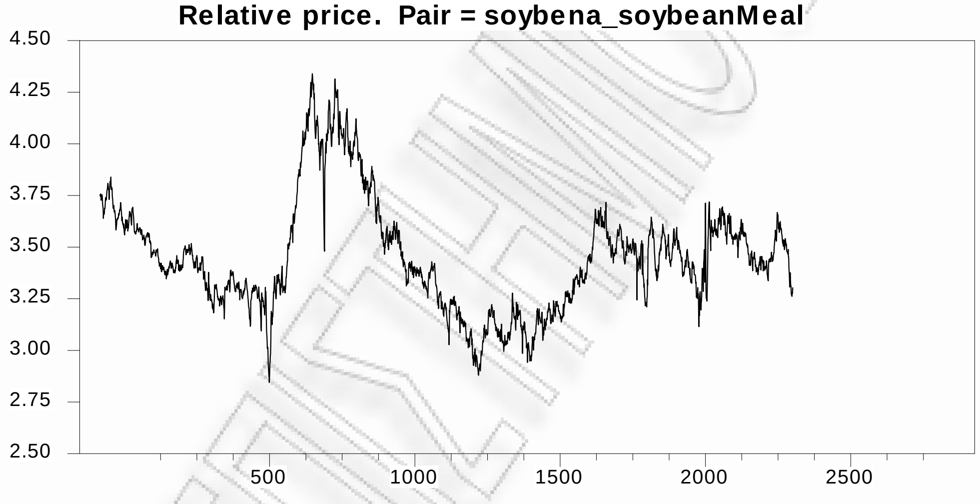
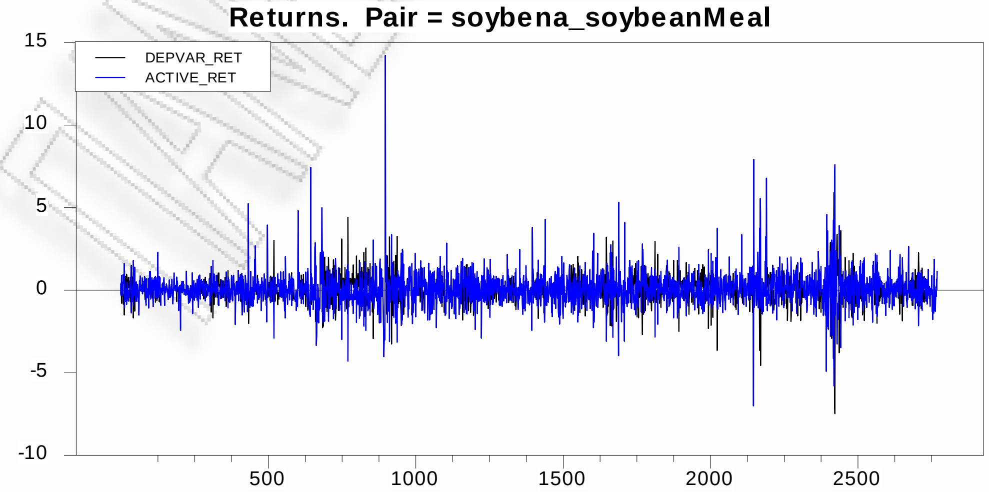

Relative price. Pair = soybena_soybeanMeal
4.50
4.25
4.00
3.75
3.50
3.25
3.00
2.75
2.50
500
1000
1500
2000
2500


Relative price. Pair = soybena_soybeanMeal
4.50
4.25
4.00
3.75
3.50
3.25
3.00
2.75
2.50
500
1000
1500
2000
2500


Returns. Pair = soybena_soybeanMeal
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
500
1000
1500
2000
2500

****

******************** Pair = soybena_soybeanMeal

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000421	Variance	1.069017
Standard Error	1.033933	of Sample Mean	0.019641
t-Statistic (Mean=0)	-0.021434	Signif Level	0.982901
Skewness	1.329044	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.139716	Signif Level (Ku=0)	0.000000
Jarque-Bera	47646.605195	Signif Level (JB=0)	0.000000

Minimum	-7.541035	Maximum	14.159056
01-%ile	-2.395240	99-%ile	3.164576
05-%ile	-1.419159	95-%ile	1.425752
10-%ile	-1.031134	90-%ile	1.007217
25-%ile	-0.514368	75-%ile	0.474729
Median	-0.037627		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.00 1.03 -1.42 0.51 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.024509	Variance	1.068416
Standard Error	1.033642	of Sample Mean	0.019636
t-Statistic (Mean=0)	1.248153	Signif Level	0.212080
Skewness	1.592420	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	20.008948	Signif Level (Ku=0)	0.000000
Jarque-Bera	47395.783414	Signif Level (JB=0)	0.000000

Minimum	-7.060439	Maximum	14.159056
01-%ile	-2.491234	99-%ile	2.986161
05-%ile	-1.410634	95-%ile	1.435524
10-%ile	-1.002168	90-%ile	1.039261
25-%ile	-0.486737	75-%ile	0.502765
	Median	-0.008196	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.02 1.03 -1.41 0.49 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.999085	Variance	0.001109
Standard Error	0.033296	of Sample Mean	0.000638
t-Statistic (Mean=0)	1565.809178	Signif Level	0.000000
Skewness	0.323927	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.225008	Signif Level (Ku=0)	0.000000
Jarque-Bera	217.880683	Signif Level (JB=0)	0.000000

Minimum	0.836120	Maximum	1.146102
01-%ile	0.926670	99-%ile	1.083031
05-%ile	0.952258	95-%ile	1.064024
10-%ile	0.961970	90-%ile	1.043511
25-%ile	0.977486	75-%ile	1.016945
	Median	0.996232	

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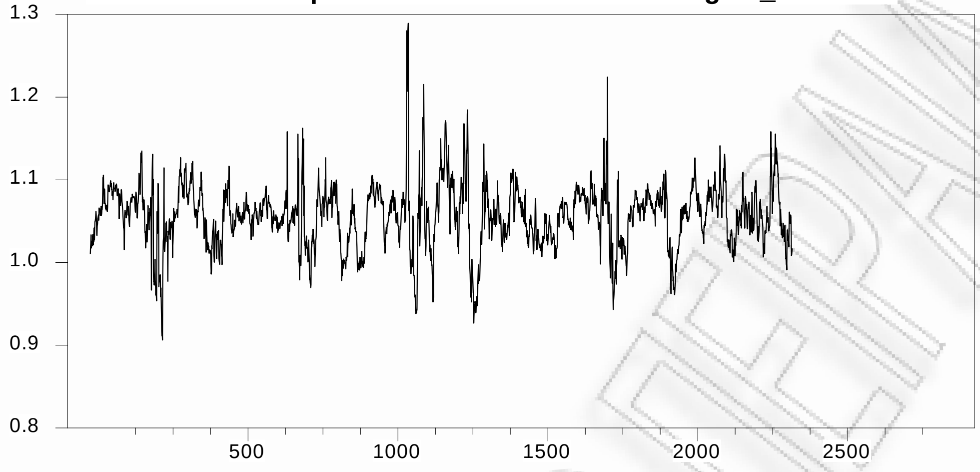
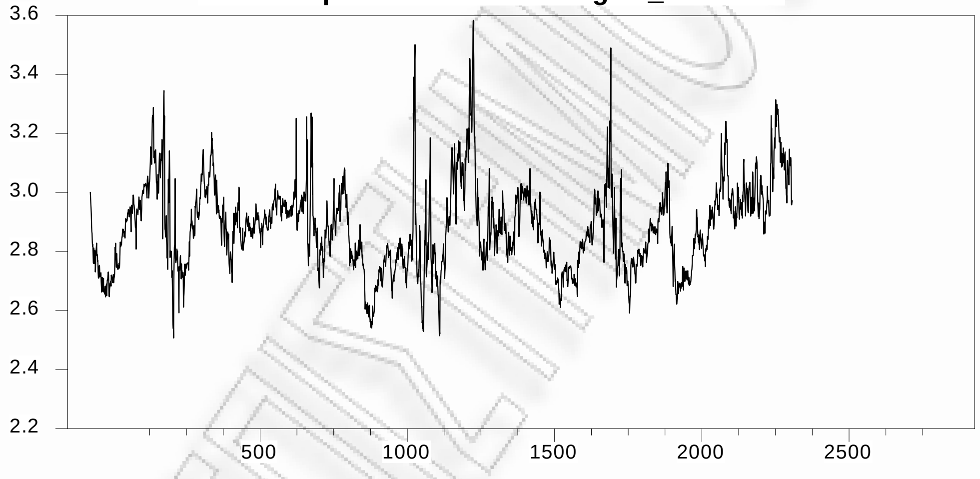
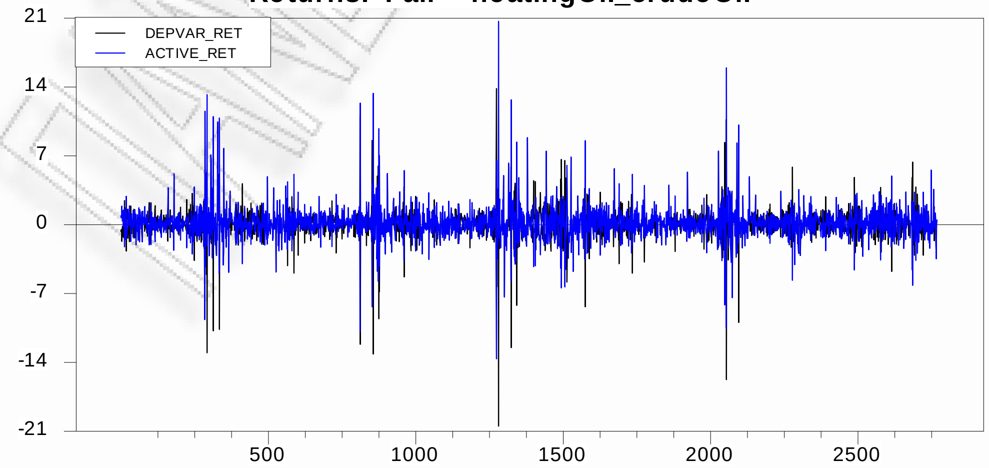
Deviation of rel price from MA. Pair = heatingOil_crudeOil



Relative price. Pair = heatingOil_crudeOil



Returns. Pair = heatingOil_crudeOil



****

******************** Pair = heatingOil_crudeOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.014758	Variance	2.990445
Standard Error	1.729290	of Sample Mean	0.032851
t-Statistic (Mean=0)	0.449253	Signif Level	0.653284
Skewness	-0.979650	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.556673	Signif Level (Ku=0)	0.000000
Jarque-Bera	54095.579900	Signif Level (JB=0)	0.000000

Minimum	-20.584528	Maximum	13.741360
01-%ile	-4.169521	99-%ile	5.036791
05-%ile	-2.135145	95-%ile	2.275982
10-%ile	-1.481046	90-%ile	1.480858
25-%ile	-0.707339	75-%ile	0.689096
Median	0.017143		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.73 -2.14 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.088677	Variance	2.982796
Standard Error	1.727077	of Sample Mean	0.032809

t-Statistic (Mean=0)	2.702827	Signif Level	0.006917
Skewness	1.605994	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.303390	Signif Level (Ku=0)	0.000000
Jarque-Bera	53590.135967	Signif Level (JB=0)	0.000000

Minimum	-13.741360	Maximum	20.584528
01-%ile	-4.223247	99-%ile	5.423309
05-%ile	-2.101220	95-%ile	2.299372
10-%ile	-1.454630	90-%ile	1.554952
25-%ile	-0.668181	75-%ile	0.734633
	Median	0.038037	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.09 1.73 -2.10 0.47 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.001564	Variance	0.001977
Standard Error	0.044465	of Sample Mean	0.000852
t-Statistic (Mean=0)	1175.395543	Signif Level	0.000000
Skewness	0.115100	Signif Level (Sk=0)	0.014259
Kurtosis (excess)	2.972188	Signif Level (Ku=0)	0.000000
Jarque-Bera	1008.291980	Signif Level (JB=0)	0.000000

Minimum	0.827322	Maximum	1.272809
01-%ile	0.880963	99-%ile	1.116692
05-%ile	0.925767	95-%ile	1.065373
10-%ile	0.946437	90-%ile	1.048014
25-%ile	0.976920	75-%ile	1.026959
	Median	1.004529	

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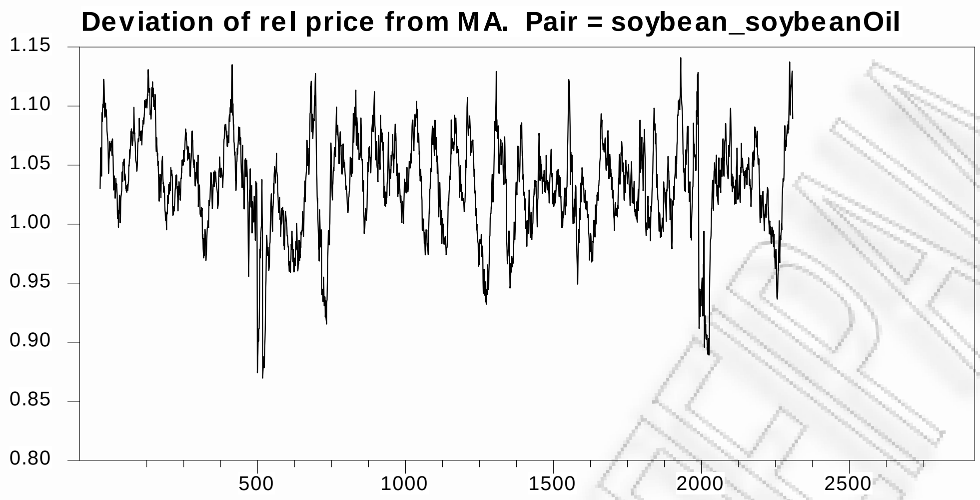
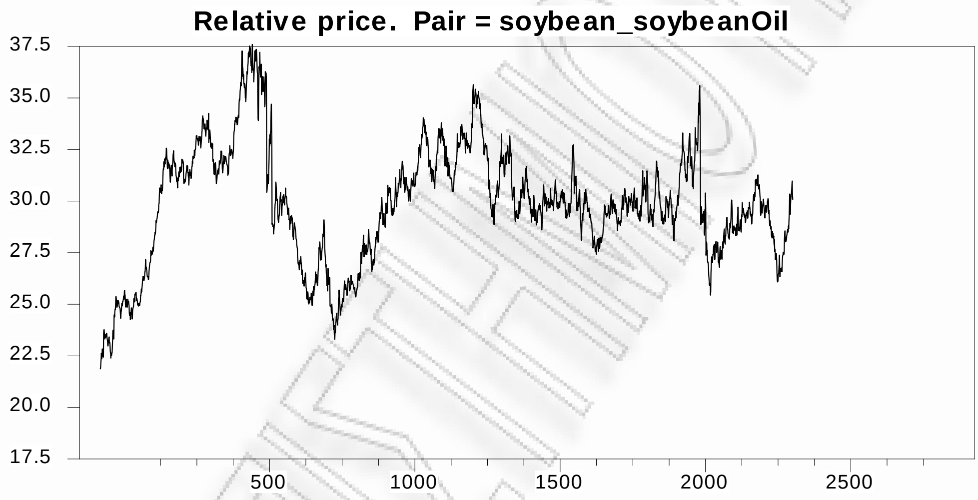
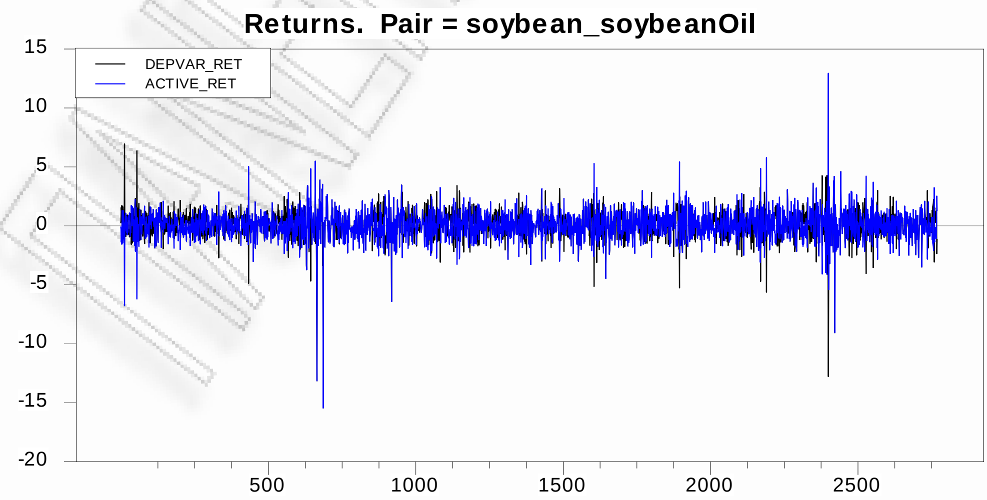

Deviation of rel price from MA. Pair = soybean_soybeanOil
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
500
1000
1500
2000
2500


Relative price. Pair = soybean_soybeanOil
37.5
35.0
32.5
30.0
27.5
25.0
22.5
20.0
17.5
500
1000
1500
2000
2500


Returns. Pair = soybean_soybeanOil
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = soybean_soybeanOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022759	Variance	1.548062
Standard Error	1.244211	of Sample Mean	0.023636
t-Statistic (Mean=0)	0.962875	Signif Level	0.335694
Skewness	-1.805608	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.845722	Signif Level (Ku=0)	0.000000
Jarque-Bera	46979.254862	Signif Level (JB=0)	0.000000

Minimum	-15.532950	Maximum	6.866004
01-%ile	-3.121745	99-%ile	2.864887
05-%ile	-1.743204	95-%ile	1.801140
10-%ile	-1.343896	90-%ile	1.363836
25-%ile	-0.658107	75-%ile	0.745133
Median	0.056297		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.24 -1.74 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.011626	Variance	1.548445
Standard Error	1.244365	of Sample Mean	0.023639
t-Statistic (Mean=0)	-0.491826	Signif Level	0.622881
Skewness	-0.927849	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.668947	Signif Level (Ku=0)	0.000000

Jarque-Bera	45064.669622	Signif Level (JB=0)	0.000000

Minimum	-15.532950	Maximum	12.861647
01-%ile	-2.899132	99-%ile	2.946080
05-%ile	-1.799413	95-%ile	1.733693
10-%ile	-1.381688	90-%ile	1.337513
25-%ile	-0.704612	75-%ile	0.718432
Median	0.001324		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.01 1.24 -1.80 0.49 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.003310	Variance	0.002306
Standard Error	0.048020	of Sample Mean	0.000920
t-Statistic (Mean=0)	1090.268210	Signif Level	0.000000
Skewness	-0.583157	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.920079	Signif Level (Ku=0)	0.000000
Jarque-Bera	250.383937	Signif Level (JB=0)	0.000000

Minimum	0.813538	Maximum	1.129190
01-%ile	0.855678	99-%ile	1.103250
05-%ile	0.920552	95-%ile	1.075824
10-%ile	0.943769	90-%ile	1.060995
25-%ile	0.975674	75-%ile	1.035177
Median	1.006727		

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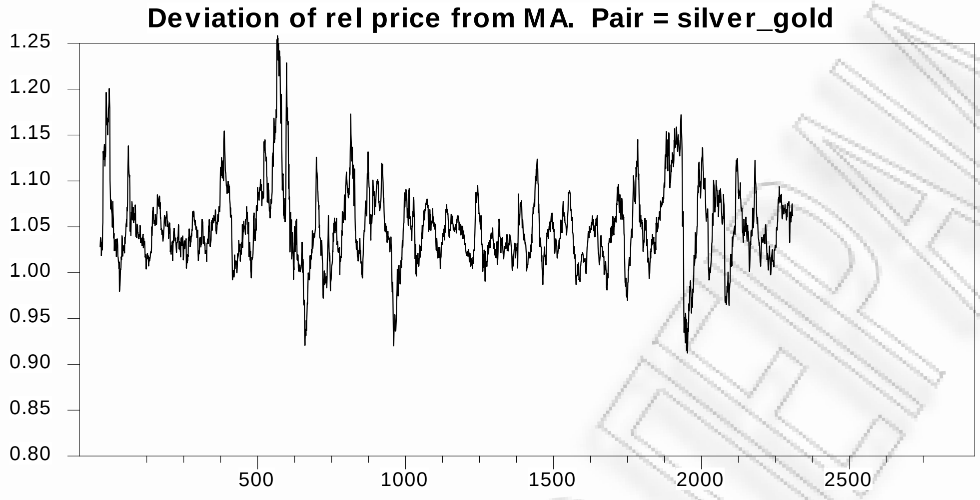
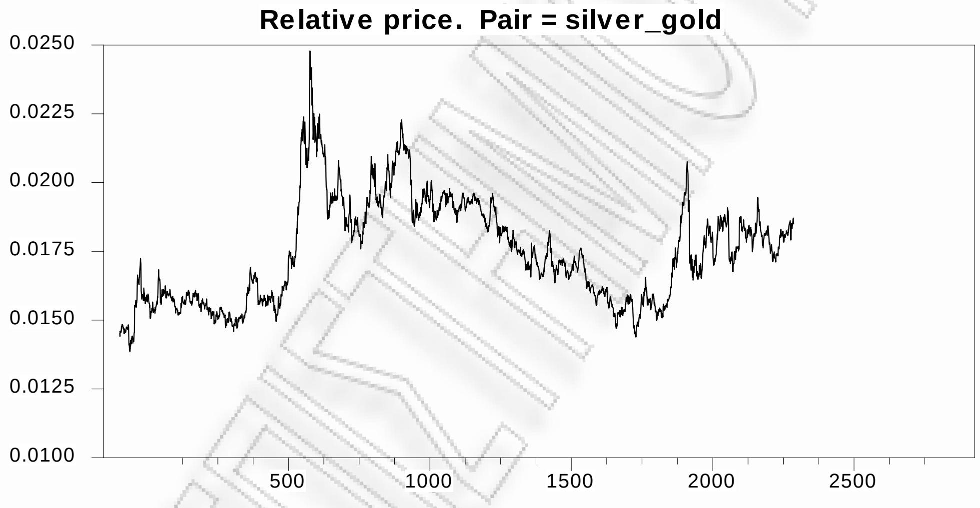
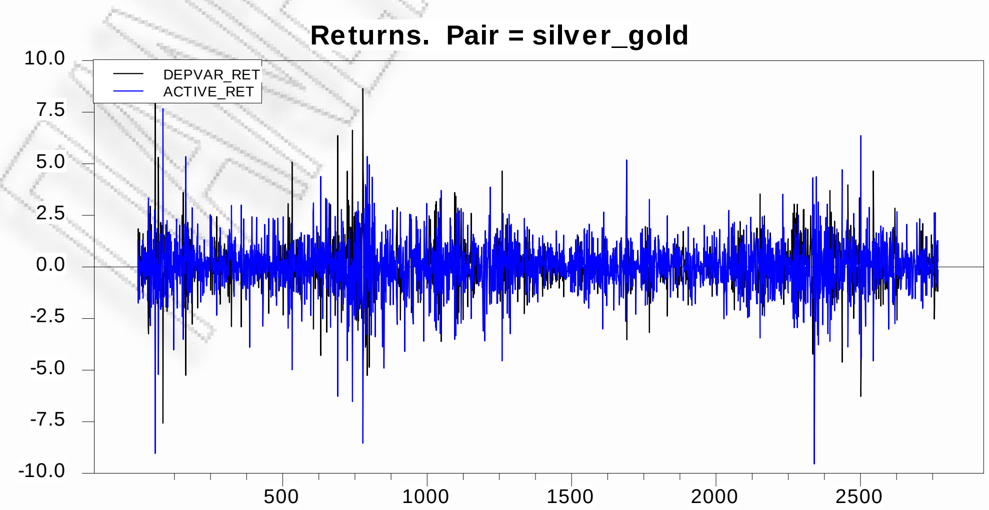

Deviation of rel price from MA. Pair = silver_gold
1.25
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
500
1000
1500
2000
2500


Relative price. Pair = silver_gold
0.0250
0.0225
0.0200
0.0175
0.0150
0.0125
0.0100
500
1000
1500
2000
2500


Returns. Pair = silver_gold
DEPVAR_RET
ACTIVE_RET
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
500
1000
1500
2000
2500

****

******************** Pair = silver_gold

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018778	Variance	1.475875
Standard Error	1.214856	of Sample Mean	0.023078
t-Statistic (Mean=0)	0.813642	Signif Level	0.415920
Skewness	0.010534	Signif Level (Sk=0)	0.820998
Kurtosis (excess)	6.051425	Signif Level (Ku=0)	0.000000
Jarque-Bera	4228.105978	Signif Level (JB=0)	0.000000
Minimum	-9.590524	Maximum	9.087904
01-%ile	-3.282010	99-%ile	3.105876
05-%ile	-1.838538	95-%ile	1.873336
10-%ile	-1.325501	90-%ile	1.347578
25-%ile	-0.591186	75-%ile	0.628350
Median	0.006533		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.21 -1.84 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.004915	Variance	1.476203
Standard Error	1.214991	of Sample Mean	0.023081
t-Statistic (Mean=0)	0.212952	Signif Level	0.831380
Skewness	-0.497097	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	6.057440	Signif Level (Ku=0)	0.000000
Jarque-Bera	4350.585482	Signif Level (JB=0)	0.000000

Minimum	-9.590524	Maximum	7.620257
01-%ile	-3.354497	99-%ile	3.007187
05-%ile	-1.853928	95-%ile	1.867606
10-%ile	-1.336147	90-%ile	1.335086
25-%ile	-0.589499	75-%ile	0.629933
	Median	0.028667	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.00 1.21 -1.85 0.47 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.003398	Variance	0.002490
Standard Error	0.049904	of Sample Mean	0.000956
t-Statistic (Mean=0)	1049.208577	Signif Level	0.000000
Skewness	0.791709	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.480069	Signif Level (Ku=0)	0.000000
Jarque-Bera	982.317165	Signif Level (JB=0)	0.000000

Minimum	0.843943	Maximum	1.246453
01-%ile	0.882092	99-%ile	1.154613
05-%ile	0.935227	95-%ile	1.094324
10-%ile	0.952610	90-%ile	1.064071
25-%ile	0.973012	75-%ile	1.026973
	Median	0.998284	

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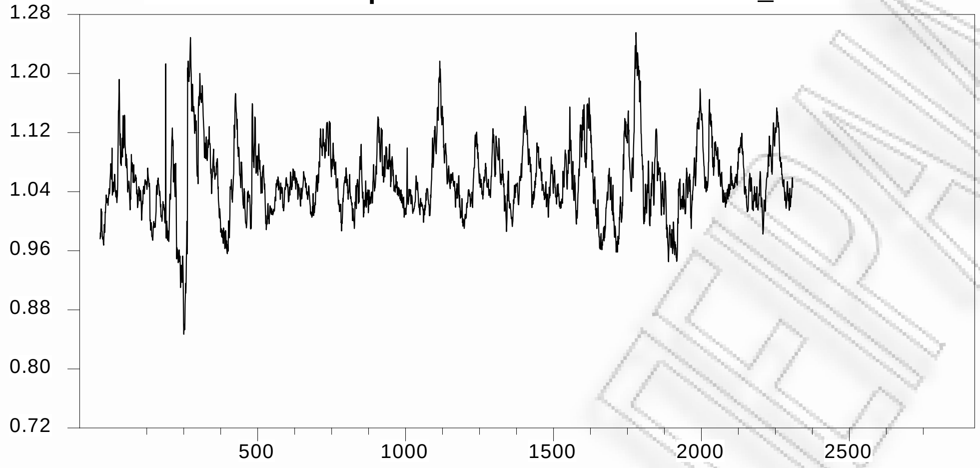
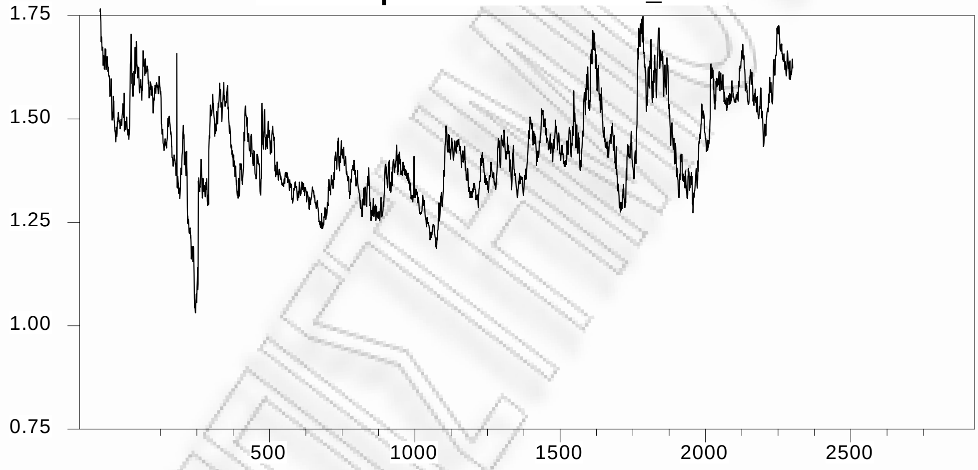
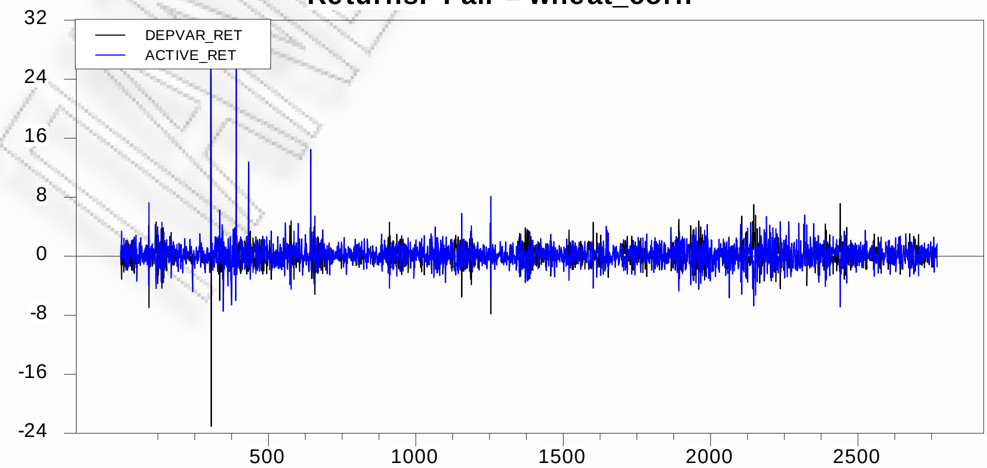
Deviation of rel price from MA. Pair = wheat_corn



Relative price. Pair = wheat_corn



Returns. Pair = wheat_corn



```
************************************************************************************
******************** Pair = wheat_corn
******************** SMA ---> 1 LMA ---> 50
************************************************************************************
```

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.011072	Variance	2.974005
Standard Error	1.724530	of Sample Mean	0.032761
t-Statistic (Mean=0)	0.337962	Signif Level	0.735418
Skewness	2.730782	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	68.283882	Signif Level (Ku=0)	0.000000
Jarque-Bera	541790.217454	Signif Level (JB=0)	0.000000

Minimum	-23.187712	Maximum	30.020972
01-%ile	-3.476776	99-%ile	4.173708
05-%ile	-2.166937	95-%ile	2.260124
10-%ile	-1.689766	90-%ile	1.697152
25-%ile	-0.893765	75-%ile	0.853195
Median	-0.039146		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.72 -2.17 0.50 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.059416	Variance	2.970596
Standard Error	1.723542	of Sample Mean	0.032742
t-Statistic (Mean=0)	1.814691	Signif Level	0.069680
Skewness	4.361950	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	67.908727	Signif Level (Ku=0)	0.000000
Jarque-Bera	541234.216505	Signif Level (JB=0)	0.000000
Minimum	-7.588072	Maximum	30.020972
01-%ile	-3.756712	99-%ile	4.016462
05-%ile	-2.208240	95-%ile	2.232821
10-%ile	-1.671482	90-%ile	1.709537
25-%ile	-0.847344	75-%ile	0.906731
Median	0.031328		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.06 1.72 -2.21 0.48 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.000873	Variance	0.003342
Standard Error	0.057807	of Sample Mean	0.001108
t-Statistic (Mean=0)	903.490054	Signif Level	0.000000
Skewness	0.464460	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.436825	Signif Level (Ku=0)	0.000000
Jarque-Bera	332.133235	Signif Level (JB=0)	0.000000
Minimum	0.759603	Maximum	1.234912
01-%ile	0.875904	99-%ile	1.170428
05-%ile	0.913756	95-%ile	1.104803
10-%ile	0.937008	90-%ile	1.078759
25-%ile	0.966494	75-%ile	1.030287
Median	0.993777		

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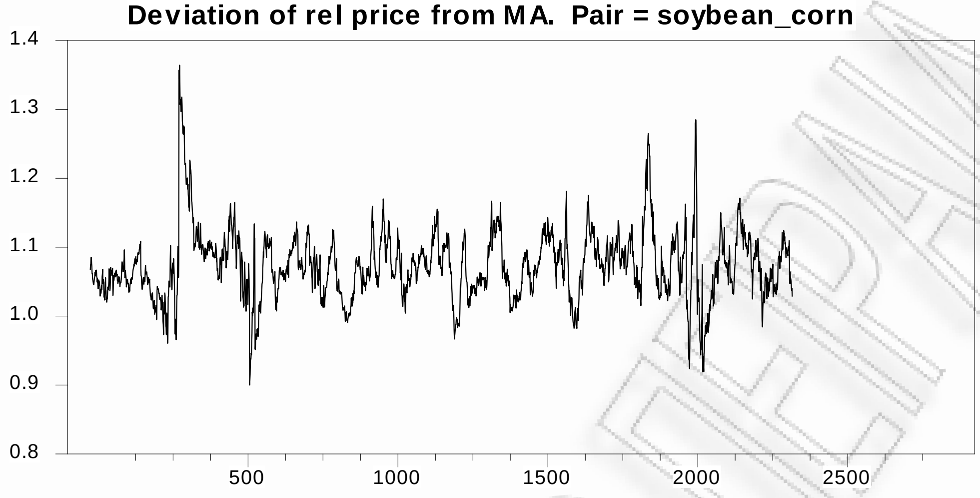
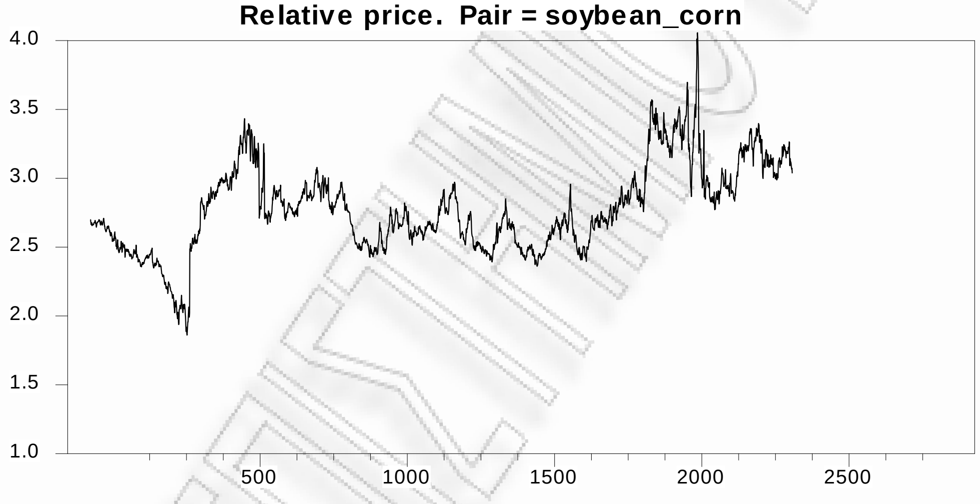
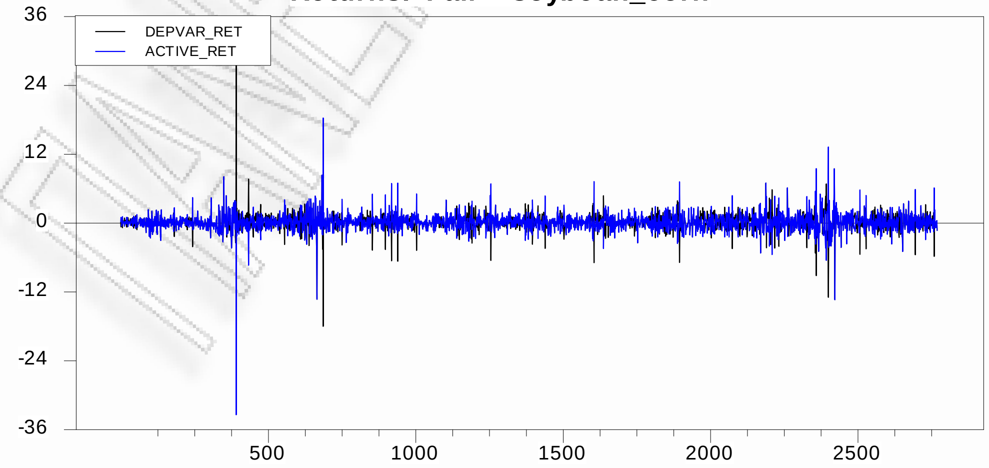
Deviation of rel price from MA. Pair = soybean_corn



Relative price. Pair = soybean_corn



Returns. Pair = soybean_corn



****

******************** Pair = soybean_corn

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018639	Variance	2.666566
Standard Error	1.632962	of Sample Mean	0.031021
t-Statistic (Mean=0)	0.600843	Signif Level	0.547994
Skewness	1.968128	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	76.216099	Signif Level (Ku=0)	0.000000
Jarque-Bera	672474.116889	Signif Level (JB=0)	0.000000

Minimum	-18.156908	Maximum	33.572249
01-%ile	-4.518416	99-%ile	3.746851
05-%ile	-2.138780	95-%ile	2.141820
10-%ile	-1.496651	90-%ile	1.566307
25-%ile	-0.654477	75-%ile	0.760979
Median	0.016422		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.63 -2.14 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.019726	Variance	2.666524
Standard Error	1.632950	of Sample Mean	0.031021
t-Statistic (Mean=0)	0.635893	Signif Level	0.524899
Skewness	-2.413744	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	76.425275	Signif Level (Ku=0)	0.000000

Jarque-Bera	677062.364651	Signif Level (JB=0)	0.000000
Minimum	-33.572249	Maximum	18.156908
01-%ile	-3.451655	99-%ile	4.584303
05-%ile	-2.037503	95-%ile	2.242522
10-%ile	-1.529897	90-%ile	1.526385
25-%ile	-0.713277	75-%ile	0.693040
Median	-0.022070		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.02 1.63 -2.04 0.50 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.002616	Variance	0.003444
Standard Error	0.058686	of Sample Mean	0.001125
t-Statistic (Mean=0)	891.510550	Signif Level	0.000000
Skewness	0.915651	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.909126	Signif Level (Ku=0)	0.000000
Jarque-Bera	2114.288247	Signif Level (JB=0)	0.000000
Minimum	0.800693	Maximum	1.340575
01-%ile	0.871550	99-%ile	1.207280
05-%ile	0.915170	95-%ile	1.090857
10-%ile	0.936883	90-%ile	1.065721
25-%ile	0.968691	75-%ile	1.034551
Median	0.998403		

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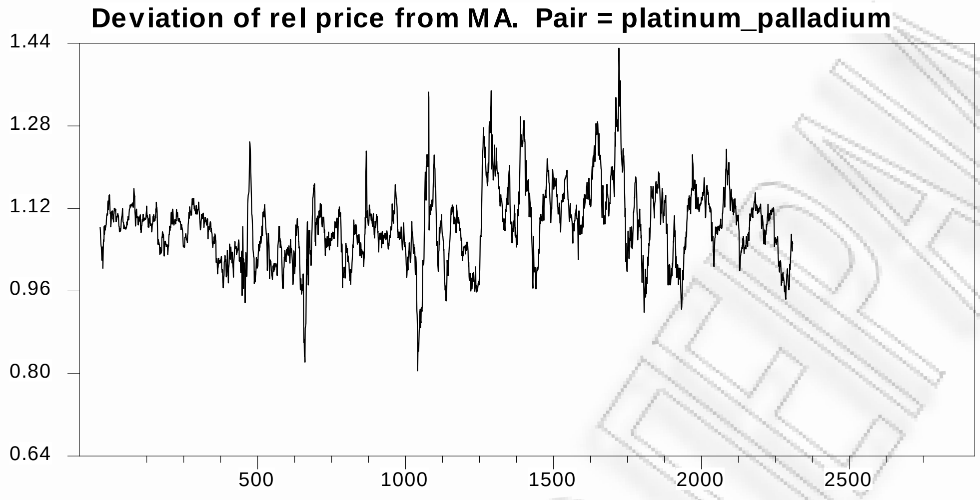
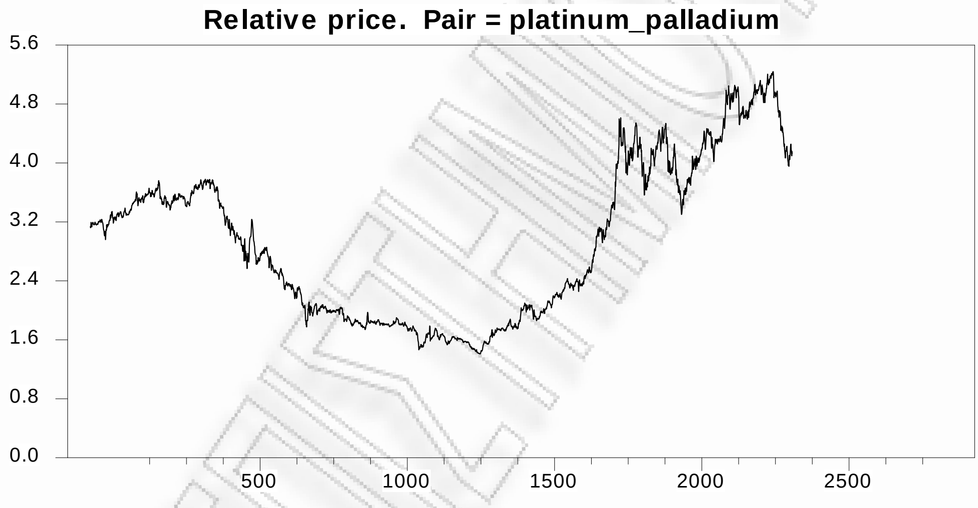
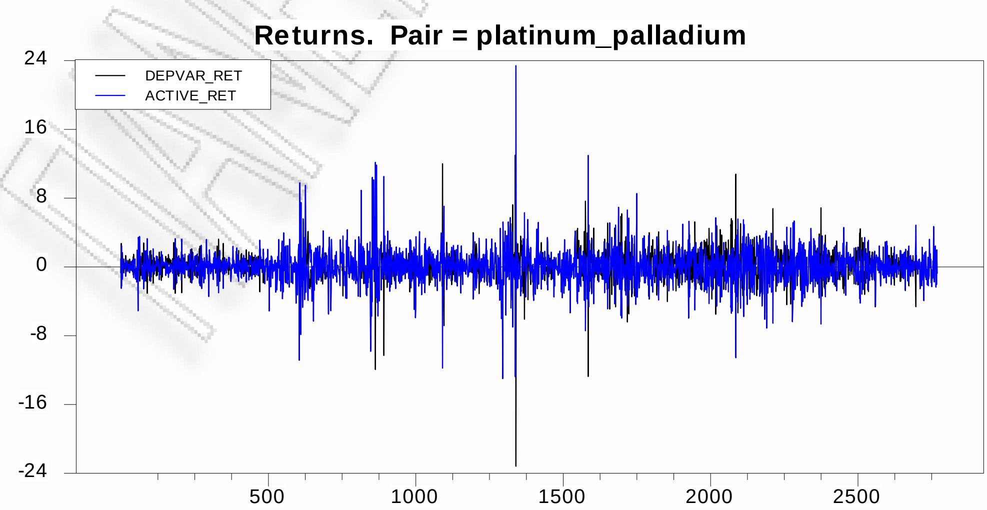

Deviation of rel price from MA. Pair = platinum_palladium
1.44
1.28
1.12
0.96
0.80
0.64
500
1000
1500
2000
2500


Relative price. Pair = platinum_palladium
5.6
4.8
4.0
3.2
2.4
1.6
0.8
0.0
500
1000
1500
2000
2500


Returns. Pair = platinum_palladium
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = platinum_palladium

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.033564	Variance	4.011642
Standard Error	2.002908	of Sample Mean	0.038049
t-Statistic (Mean=0)	0.882115	Signif Level	0.377791
Skewness	-0.535602	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	12.067461	Signif Level (Ku=0)	0.000000
Jarque-Bera	16945.945198	Signif Level (JB=0)	0.000000

Minimum	-23.298456	Maximum	12.896863
01-%ile	-5.453415	99-%ile	5.149221
05-%ile	-2.875062	95-%ile	3.038467
10-%ile	-2.047033	90-%ile	2.165283
25-%ile	-0.927409	75-%ile	0.984723
Median	0.026603		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.00 -2.88 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.065546	Variance	4.008471
Standard Error	2.002117	of Sample Mean	0.038034
t-Statistic (Mean=0)	-1.723353	Signif Level	0.084936
Skewness	0.561326	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	12.124162	Signif Level (Ku=0)	0.000000
Jarque-Bera	17117.351637	Signif Level (JB=0)	0.000000

Minimum	-13.105920	Maximum	23.298456
01-%ile	-5.429899	99-%ile	5.142454
05-%ile	-3.064644	95-%ile	2.876993
10-%ile	-2.158674	90-%ile	2.020969
25-%ile	-1.007472	75-%ile	0.889374
	Median	-0.044988	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

Active_Performance = -0.07 2.00 -3.06 0.51 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.004808	Variance	0.006875
Standard Error	0.082914	of Sample Mean	0.001589
t-Statistic (Mean=0)	632.378769	Signif Level	0.000000
Skewness	0.326883	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.299731	Signif Level (Ku=0)	0.000000
Jarque-Bera	240.158498	Signif Level (JB=0)	0.000000

Minimum	0.677982	Maximum	1.405558
01-%ile	0.813135	99-%ile	1.237760
05-%ile	0.878349	95-%ile	1.148425
10-%ile	0.904342	90-%ile	1.105662
25-%ile	0.953503	75-%ile	1.048823
	Median	1.005631	

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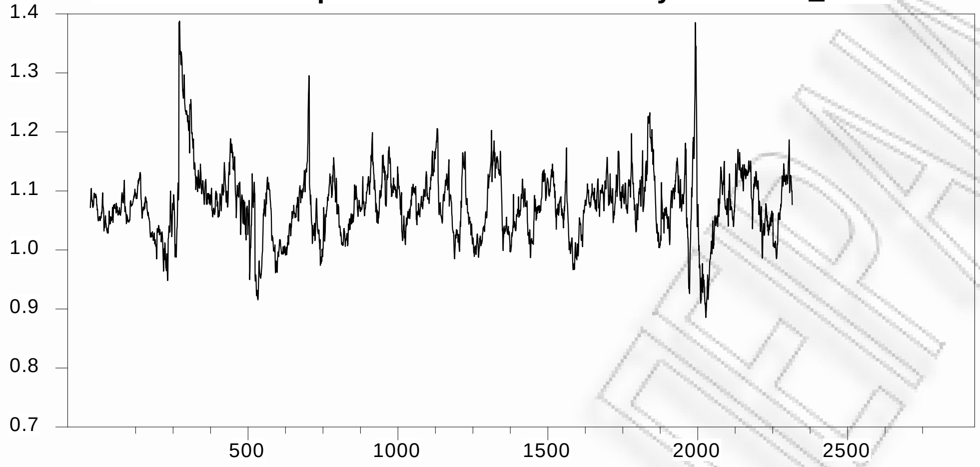
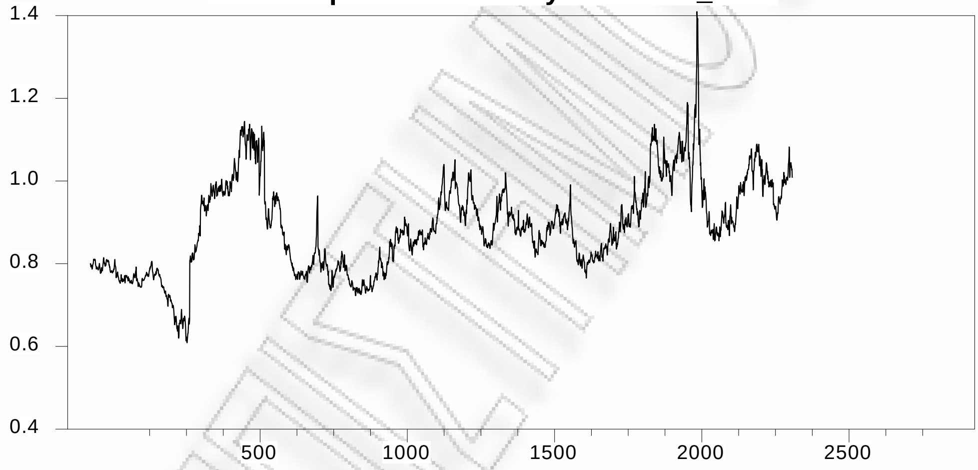
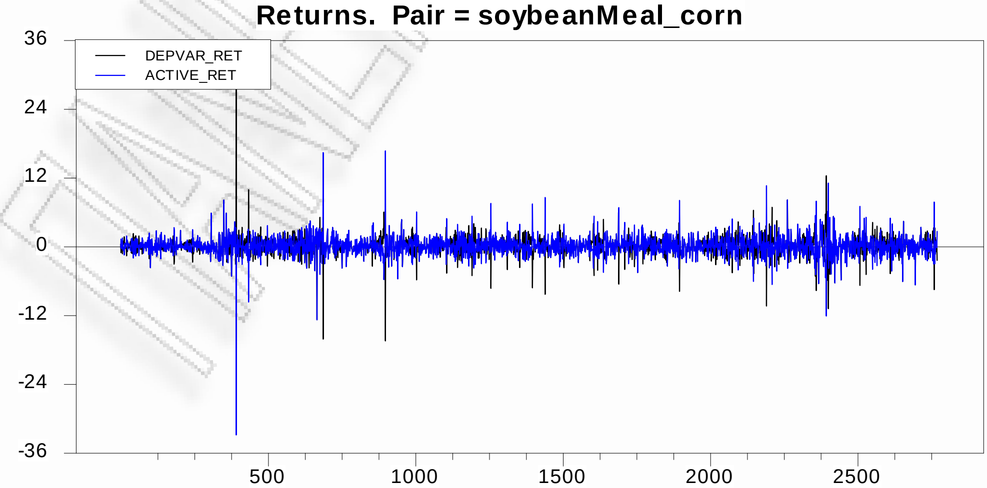
Deviation of rel price from MA. Pair = soybeanMeal_corn



Relative price. Pair = soybeanMeal_corn



Returns. Pair = soybeanMeal_corn



****

******************** Pair = soybeanMeal_corn

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.027405	Variance	3.271722
Standard Error	1.808790	of Sample Mean	0.034361
t-Statistic (Mean=0)	0.797547	Signif Level	0.425202
Skewness	1.327603	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	48.245724	Signif Level (Ku=0)	0.000000
Jarque-Bera	269560.575111	Signif Level (JB=0)	0.000000
Minimum	-16.583341	Maximum	32.997932
01-%ile	-4.941308	99-%ile	4.050668
05-%ile	-2.455365	95-%ile	2.457314
10-%ile	-1.728488	90-%ile	1.860235
25-%ile	-0.824091	75-%ile	0.906750
Median	0.052865		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.81 -2.46 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.008756	Variance	3.272396
Standard Error	1.808977	of Sample Mean	0.034365
t-Statistic (Mean=0)	-0.254792	Signif Level	0.798903
Skewness	-1.546969	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	48.276382	Signif Level (Ku=0)	0.000000
Jarque-Bera	270193.457728	Signif Level (JB=0)	0.000000

Minimum	-32.997932	Maximum	16.583341
01-%ile	-3.940904	99-%ile	4.844995
05-%ile	-2.416291	95-%ile	2.477078
10-%ile	-1.770379	90-%ile	1.819380
25-%ile	-0.892857	75-%ile	0.846193
Median	-0.044612		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.01 1.81 -2.42 0.51 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.004076	Variance	0.004743
Standard Error	0.068872	of Sample Mean	0.001320
t-Statistic (Mean=0)	760.756285	Signif Level	0.000000
Skewness	0.677314	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.995710	Signif Level (Ku=0)	0.000000
Jarque-Bera	1226.404669	Signif Level (JB=0)	0.000000

Minimum	0.780788	Maximum	1.365193
01-%ile	0.835087	99-%ile	1.224123
05-%ile	0.900536	95-%ile	1.108655
10-%ile	0.923468	90-%ile	1.077542
25-%ile	0.963289	75-%ile	1.040141
Median	1.002753		

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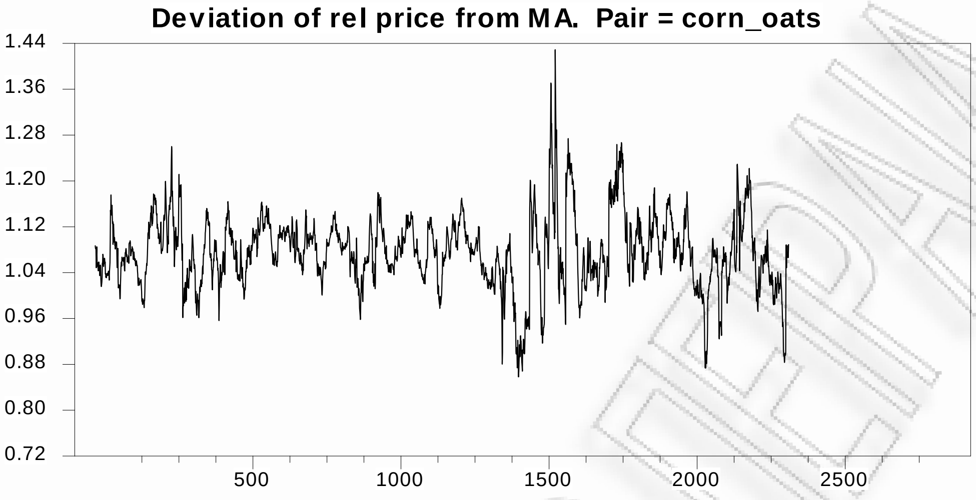
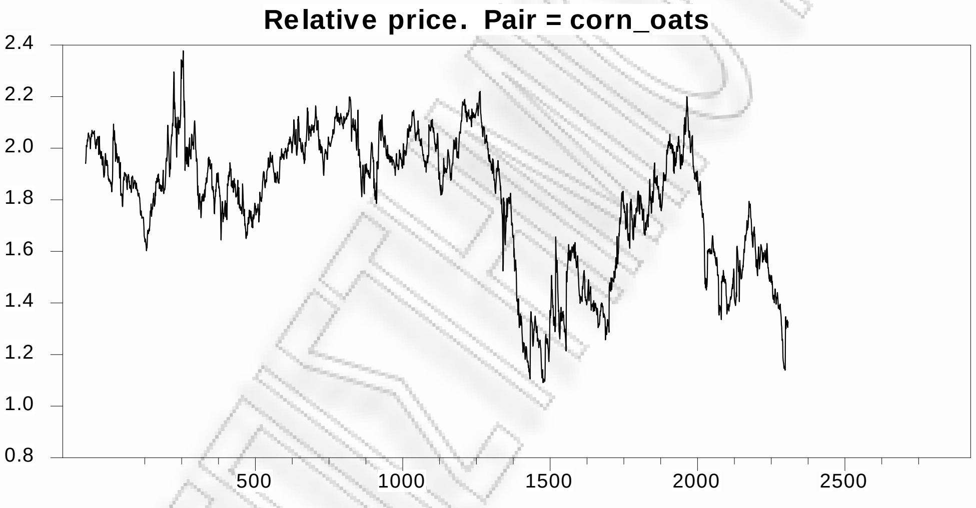
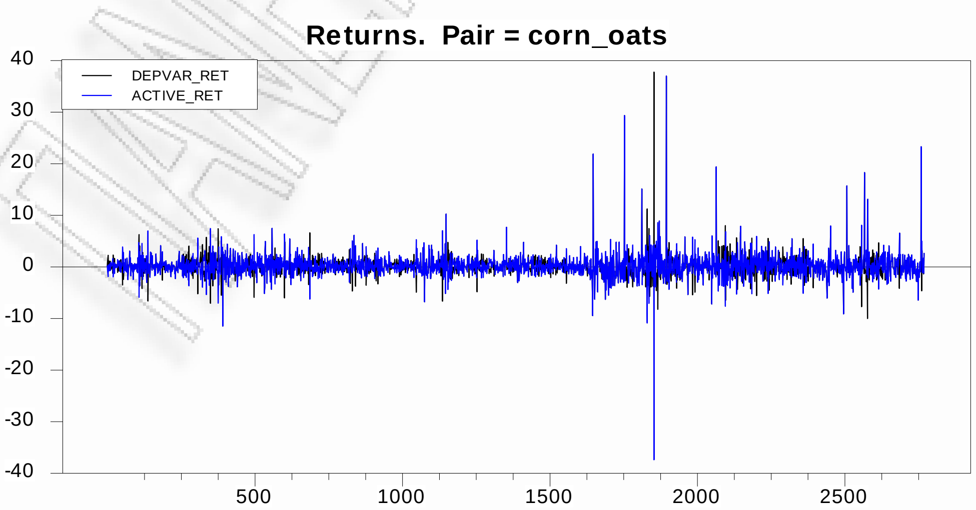

Deviation of rel price from MA. Pair = corn_oats
1.44
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
500
1000
1500
2000
2500


Relative price. Pair = corn_oats
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
500
1000
1500
2000
2500


Returns. Pair = corn_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
-30
-40
500
1000
1500
2000
2500

****

******************** Pair = corn_oats

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.007345	Variance	5.392940
Standard Error	2.322270	of Sample Mean	0.044116
t-Statistic (Mean=0)	0.166487	Signif Level	0.867786
Skewness	4.890516	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	67.317399	Signif Level (Ku=0)	0.000000
Jarque-Bera	534260.441385	Signif Level (JB=0)	0.000000

Minimum	-11.661956	Maximum	37.584567
01-%ile	-5.104269	99-%ile	5.655687
05-%ile	-2.839969	95-%ile	2.742127
10-%ile	-1.999840	90-%ile	1.900938
25-%ile	-0.981165	75-%ile	0.864683
Median	-0.068176		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.01 2.32 -2.84 0.51 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.069305	Variance	5.388189
Standard Error	2.321247	of Sample Mean	0.044096
t-Statistic (Mean=0)	1.571668	Signif Level	0.116142
Skewness	1.868429	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	67.274766	Signif Level (Ku=0)	0.000000
Jarque-Bera	524164.466312	Signif Level (JB=0)	0.000000

Minimum	-37.584567	Maximum	36.816434
01-%ile	-5.013760	99-%ile	5.847661
05-%ile	-2.659467	95-%ile	2.906100
10-%ile	-1.885972	90-%ile	2.015414
25-%ile	-0.935245	75-%ile	0.904545
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.07 2.32 -2.66 0.48 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.995766	Variance	0.005502
Standard Error	0.074173	of Sample Mean	0.001421
t-Statistic (Mean=0)	700.541713	Signif Level	0.000000
Skewness	0.084358	Signif Level (Sk=0)	0.072476
Kurtosis (excess)	1.696549	Signif Level (Ku=0)	0.000000
Jarque-Bera	329.794164	Signif Level (JB=0)	0.000000

Minimum	0.741905	Maximum	1.405877
01-%ile	0.788215	99-%ile	1.193138
05-%ile	0.879913	95-%ile	1.115163
10-%ile	0.911838	90-%ile	1.082754
25-%ile	0.954004	75-%ile	1.037686
Median	0.994522		

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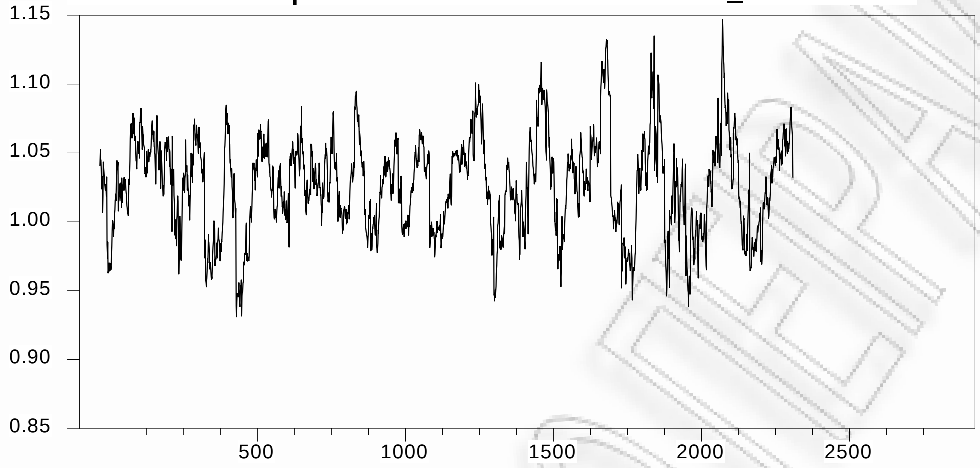
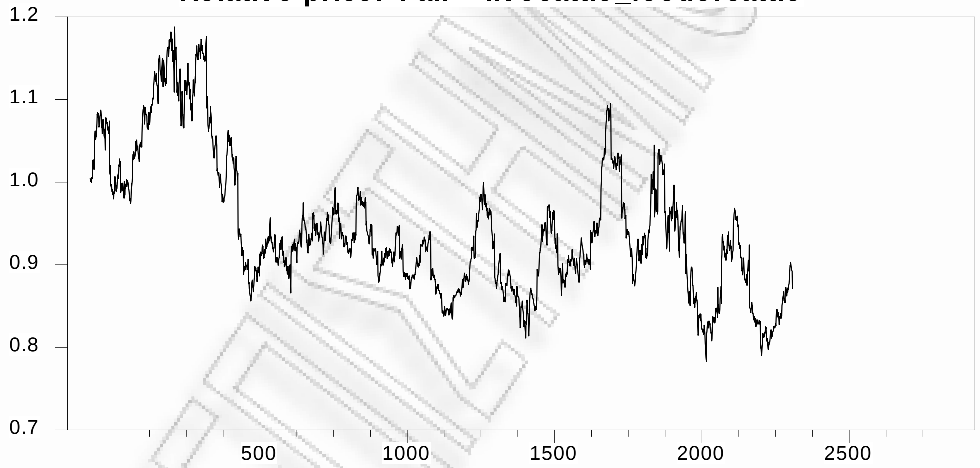
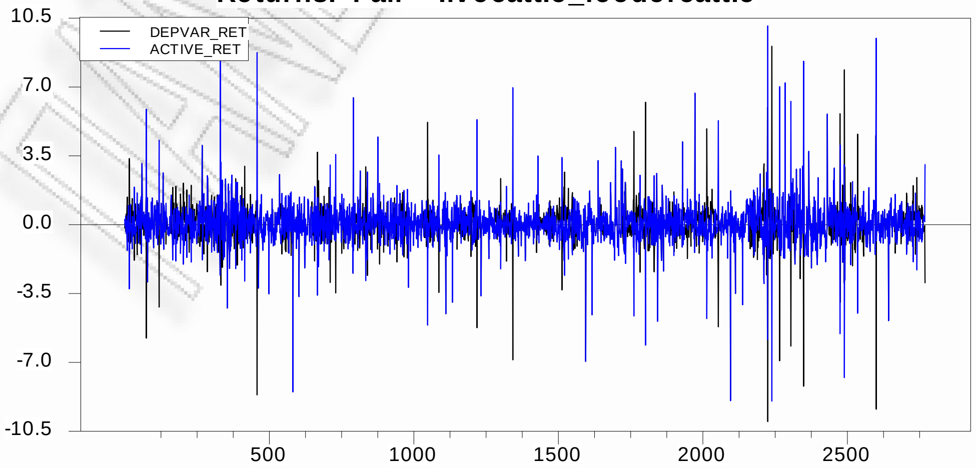
Deviation of rel price from MA. Pair = livecattle_feedercattle



Relative price. Pair = livecattle_feedercattle



Returns. Pair = livecattle_feedercattle



****

******************** Pair = livecattle_feedercattle

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000245	Variance	1.223698
Standard Error	1.106209	of Sample Mean	0.021014
t-Statistic (Mean=0)	-0.011655	Signif Level	0.990702
Skewness	-0.699388	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.182778	Signif Level (Ku=0)	0.000000
Jarque-Bera	42712.139854	Signif Level (JB=0)	0.000000

Minimum	-10.059802	Maximum	9.021523
01-%ile	-3.406924	99-%ile	2.927325
05-%ile	-1.363140	95-%ile	1.311686
10-%ile	-0.933457	90-%ile	0.970670
25-%ile	-0.444826	75-%ile	0.471812
Median	0.003105		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.00 1.11 -1.36 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.014859	Variance	1.223478
Standard Error	1.106109	of Sample Mean	0.021013
t-Statistic (Mean=0)	0.707165	Signif Level	0.479523

Skewness	0.561147	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.160125	Signif Level (Ku=0)	0.000000
Jarque-Bera	42531.380020	Signif Level (JB=0)	0.000000

Minimum	-9.021523	Maximum	10.059802
01-%ile	-2.987727	99-%ile	3.201658
05-%ile	-1.296062	95-%ile	1.362120
10-%ile	-0.939702	90-%ile	0.969901
25-%ile	-0.451749	75-%ile	0.460000
	Median	-0.005610	

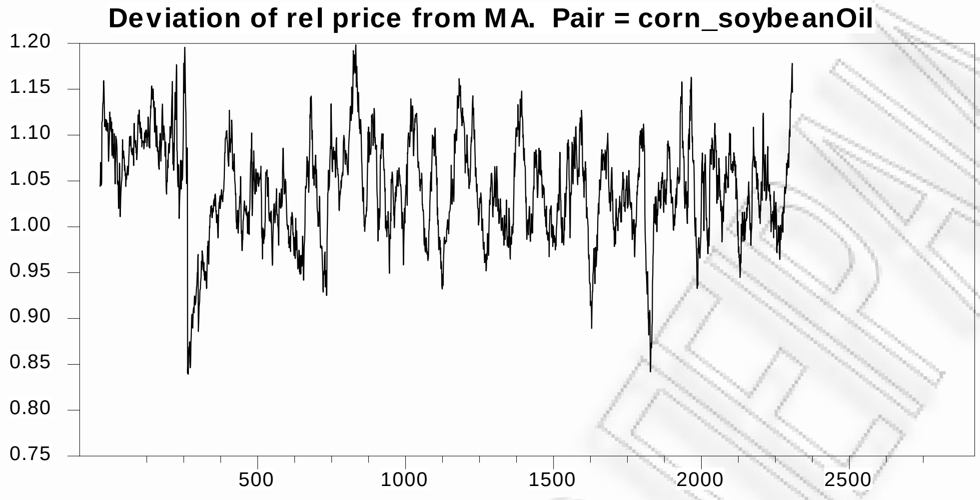
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 1.11 -1.30 0.49 %

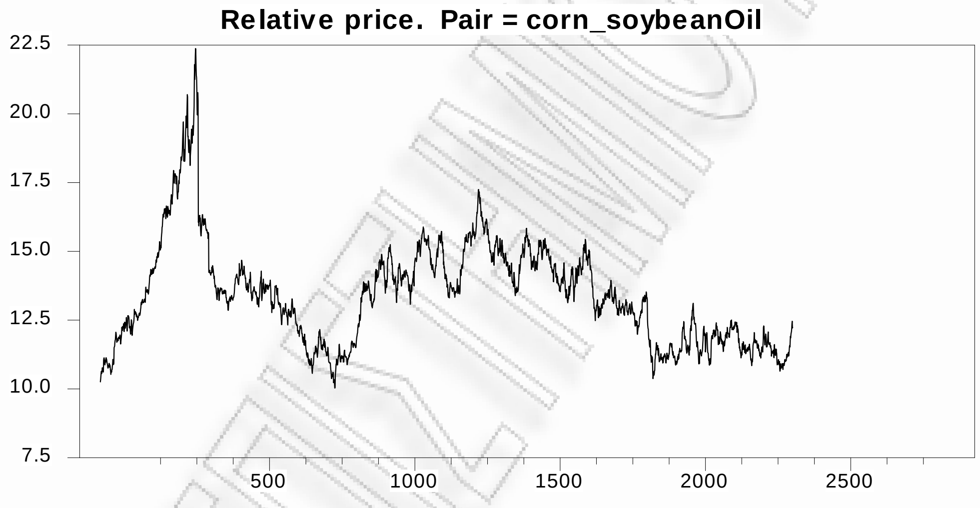
Statistics on Series MA_REL

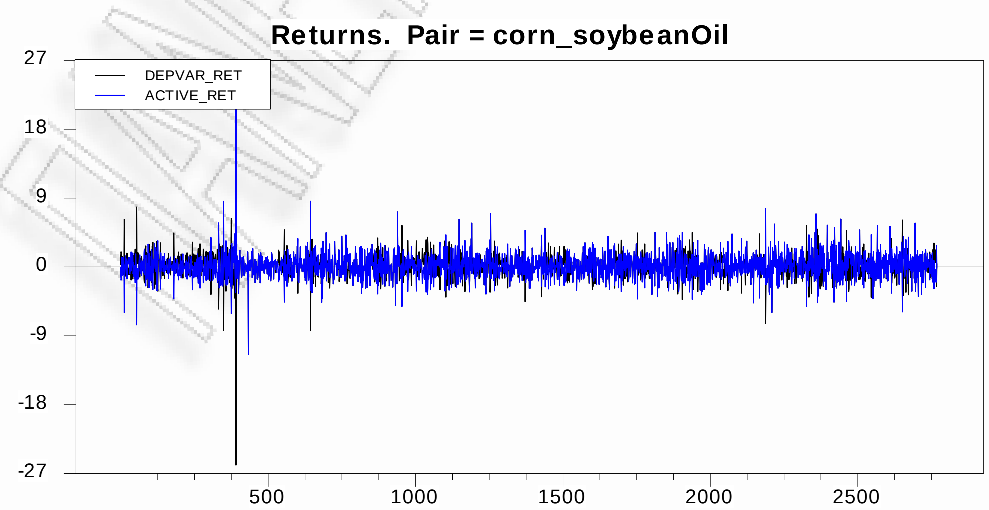
Observations	2723	Skipped/Missing	49
Sample Mean	0.998283	Variance	0.001640
Standard Error	0.040498	of Sample Mean	0.000776
t-Statistic (Mean=0)	1286.303952	Signif Level	0.000000
Skewness	0.005105	Signif Level (Sk=0)	0.913444
Kurtosis (excess)	-0.094676	Signif Level (Ku=0)	0.313859
Jarque-Bera	1.028807	Signif Level (JB=0)	0.597857

Minimum	0.886374	Maximum	1.137412
01-%ile	0.906563	99-%ile	1.096406
05-%ile	0.931144	95-%ile	1.063491
10-%ile	0.943616	90-%ile	1.046622
25-%ile	0.969283	75-%ile	1.025224
	Median	1.000903	

-11


Deviation of rel price from MA. Pair = corn_soybeanOil
1.20
1.15
1.10
1.05
1.00
0.95
0.90
0.85
0.80
0.75
500
1000
1500
2000
2500


Relative price. Pair = corn_soybeanOil
22.5
20.0
17.5
15.0
12.5
10.0
7.5
500
1000
1500
2000
2500


Returns. Pair = corn_soybeanOil
DEPVAR_RET
ACTIVE_RET
27
18
9
0
-9
-18
-27
500
1000
1500
2000
2500

****

******************** Pair = corn_soybeanOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022716	Variance	2.607125
Standard Error	1.614659	of Sample Mean	0.030673
t-Statistic (Mean=0)	0.740579	Signif Level	0.459012
Skewness	-1.541697	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	26.658832	Signif Level (Ku=0)	0.000000
Jarque-Bera	83153.165661	Signif Level (JB=0)	0.000000

Minimum	-26.029427	Maximum	7.705406
01-%ile	-3.723503	99-%ile	4.328790
05-%ile	-2.408582	95-%ile	2.408979
10-%ile	-1.733030	90-%ile	1.805792
25-%ile	-0.894354	75-%ile	0.925156
Median	0.043607		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.61 -2.41 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.002030	Variance	2.607637
Standard Error	1.614818	of Sample Mean	0.030676
t-Statistic (Mean=0)	-0.066165	Signif Level	0.947251
Skewness	1.570984	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	26.569423	Signif Level (Ku=0)	0.000000
Jarque-Bera	82645.794393	Signif Level (JB=0)	0.000000
Minimum	-11.591903	Maximum	26.029427
01-%ile	-3.724681	99-%ile	4.090857
05-%ile	-2.417113	95-%ile	2.396457
10-%ile	-1.771147	90-%ile	1.771237
25-%ile	-0.935120	75-%ile	0.888041
	Median	-0.035067	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.00 1.61 -2.42 0.50 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.001771	Variance	0.004047
Standard Error	0.063616	of Sample Mean	0.001219
t-Statistic (Mean=0)	821.725742	Signif Level	0.000000
Skewness	-0.280164	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.421407	Signif Level (Ku=0)	0.000007
Jarque-Bera	55.770707	Signif Level (JB=0)	0.000000
Minimum	0.767027	Maximum	1.184947
01-%ile	0.828829	99-%ile	1.139849
05-%ile	0.897049	95-%ile	1.100873
10-%ile	0.925150	90-%ile	1.080469
25-%ile	0.960228	75-%ile	1.046960
	Median	1.003075	

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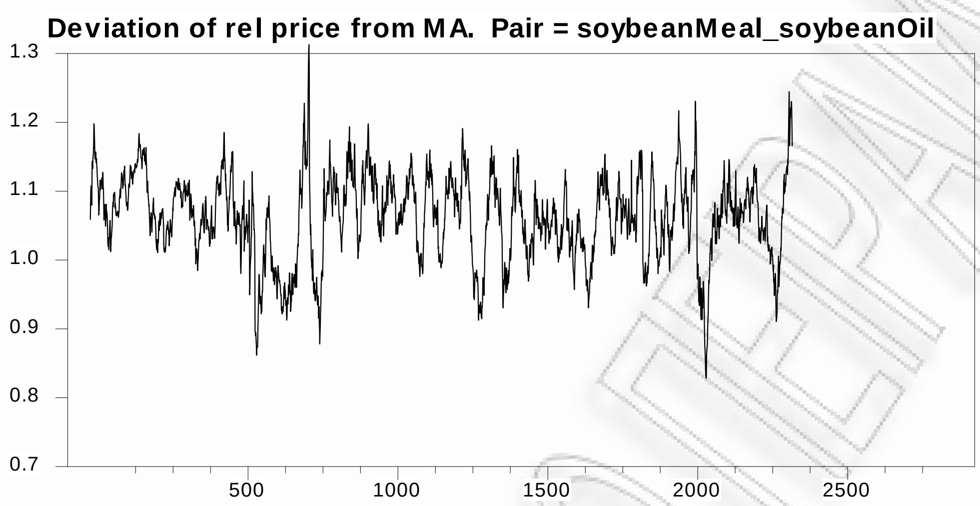
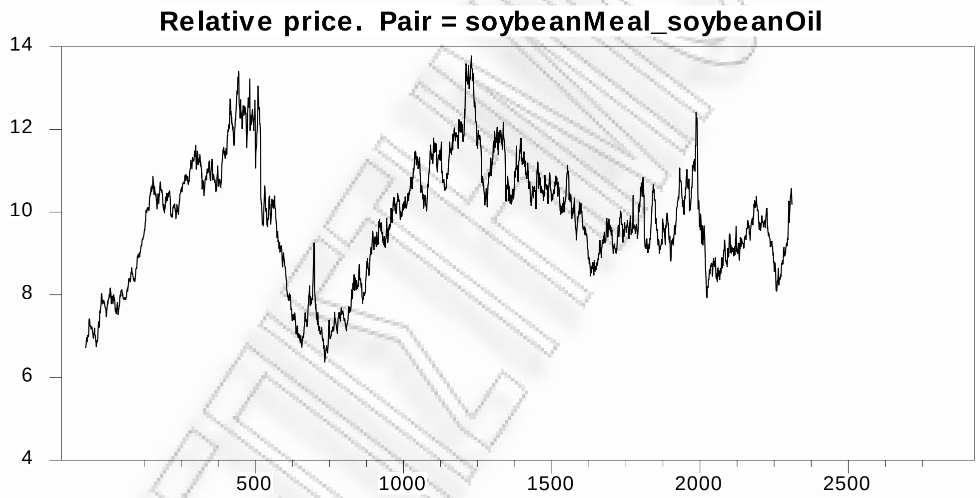
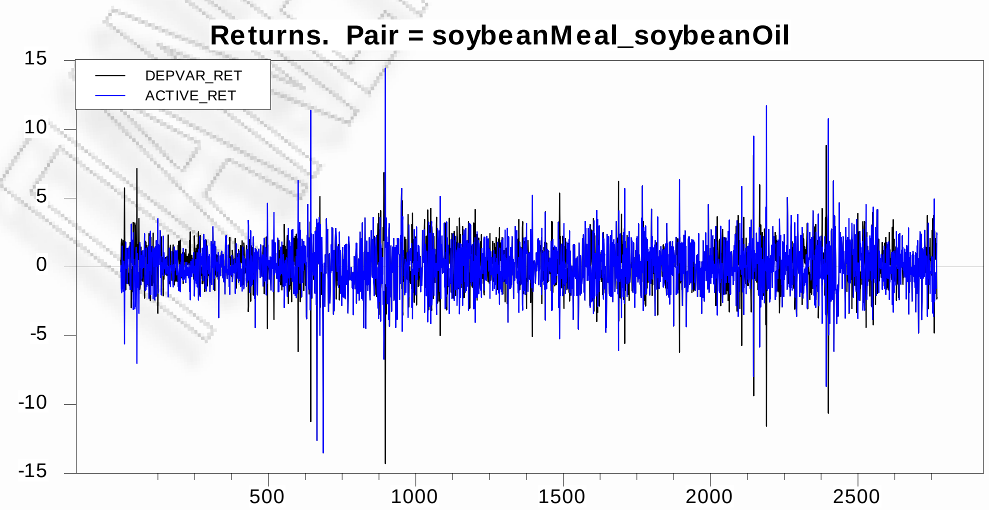

Deviation of rel price from MA. Pair = soybeanMeal_soybeanOil
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = soybeanMeal_soybeanOil
14
12
10
8
6
4
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_soybeanOil
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_soybeanOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.036021	Variance	3.051191
Standard Error	1.746766	of Sample Mean	0.033183
t-Statistic (Mean=0)	1.085531	Signif Level	0.277781
Skewness	-0.785063	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.398734	Signif Level (Ku=0)	0.000000
Jarque-Bera	5011.941007	Signif Level (JB=0)	0.000000
Minimum	-14.377052	Maximum	8.763069
01-%ile	-4.373552	99-%ile	3.957606
05-%ile	-2.568975	95-%ile	2.622996
10-%ile	-1.985613	90-%ile	2.051847
25-%ile	-0.976966	75-%ile	1.107380
Median	0.071895		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.04 1.75 -2.57 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.024463	Variance	3.051890
Standard Error	1.746966	of Sample Mean	0.033187
t-Statistic (Mean=0)	-0.737138	Signif Level	0.461101

Skewness	0.100338	Signif Level (Sk=0)	0.031152
Kurtosis (excess)	6.336609	Signif Level (Ku=0)	0.000000
Jarque-Bera	4640.604131	Signif Level (JB=0)	0.000000
Minimum	-13.588306	Maximum	14.377052
01-%ile	-4.174882	99-%ile	4.017023
05-%ile	-2.650727	95-%ile	2.569327
10-%ile	-2.039117	90-%ile	1.991677
25-%ile	-1.052658	75-%ile	1.054840
	Median	-0.019023	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.02 1.75 -2.65 0.49 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.005175	Variance	0.005245
Standard Error	0.072420	of Sample Mean	0.001388
t-Statistic (Mean=0)	724.281538	Signif Level	0.000000
Skewness	-0.367512	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.429658	Signif Level (Ku=0)	0.000005
Jarque-Bera	82.242254	Signif Level (JB=0)	0.000000
Minimum	0.733350	Maximum	1.297267
01-%ile	0.819906	99-%ile	1.160513
05-%ile	0.874645	95-%ile	1.108921
10-%ile	0.903899	90-%ile	1.091325
25-%ile	0.962734	75-%ile	1.054654
	Median	1.010786	

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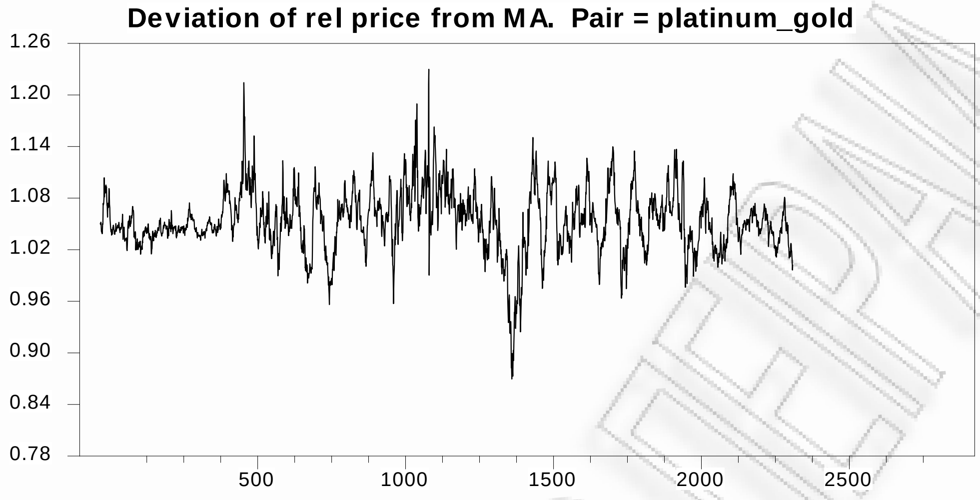
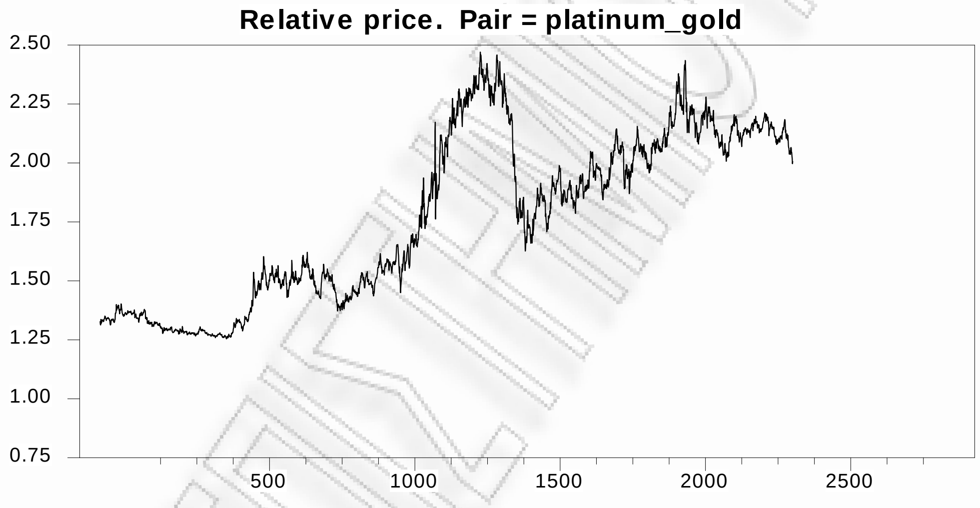
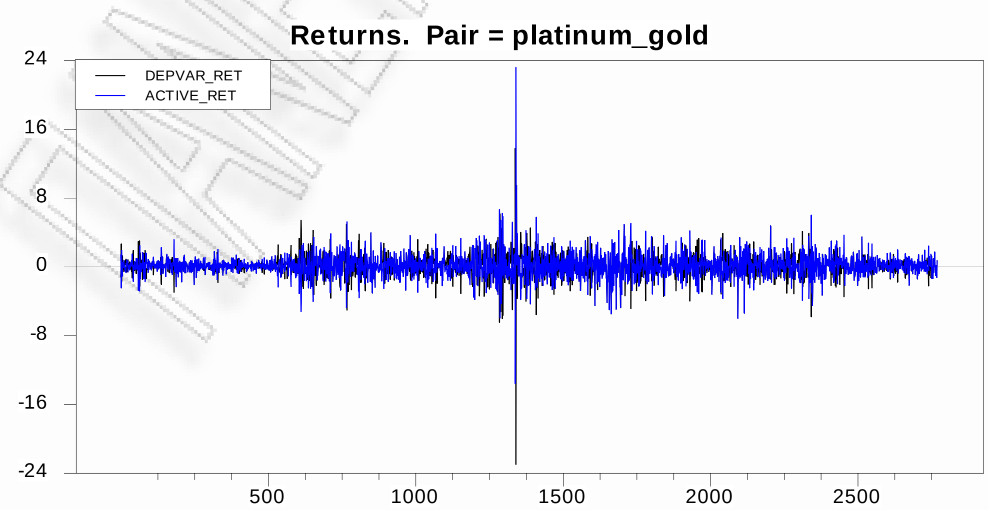

Deviation of rel price from MA. Pair = platinum_gold
1.26
1.20
1.14
1.08
1.02
0.96
0.90
0.84
0.78
500
1000
1500
2000
2500


Relative price. Pair = platinum_gold
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
500
1000
1500
2000
2500


Returns. Pair = platinum_gold
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = platinum_gold

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.029221	Variance	1.866778
Standard Error	1.366301	of Sample Mean	0.025955
t-Statistic (Mean=0)	1.125805	Signif Level	0.260346
Skewness	-1.514723	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	35.323129	Signif Level (Ku=0)	0.000000
Jarque-Bera	145119.694952	Signif Level (JB=0)	0.000000

Minimum	-23.089649	Maximum	13.681595
01-%ile	-3.604782	99-%ile	3.355483
05-%ile	-1.984238	95-%ile	2.061826
10-%ile	-1.404106	90-%ile	1.421705
25-%ile	-0.579246	75-%ile	0.686800
Median	0.031917		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.37 -1.98 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.026158	Variance	1.866948
Standard Error	1.366363	of Sample Mean	0.025957
t-Statistic (Mean=0)	1.007775	Signif Level	0.313651
Skewness	1.506511	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	35.071434	Signif Level (Ku=0)	0.000000
Jarque-Bera	143062.547421	Signif Level (JB=0)	0.000000

Minimum	-13.681595	Maximum	23.089649
01-%ile	-3.382189	99-%ile	3.505002
05-%ile	-1.910883	95-%ile	2.106312
10-%ile	-1.403766	90-%ile	1.414537
25-%ile	-0.630365	75-%ile	0.646549
Median	0.019516		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.37 -1.91 0.47 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.005638	Variance	0.001789
Standard Error	0.042296	of Sample Mean	0.000811
t-Statistic (Mean=0)	1240.706614	Signif Level	0.000000
Skewness	-0.306163	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.488092	Signif Level (Ku=0)	0.000000
Jarque-Bera	744.915958	Signif Level (JB=0)	0.000000

Minimum	0.791680	Maximum	1.210762
01-%ile	0.882555	99-%ile	1.102579
05-%ile	0.939982	95-%ile	1.073152
10-%ile	0.957841	90-%ile	1.058484
25-%ile	0.985053	75-%ile	1.029714
Median	1.003725		

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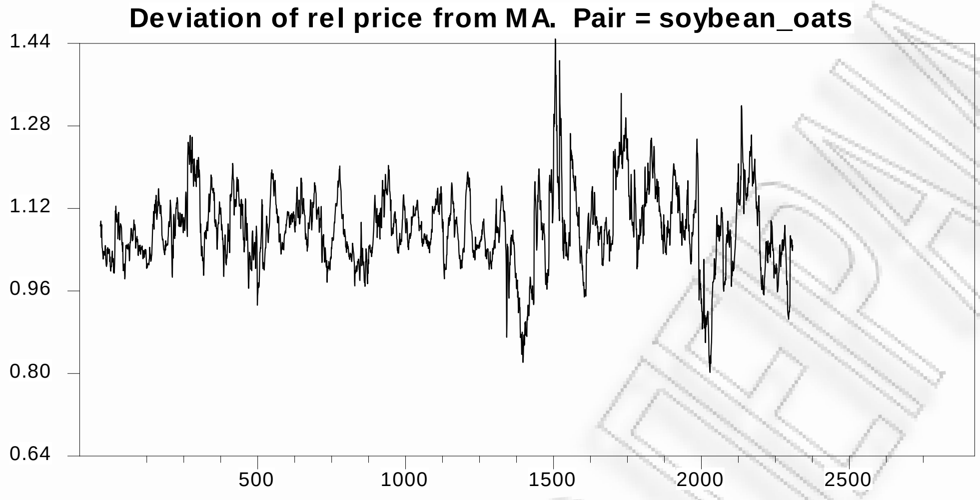
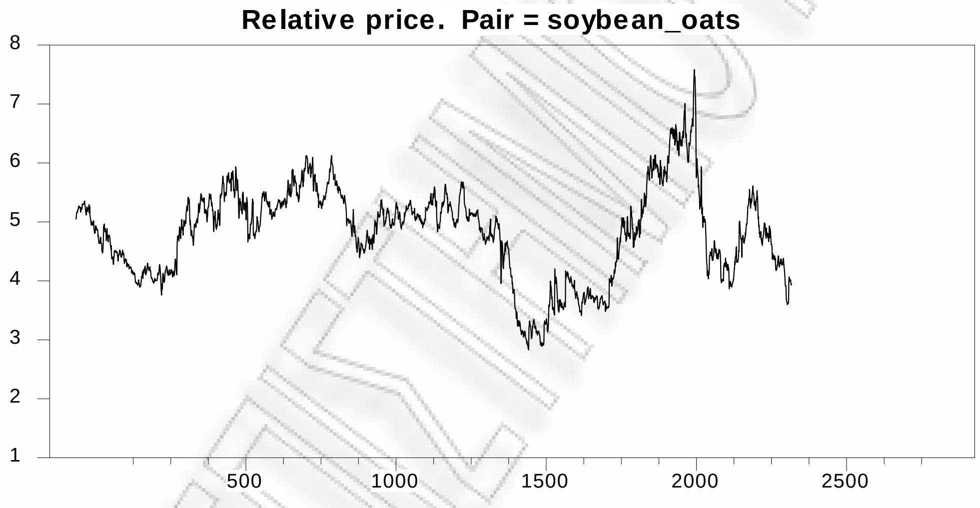
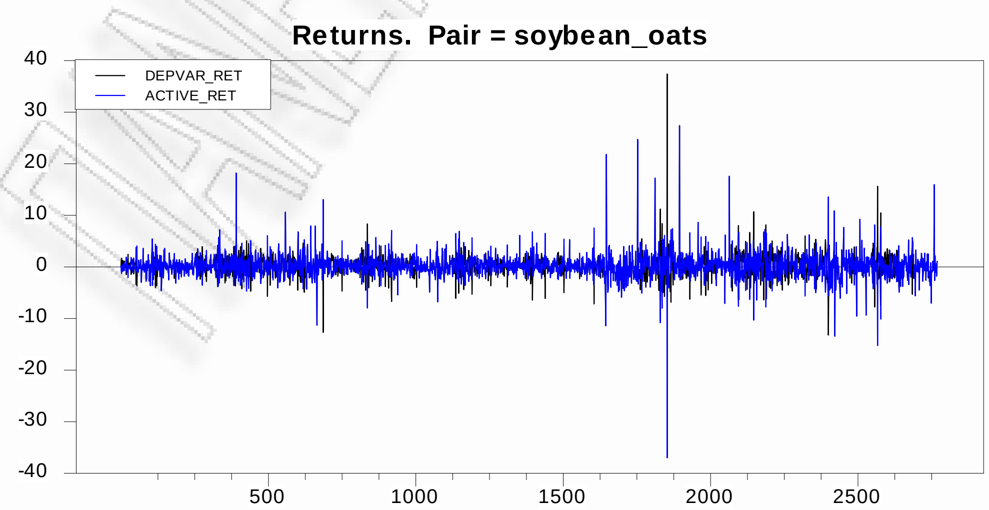

Deviation of rel price from MA. Pair = soybean_oats
1.44
1.28
1.12
0.96
0.80
0.64
500
1000
1500
2000
2500


Relative price. Pair = soybean_oats
8
7
6
5
4
3
2
1
500
1000
1500
2000
2500


Returns. Pair = soybean_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
-30
-40
500
1000
1500
2000
2500

****

******************** Pair = soybean_oats

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.016252	Variance	5.964254
Standard Error	2.442182	of Sample Mean	0.046394
t-Statistic (Mean=0)	0.350311	Signif Level	0.726132
Skewness	2.767555	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	36.111552	Signif Level (Ku=0)	0.000000
Jarque-Bera	154100.116052	Signif Level (JB=0)	0.000000

Minimum	-13.618441	Maximum	37.210784
01-%ile	-5.903439	99-%ile	6.642461
05-%ile	-3.293106	95-%ile	3.106230
10-%ile	-2.314150	90-%ile	2.209474
25-%ile	-1.084896	75-%ile	1.037507
Median	-0.027660		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 2.44 -3.29 0.50 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.053498	Variance	5.961656
Standard Error	2.441650	of Sample Mean	0.046384
t-Statistic (Mean=0)	1.153387	Signif Level	0.248851

Skewness	0.216487	Signif Level (Sk=0)	0.000003
Kurtosis (excess)	36.197882	Signif Level (Ku=0)	0.000000
Jarque-Bera	151305.155444	Signif Level (JB=0)	0.000000
Minimum	-37.210784	Maximum	27.204426
01-%ile	-5.346741	99-%ile	6.541989
05-%ile	-2.980202	95-%ile	3.351140
10-%ile	-2.174865	90-%ile	2.325757
25-%ile	-1.069382	75-%ile	1.057322
Median	-0.009649		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.05 2.44 -2.98 0.49 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.998309	Variance	0.007841
Standard Error	0.088547	of Sample Mean	0.001697
t-Statistic (Mean=0)	588.324085	Signif Level	0.000000
Skewness	0.066282	Signif Level (Sk=0)	0.158172
Kurtosis (excess)	1.328002	Signif Level (Ku=0)	0.000000
Jarque-Bera	202.087864	Signif Level (JB=0)	0.000000
Minimum	0.674213	Maximum	1.426471
01-%ile	0.756447	99-%ile	1.218586
05-%ile	0.861550	95-%ile	1.145264
10-%ile	0.903329	90-%ile	1.110333
25-%ile	0.948401	75-%ile	1.049483
Median	0.993847		

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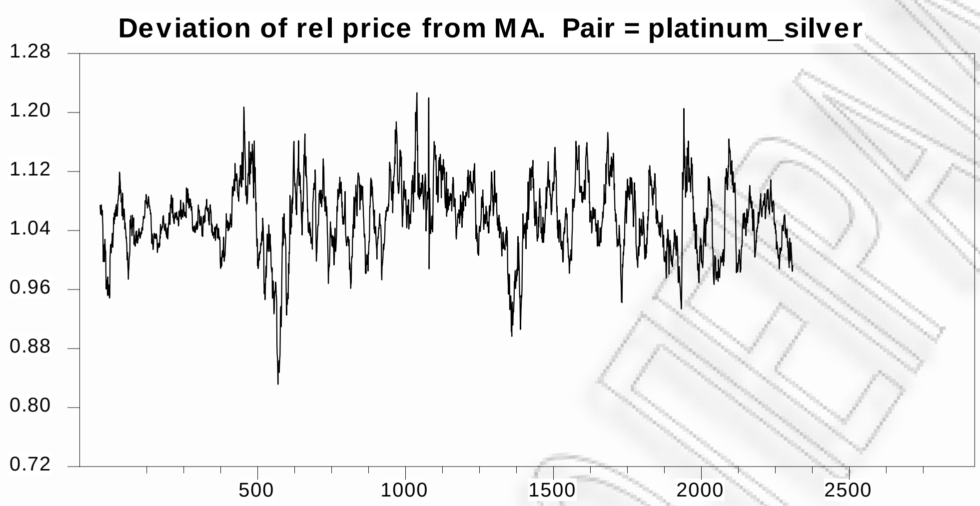
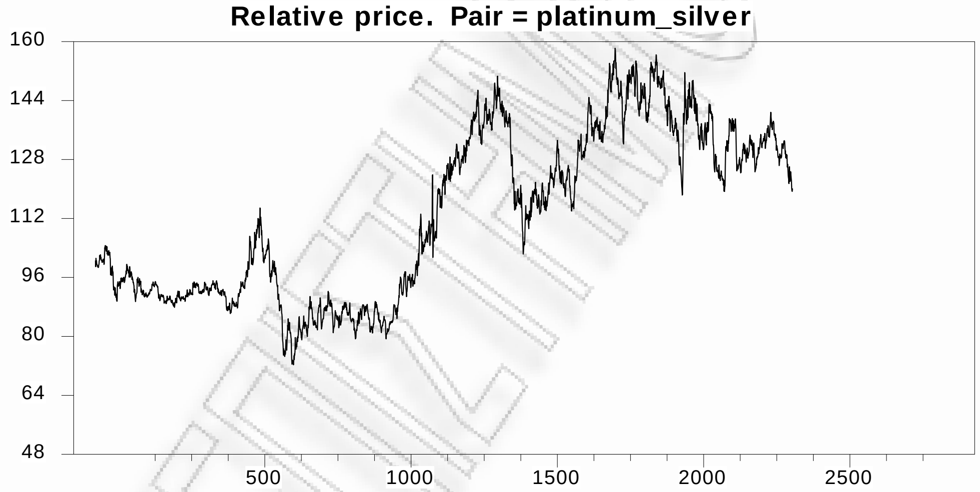
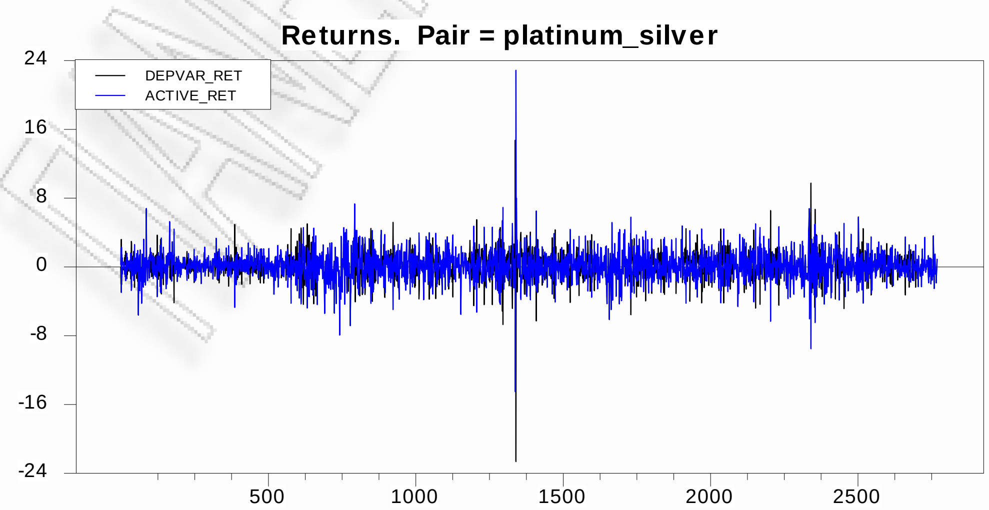

Deviation of rel price from MA. Pair = platinum_silver
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
500
1000
1500
2000
2500


Relative price. Pair = platinum_silver
160
144
128
112
96
80
64
48
500
1000
1500
2000
2500


Returns. Pair = platinum_silver
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

********************* Pair = platinum_silver

********************* SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022861	Variance	2.880563
Standard Error	1.697222	of Sample Mean	0.032242
t-Statistic (Mean=0)	0.709052	Signif Level	0.478352
Skewness	-0.607325	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	15.038889	Signif Level (Ku=0)	0.000000
Jarque-Bera	26283.346343	Signif Level (JB=0)	0.000000

Minimum	-22.761392	Maximum	14.637253
01-%ile	-4.405745	99-%ile	4.262631
05-%ile	-2.595632	95-%ile	2.679068
10-%ile	-1.844801	90-%ile	1.922779
25-%ile	-0.871783	75-%ile	0.924093
Median	0.006132		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.70 -2.60 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.013503	Variance	2.880904
Standard Error	1.697323	of Sample Mean	0.032244
t-Statistic (Mean=0)	0.418784	Signif Level	0.675406
Skewness	0.590223	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	14.983765	Signif Level (Ku=0)	0.000000
Jarque-Bera	26082.806142	Signif Level (JB=0)	0.000000

Minimum	-14.637253	Maximum	22.761392
01-%ile	-4.344839	99-%ile	4.302771
05-%ile	-2.617065	95-%ile	2.659992
10-%ile	-1.849910	90-%ile	1.912361
25-%ile	-0.901039	75-%ile	0.897587
Median	0.003145		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 1.70 -2.62 0.48 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.003115	Variance	0.003238
Standard Error	0.056905	of Sample Mean	0.001090
t-Statistic (Mean=0)	919.869685	Signif Level	0.000000
Skewness	-0.342505	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.064027	Signif Level (Ku=0)	0.000000
Jarque-Bera	181.691100	Signif Level (JB=0)	0.000000

Minimum	0.741840	Maximum	1.201574
01-%ile	0.858417	99-%ile	1.125839
05-%ile	0.907410	95-%ile	1.089923
10-%ile	0.933814	90-%ile	1.073104
25-%ile	0.968823	75-%ile	1.041685
Median	1.004591		

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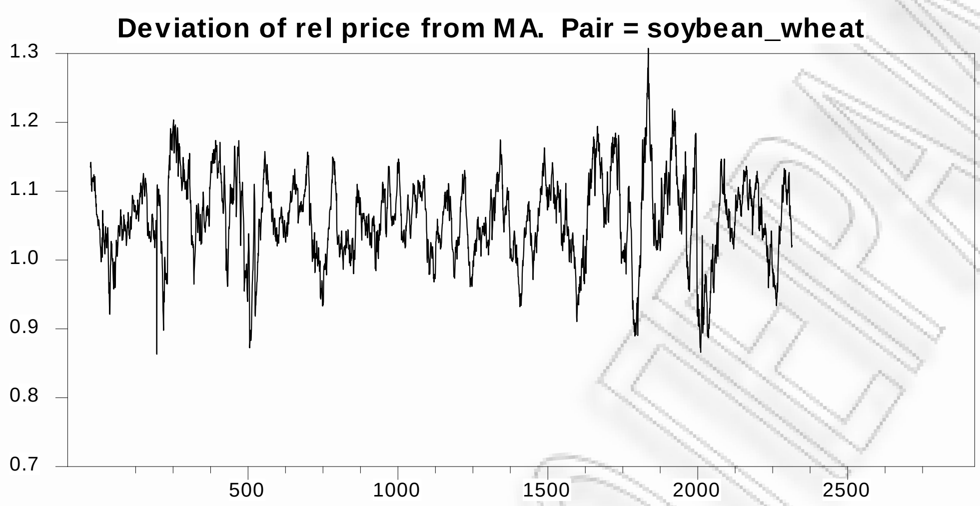
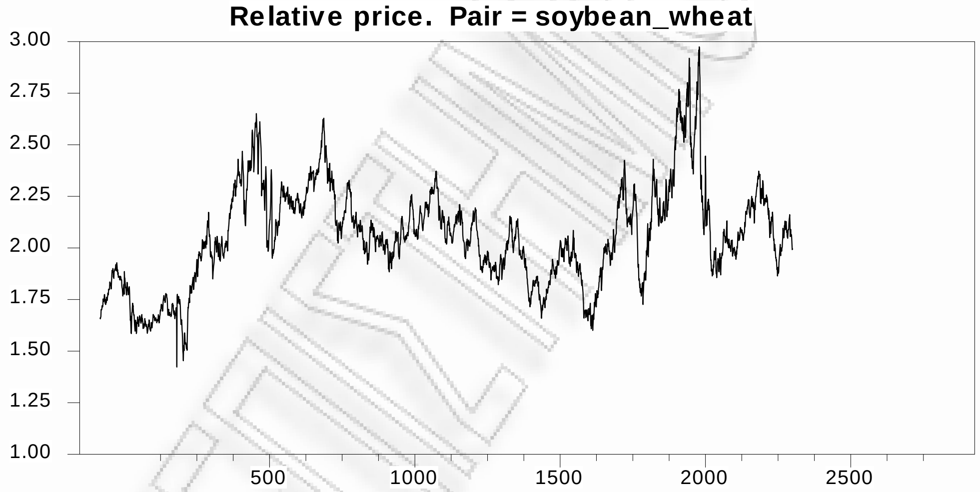
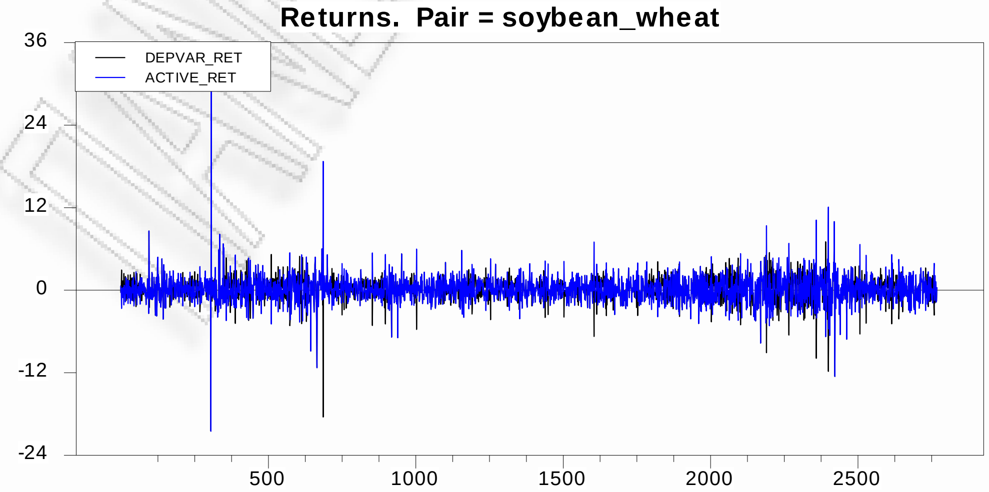

Deviation of rel price from MA. Pair = soybean_wheat
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = soybean_wheat
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
500
1000
1500
2000
2500


Returns. Pair = soybean_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
500
1000
1500
2000
2500

****

******************** Pair = soybean_wheat

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.028673	Variance	3.966073
Standard Error	1.991500	of Sample Mean	0.037832
t-Statistic (Mean=0)	0.757906	Signif Level	0.448572
Skewness	0.962669	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	45.991872	Signif Level (Ku=0)	0.000000
Jarque-Bera	244651.496642	Signif Level (JB=0)	0.000000

Minimum	-20.641139	Maximum	35.710739
01-%ile	-4.993450	99-%ile	4.316930
05-%ile	-2.784960	95-%ile	2.681696
10-%ile	-2.030549	90-%ile	2.107653
25-%ile	-0.987005	75-%ile	1.119243
Median	0.067765		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.03 1.99 -2.78 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.005843	Variance	3.966861
Standard Error	1.991698	of Sample Mean	0.037836
t-Statistic (Mean=0)	0.154440	Signif Level	0.877274

Skewness	2.014359	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	46.005421	Signif Level (Ku=0)	0.000000
Jarque-Bera	246241.374361	Signif Level (JB=0)	0.000000

Minimum	-20.641139	Maximum	35.710739
01-%ile	-4.314156	99-%ile	4.799012
05-%ile	-2.765818	95-%ile	2.700442
10-%ile	-2.063300	90-%ile	2.060606
25-%ile	-1.062238	75-%ile	1.057395
	Median	-0.010752	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 1.99 -2.77 0.49 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.002878	Variance	0.005028
Standard Error	0.070905	of Sample Mean	0.001359
t-Statistic (Mean=0)	738.061859	Signif Level	0.000000
Skewness	-0.159006	Signif Level (Sk=0)	0.000711
Kurtosis (excess)	0.295688	Signif Level (Ku=0)	0.001658
Jarque-Bera	21.394038	Signif Level (JB=0)	0.000023

Minimum	0.774205	Maximum	1.291089
01-%ile	0.816520	99-%ile	1.156536
05-%ile	0.880841	95-%ile	1.116350
10-%ile	0.912043	90-%ile	1.091194
25-%ile	0.958940	75-%ile	1.049825
	Median	1.004059	

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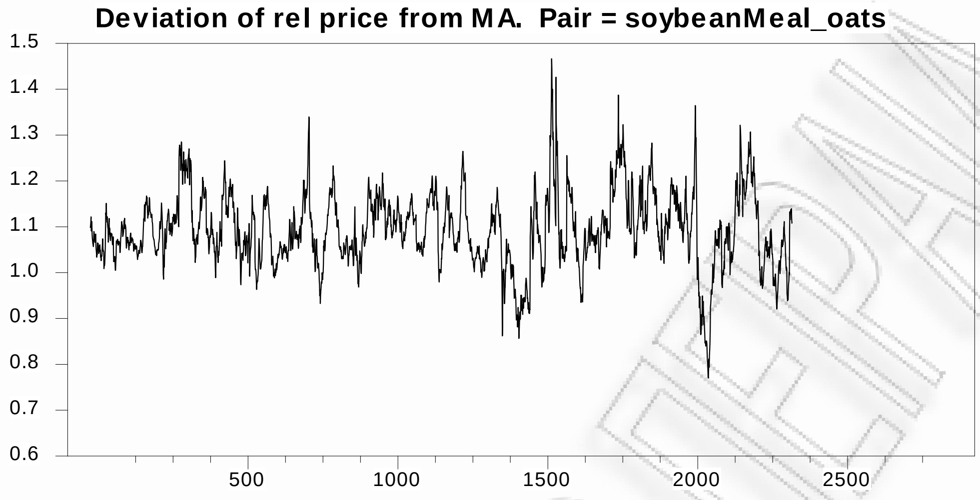
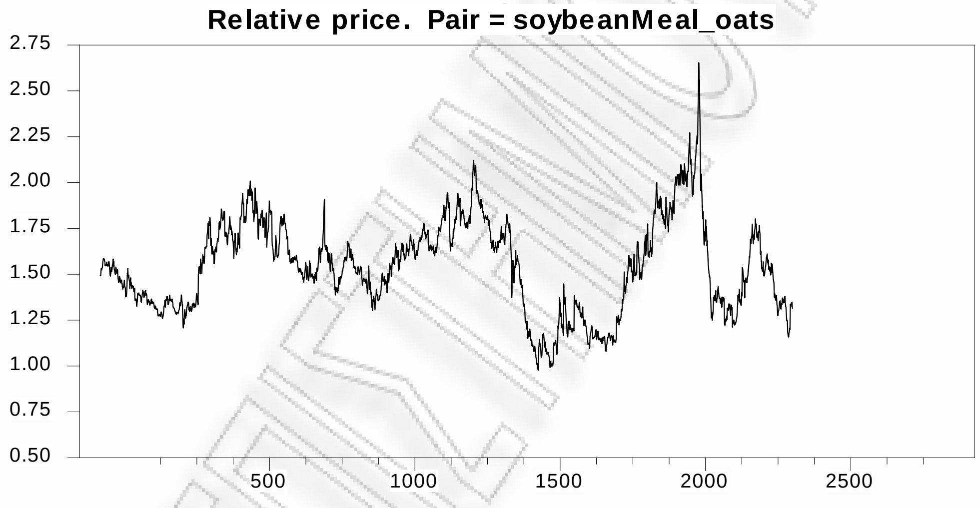
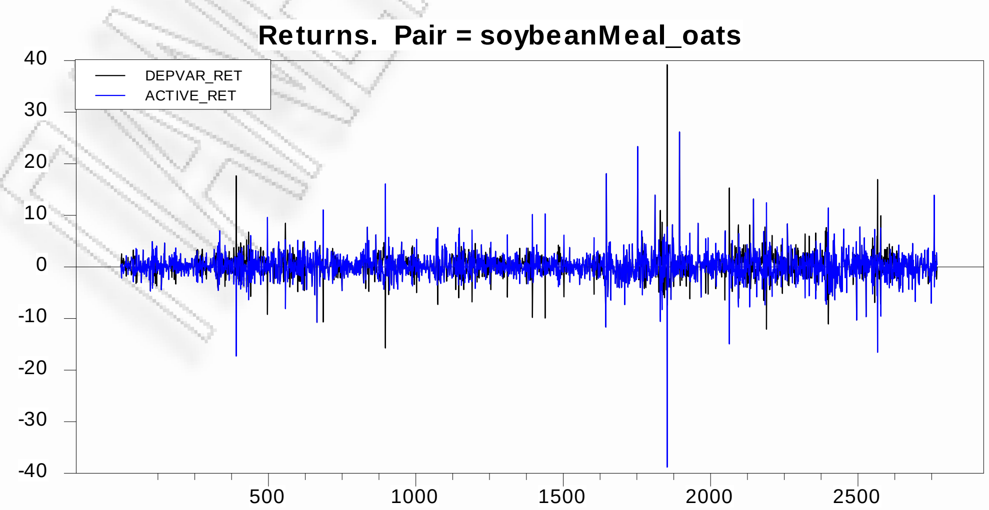

Deviation of rel price from MA. Pair = soybeanMeal_oats
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
1000
1500
2000
2500


Relative price. Pair = soybeanMeal_oats
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
-30
-40
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_oats

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.024126	Variance	6.367407
Standard Error	2.523372	of Sample Mean	0.047936
t-Statistic (Mean=0)	0.503303	Signif Level	0.614791
Skewness	2.251131	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	31.992886	Signif Level (Ku=0)	0.000000
Jarque-Bera	120517.156797	Signif Level (JB=0)	0.000000

Minimum	-15.914524	Maximum	39.009537
01-%ile	-6.214759	99-%ile	6.812070
05-%ile	-3.479263	95-%ile	3.280542
10-%ile	-2.455063	90-%ile	2.408699
25-%ile	-1.209037	75-%ile	1.229352
Median	-0.003729		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.52 -3.48 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.002656	Variance	6.367982
Standard Error	2.523486	of Sample Mean	0.047938
t-Statistic (Mean=0)	0.055408	Signif Level	0.955818

Skewness	-0.568870	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	32.075708	Signif Level (Ku=0)	0.000000
Jarque-Bera	118938.884079	Signif Level (JB=0)	0.000000

Minimum	-39.009537	Maximum	25.961823
01-%ile	-6.267145	99-%ile	6.739626
05-%ile	-3.407500	95-%ile	3.413910
10-%ile	-2.435511	90-%ile	2.429535
25-%ile	-1.233502	75-%ile	1.199055
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.00 2.52 -3.41 0.49 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.999754	Variance	0.009101
Standard Error	0.095398	of Sample Mean	0.001828
t-Statistic (Mean=0)	546.862189	Signif Level	0.000000
Skewness	0.061803	Signif Level (Sk=0)	0.188209
Kurtosis (excess)	1.196406	Signif Level (Ku=0)	0.000000
Jarque-Bera	164.136263	Signif Level (JB=0)	0.000000

Minimum	0.624555	Maximum	1.434297
01-%ile	0.747161	99-%ile	1.238540
05-%ile	0.845859	95-%ile	1.162523
10-%ile	0.892880	90-%ile	1.118027
25-%ile	0.945559	75-%ile	1.057607
Median	0.992295		

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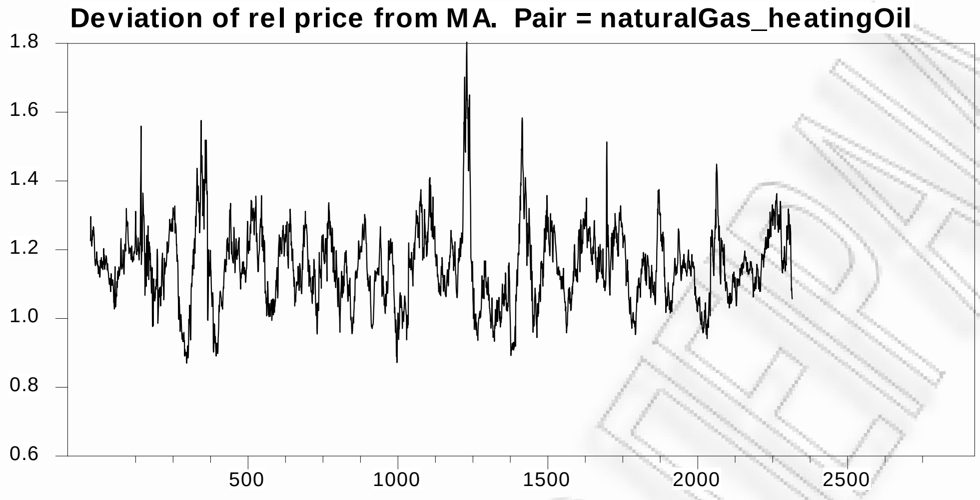
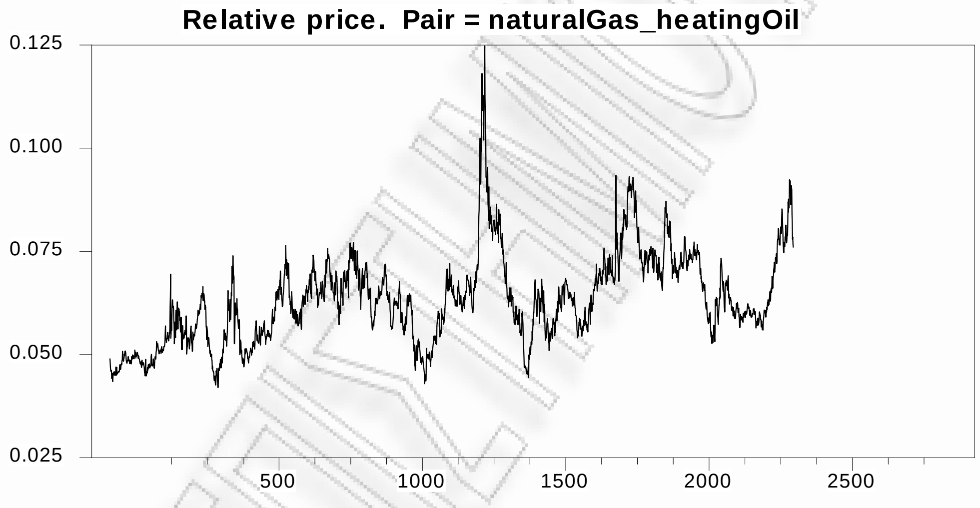
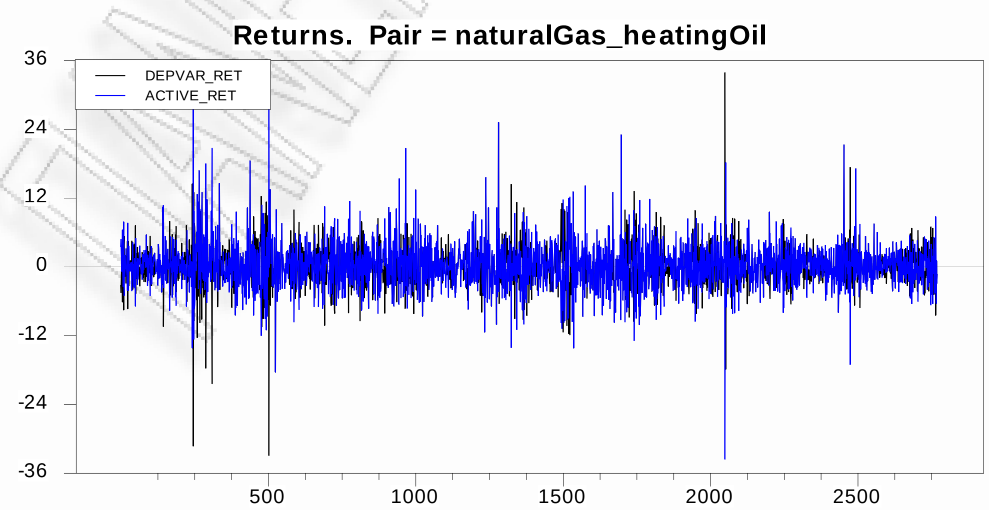

Deviation of rel price from MA. Pair = naturalGas_heatingOil
1.8
1.6
1.4
1.2
1.0
0.8
0.6
500
1000
1500
2000
2500


Relative price. Pair = naturalGas_heatingOil
0.125
0.100
0.075
0.050
0.025
500
1000
1500
2000
2500


Returns. Pair = naturalGas_heatingOil
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = naturalGas_heatingOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.101100	Variance	15.483541
Standard Error	3.934913	of Sample Mean	0.074751
t-Statistic (Mean=0)	1.352489	Signif Level	0.176329
Skewness	0.274805	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	8.000125	Signif Level (Ku=0)	0.000000
Jarque-Bera	7424.440841	Signif Level (JB=0)	0.000000

Minimum	-33.060497	Maximum	33.706014
01-%ile	-9.182690	99-%ile	11.200996
05-%ile	-5.472645	95-%ile	6.195050
10-%ile	-4.120209	90-%ile	4.473757
25-%ile	-2.137703	75-%ile	2.063937
Median		0.000000	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.10 3.93 -5.47 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.119893	Variance	15.479387
Standard Error	3.934385	of Sample Mean	0.074741
t-Statistic (Mean=0)	1.604114	Signif Level	0.108803
Skewness	0.617440	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.957348	Signif Level (Ku=0)	0.000000
Jarque-Bera	7486.816534	Signif Level (JB=0)	0.000000

Minimum	-33.706014	Maximum	33.060497
01-%ile	-9.233355	99-%ile	11.318147
05-%ile	-5.562215	95-%ile	5.913934
10-%ile	-4.326320	90-%ile	4.308869
25-%ile	-2.083437	75-%ile	2.135594
Median	0.083887		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.12 3.93 -5.56 0.47 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.011981	Variance	0.017779
Standard Error	0.133340	of Sample Mean	0.002555
t-Statistic (Mean=0)	396.037714	Signif Level	0.000000
Skewness	0.648540	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.973734	Signif Level (Ku=0)	0.000000
Jarque-Bera	632.875660	Signif Level (JB=0)	0.000000

Minimum	0.682818	Maximum	1.768989
01-%ile	0.728396	99-%ile	1.426142
05-%ile	0.808083	95-%ile	1.215542
10-%ile	0.846492	90-%ile	1.166443
25-%ile	0.923416	75-%ile	1.091933
Median	1.008289		

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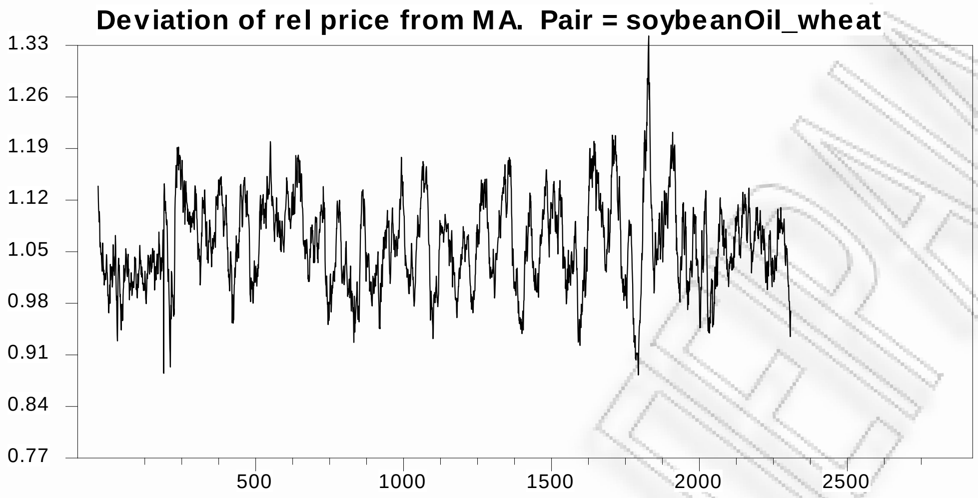
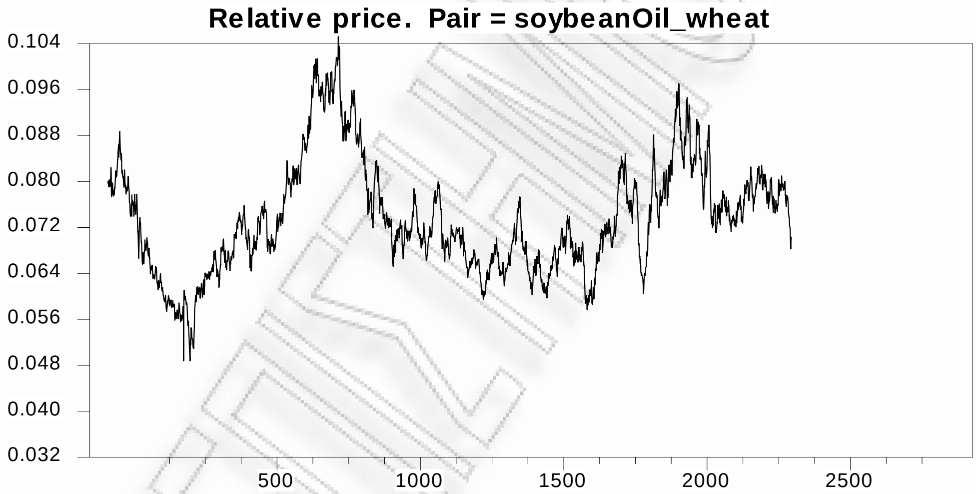
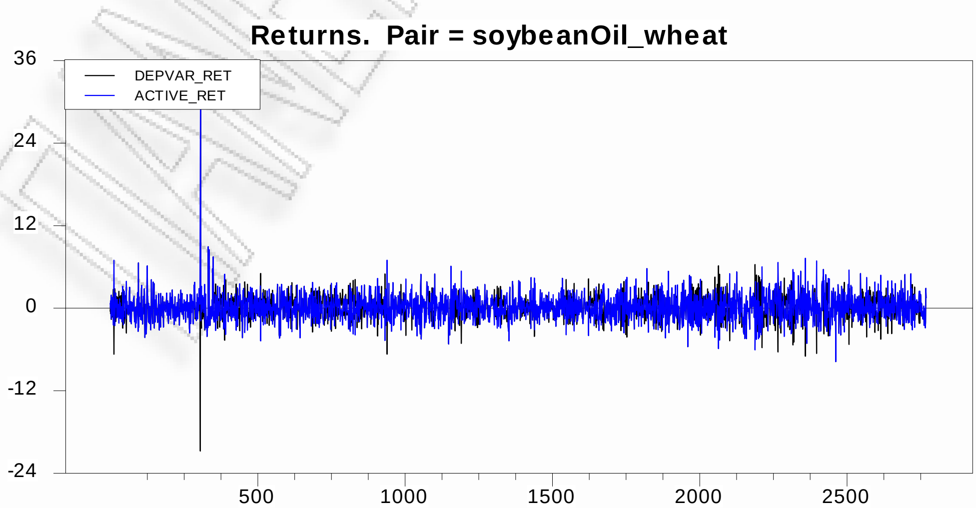

Deviation of rel price from MA. Pair = soybeanOil_wheat
1.33
1.26
1.19
1.12
1.05
0.98
0.91
0.84
0.77
500
1000
1500
2000
2500


Relative price. Pair = soybeanOil_wheat
0.104
0.096
0.088
0.080
0.072
0.064
0.056
0.048
0.040
0.032
500
1000
1500
2000
2500


Returns. Pair = soybeanOil_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
500
1000
1500
2000
2500

****

******************** Pair = soybeanOil_wheat

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.012711	Variance	3.790040
Standard Error	1.946803	of Sample Mean	0.036983
t-Statistic (Mean=0)	0.343705	Signif Level	0.731095
Skewness	1.712860	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	43.379645	Signif Level (Ku=0)	0.000000
Jarque-Bera	218623.719817	Signif Level (JB=0)	0.000000

Minimum	-20.912624	Maximum	35.226140
01-%ile	-4.337912	99-%ile	4.503759
05-%ile	-2.908811	95-%ile	2.899991
10-%ile	-2.192702	90-%ile	2.240235
25-%ile	-1.144355	75-%ile	1.123596
Median	0.018198		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.01 1.95 -2.91 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.028409	Variance	3.789394
Standard Error	1.946637	of Sample Mean	0.036980
t-Statistic (Mean=0)	0.768232	Signif Level	0.442415
Skewness	2.742559	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	43.278914	Signif Level (Ku=0)	0.000000
Jarque-Bera	219734.634479	Signif Level (JB=0)	0.000000

Minimum	-7.920405	Maximum	35.226140
01-%ile	-4.068252	99-%ile	4.814490
05-%ile	-2.835393	95-%ile	2.944346
10-%ile	-2.211356	90-%ile	2.243417
25-%ile	-1.145792	75-%ile	1.102800
	Median	-0.007297	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 1.95 -2.84 0.49 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.000009	Variance	0.004779
Standard Error	0.069129	of Sample Mean	0.001325
t-Statistic (Mean=0)	754.859646	Signif Level	0.000000
Skewness	0.234929	Signif Level (Sk=0)	0.000001
Kurtosis (excess)	0.290490	Signif Level (Ku=0)	0.002000
Jarque-Bera	34.621887	Signif Level (JB=0)	0.000000

Minimum	0.793169	Maximum	1.328471
01-%ile	0.850651	99-%ile	1.158337
05-%ile	0.891225	95-%ile	1.114578
10-%ile	0.914989	90-%ile	1.089237
25-%ile	0.950678	75-%ile	1.047720
	Median	0.997112	

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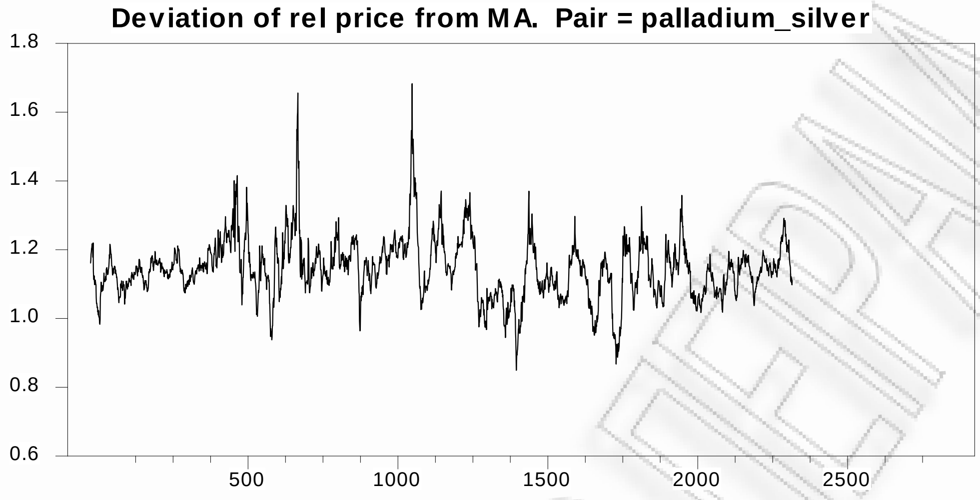
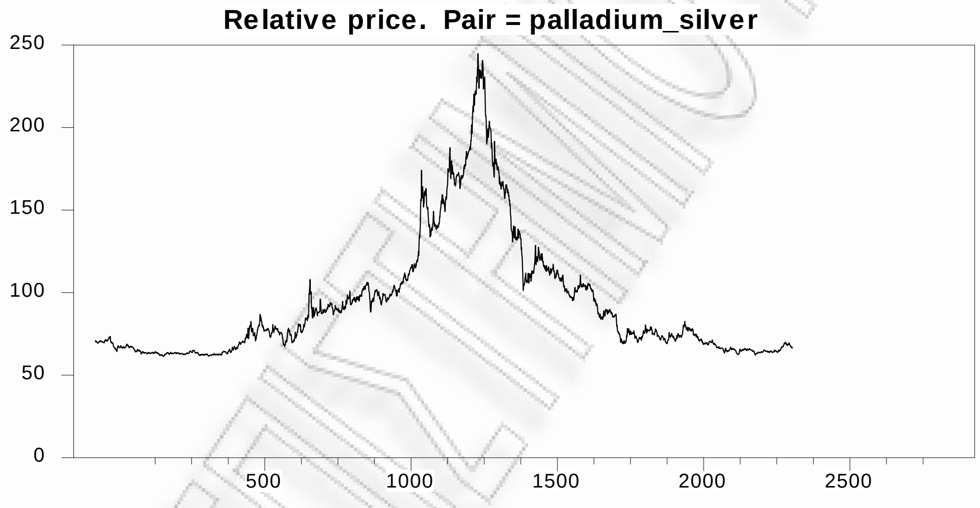
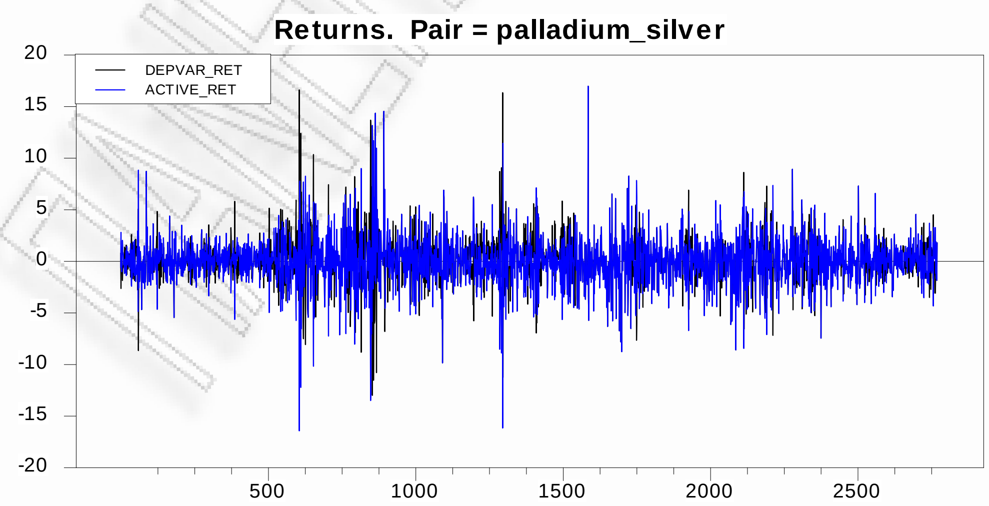

Deviation of rel price from MA. Pair = palladium_silver
1.8
1.6
1.4
1.2
1.0
0.8
0.6
500
1000
1500
2000
2500


Relative price. Pair = palladium_silver
250
200
150
100
50
0
500
1000
1500
2000
2500


Returns. Pair = palladium_silver
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = palladium_silver

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022754	Variance	5.581679
Standard Error	2.362558	of Sample Mean	0.044881
t-Statistic (Mean=0)	0.506984	Signif Level	0.612207
Skewness	0.497065	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.120386	Signif Level (Ku=0)	0.000000
Jarque-Bera	4439.074638	Signif Level (JB=0)	0.000000

Minimum	-13.081972	Maximum	16.880296
01-%ile	-6.143306	99-%ile	6.456501
05-%ile	-3.590127	95-%ile	3.614580
10-%ile	-2.445802	90-%ile	2.544375
25-%ile	-1.141549	75-%ile	1.165808
Median	-0.023274		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 2.36 -3.59 0.50 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.061427	Variance	5.578423
Standard Error	2.361868	of Sample Mean	0.044868
t-Statistic (Mean=0)	-1.369058	Signif Level	0.171092
Skewness	-0.006897	Signif Level (Sk=0)	0.882233

Kurtosis (excess)	6.146013	Signif Level (Ku=0)	0.000000
Jarque-Bera	4361.284478	Signif Level (JB=0)	0.000000

Minimum	-16.526643	Maximum	16.880296
01-%ile	-6.273394	99-%ile	6.376878
05-%ile	-3.811622	95-%ile	3.351085
10-%ile	-2.608301	90-%ile	2.433024
25-%ile	-1.192199	75-%ile	1.118062
	Median	-0.022133	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.06 2.36 -3.81 0.50 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.001515	Variance	0.009940
Standard Error	0.099700	of Sample Mean	0.001911
t-Statistic (Mean=0)	524.186108	Signif Level	0.000000
Skewness	0.605283	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.054134	Signif Level (Ku=0)	0.000000
Jarque-Bera	1224.579206	Signif Level (JB=0)	0.000000

Minimum	0.658740	Maximum	1.628276
01-%ile	0.768575	99-%ile	1.288606
05-%ile	0.846493	95-%ile	1.161498
10-%ile	0.888221	90-%ile	1.111857
25-%ile	0.942553	75-%ile	1.054735
	Median	0.999510	

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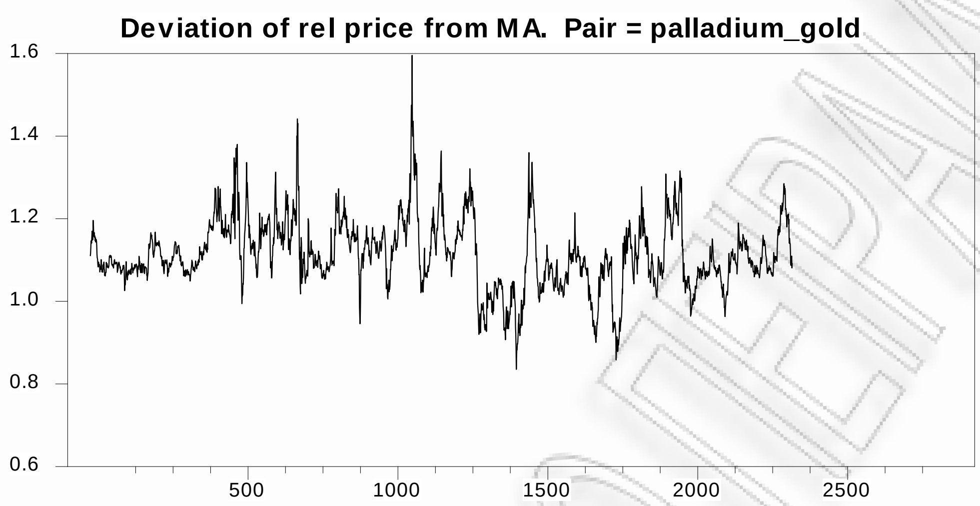
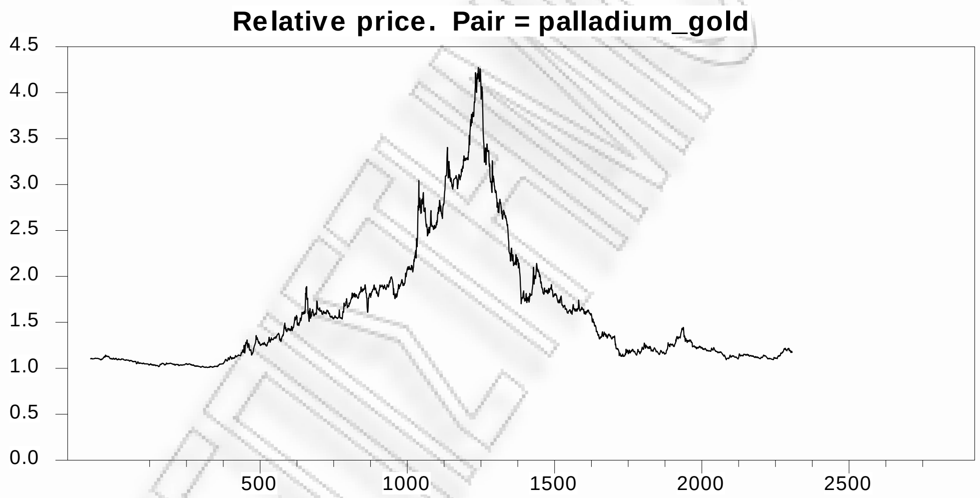
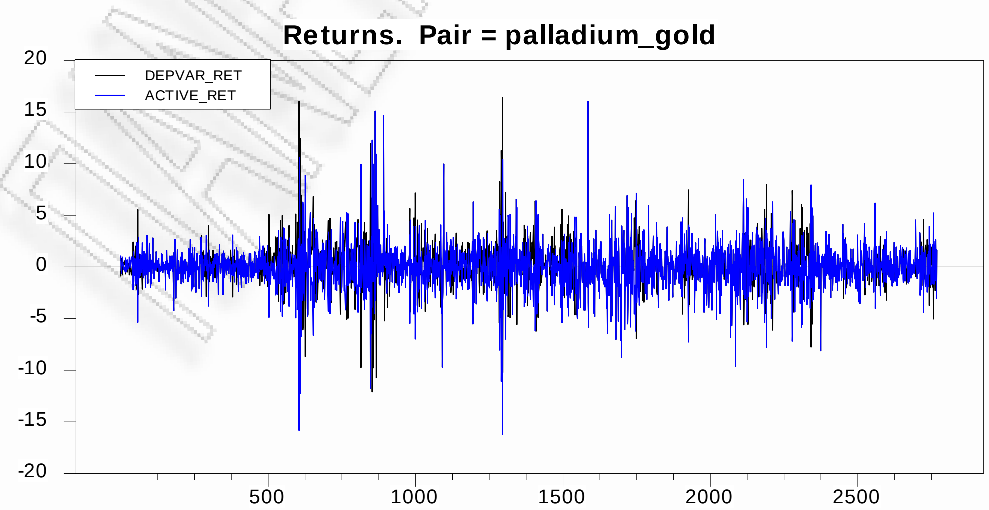

Deviation of rel price from MA. Pair = palladium_gold
1.6
1.4
1.2
1.0
0.8
0.6
500
1000
1500
2000
2500


Relative price. Pair = palladium_gold
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
500
1000
1500
2000
2500


Returns. Pair = palladium_gold
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

********************* Pair = palladium_gold

********************* SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030282	Variance	4.805463
Standard Error	2.192137	of Sample Mean	0.041644
t-Statistic (Mean=0)	0.727176	Signif Level	0.467180
Skewness	0.567981	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.728753	Signif Level (Ku=0)	0.000000
Jarque-Bera	7045.732800	Signif Level (JB=0)	0.000000

Minimum	-12.194106	Maximum	16.325261
01-%ile	-5.734283	99-%ile	6.200432
05-%ile	-3.221750	95-%ile	3.260593
10-%ile	-2.172185	90-%ile	2.310960
25-%ile	-1.006343	75-%ile	1.081906
Median	-0.001154		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.19 -3.22 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.113526	Variance	4.793488
Standard Error	2.189404	of Sample Mean	0.041592
t-Statistic (Mean=0)	-2.729518	Signif Level	0.006383
Skewness	0.020681	Signif Level (Sk=0)	0.656898

Kurtosis (excess)	7.803304	Signif Level (Ku=0)	0.000000
Jarque-Bera	7030.635216	Signif Level (JB=0)	0.000000

Minimum	-16.325261	Maximum	15.953790
01-%ile	-6.221203	99-%ile	5.744400
05-%ile	-3.385960	95-%ile	3.041335
10-%ile	-2.345848	90-%ile	2.155986
25-%ile	-1.130383	75-%ile	0.911763
Median	-0.063567		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.11 2.19 -3.39 0.51 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.004380	Variance	0.009420
Standard Error	0.097056	of Sample Mean	0.001860
t-Statistic (Mean=0)	540.006893	Signif Level	0.000000
Skewness	0.343491	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.360055	Signif Level (Ku=0)	0.000000
Jarque-Bera	263.415566	Signif Level (JB=0)	0.000000

Minimum	0.680888	Maximum	1.565157
01-%ile	0.776207	99-%ile	1.263951
05-%ile	0.841679	95-%ile	1.169535
10-%ile	0.893750	90-%ile	1.126346
25-%ile	0.951440	75-%ile	1.059660
Median	0.994007		

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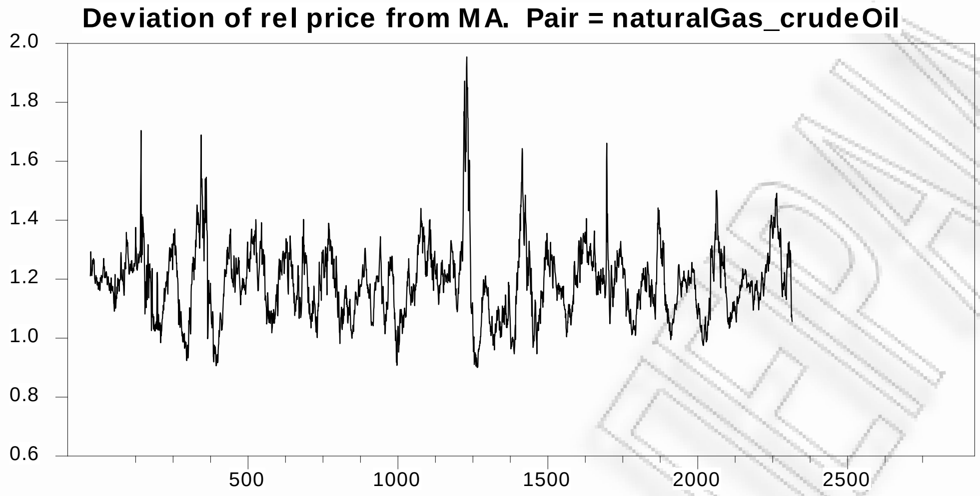
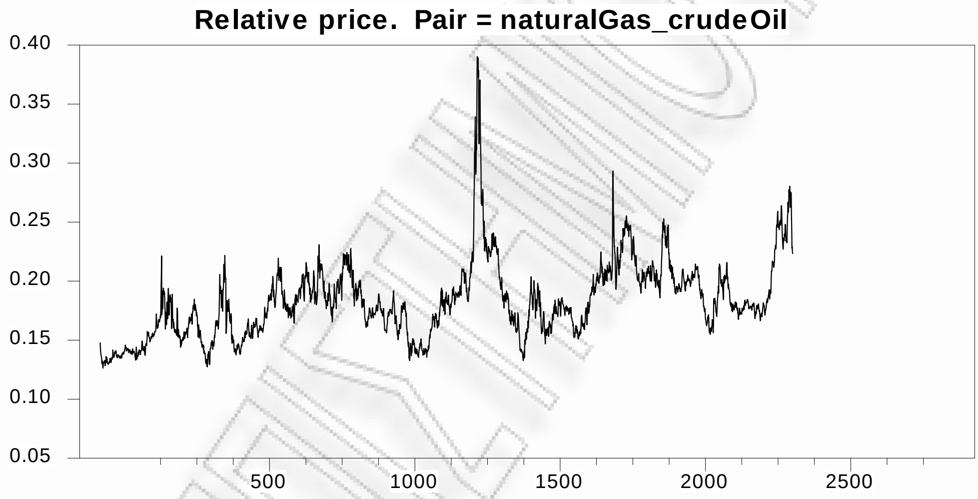
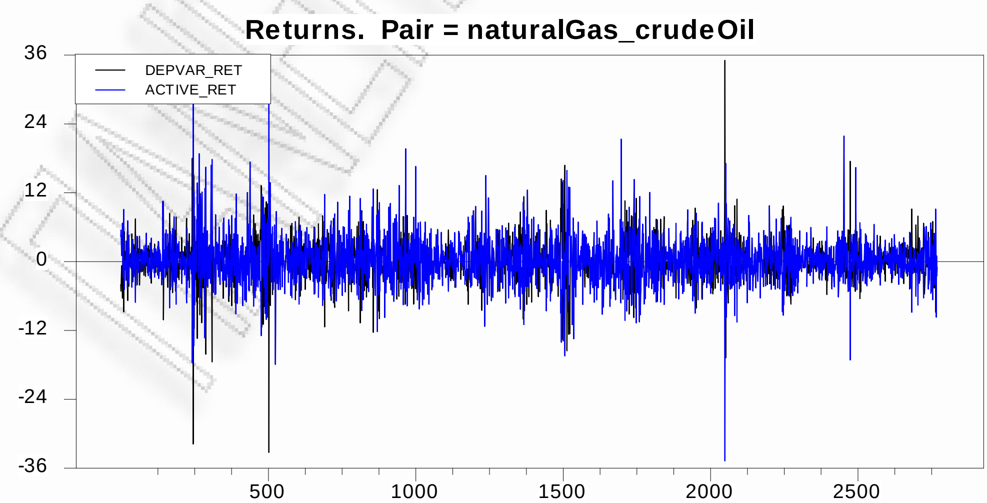

Deviation of rel price from MA. Pair = naturalGas_crudeOil
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
500
1000
1500
2000
2500


Relative price. Pair = naturalGas_crudeOil
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
500
1000
1500
2000
2500


Returns. Pair = naturalGas_crudeOil
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = naturalGas_crudeOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.105483	Variance	16.414342
Standard Error	4.051462	of Sample Mean	0.076965
t-Statistic (Mean=0)	1.370533	Signif Level	0.170632
Skewness	0.195499	Signif Level (Sk=0)	0.000027
Kurtosis (excess)	7.194324	Signif Level (Ku=0)	0.000000
Jarque-Bera	5993.578412	Signif Level (JB=0)	0.000000

Minimum	-33.437412	Maximum	34.901311
01-%ile	-9.868484	99-%ile	11.743784
05-%ile	-5.764741	95-%ile	6.493298
10-%ile	-4.318486	90-%ile	4.725616
25-%ile	-2.085847	75-%ile	2.132210
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.11 4.05 -5.76 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.129117	Variance	16.408795
Standard Error	4.050777	of Sample Mean	0.076952
t-Statistic (Mean=0)	1.677895	Signif Level	0.093480
Skewness	0.456662	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.161284	Signif Level (Ku=0)	0.000000
Jarque-Bera	6017.474021	Signif Level (JB=0)	0.000000

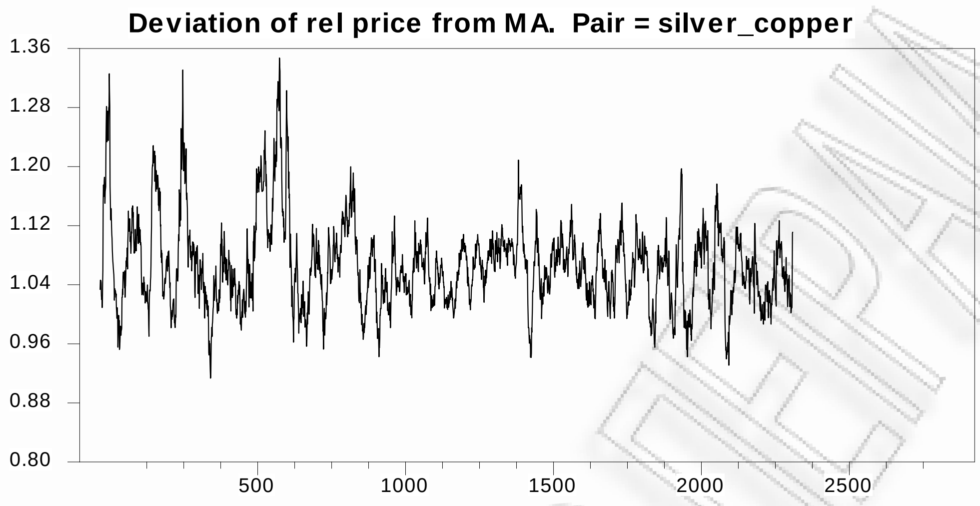
Minimum	-34.901311	Maximum	33.437412
01-%ile	-9.548823	99-%ile	11.884696
05-%ile	-5.851142	95-%ile	6.360604
10-%ile	-4.416159	90-%ile	4.663451
25-%ile	-2.080277	75-%ile	2.125378
Median	0.005843		

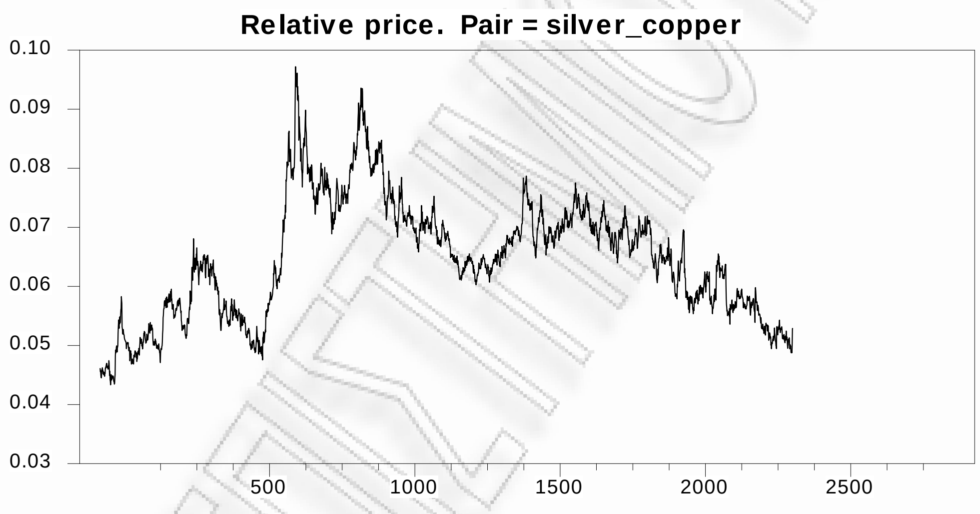
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.13 4.05 -5.85 0.48 %

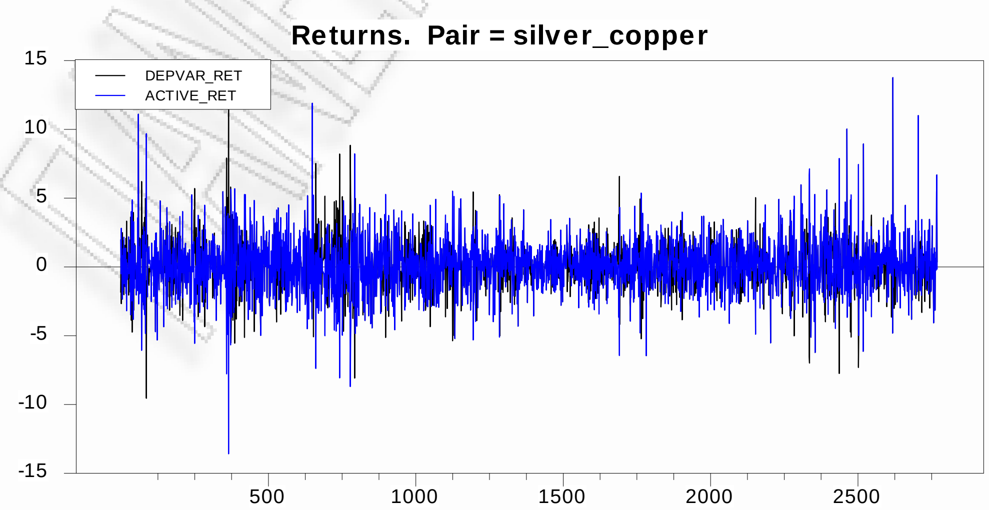
Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.013754	Variance	0.020676
Standard Error	0.143791	of Sample Mean	0.002756
t-Statistic (Mean=0)	367.895852	Signif Level	0.000000
Skewness	0.891095	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.241521	Signif Level (Ku=0)	0.000000
Jarque-Bera	1552.524944	Signif Level (JB=0)	0.000000

Minimum	0.679433	Maximum	1.905333
01-%ile	0.718752	99-%ile	1.453807
05-%ile	0.800651	95-%ile	1.238547
10-%ile	0.838923	90-%ile	1.176982
25-%ile	0.913269	75-%ile	1.094197
Median	1.011318		


Deviation of rel price from MA. Pair = silver_copper
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
500
1000
1500
2000
2500


Relative price. Pair = silver_copper
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
500
1000
1500
2000
2500


Returns. Pair = silver_copper
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = silver_copper

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.025844	Variance	3.736357
Standard Error	1.932966	of Sample Mean	0.036720
t-Statistic (Mean=0)	0.703819	Signif Level	0.481605
Skewness	0.499363	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.173754	Signif Level (Ku=0)	0.000000
Jarque-Bera	2126.473768	Signif Level (JB=0)	0.000000

Minimum	-9.616879	Maximum	13.690975
01-%ile	-4.809632	99-%ile	5.049778
05-%ile	-2.954076	95-%ile	2.996497
10-%ile	-2.202539	90-%ile	2.279886
25-%ile	-1.068965	75-%ile	1.108465
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.93 -2.95 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.077024	Variance	3.731090
Standard Error	1.931603	of Sample Mean	0.036694
t-Statistic (Mean=0)	2.099078	Signif Level	0.035900

Skewness	0.265794	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.169908	Signif Level (Ku=0)	0.000000
Jarque-Bera	2040.232180	Signif Level (JB=0)	0.000000

Minimum	-13.655939	Maximum	13.690975
01-%ile	-4.872146	99-%ile	5.123446
05-%ile	-2.916798	95-%ile	3.073516
10-%ile	-2.188475	90-%ile	2.279895
25-%ile	-1.019202	75-%ile	1.142972
Median	0.053653		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.08 1.93 -2.92 0.47 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.002407	Variance	0.004670
Standard Error	0.068340	of Sample Mean	0.001310
t-Statistic (Mean=0)	765.411520	Signif Level	0.000000
Skewness	1.010350	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.145129	Signif Level (Ku=0)	0.000000
Jarque-Bera	985.363650	Signif Level (JB=0)	0.000000

Minimum	0.824049	Maximum	1.328575
01-%ile	0.872245	99-%ile	1.232863
05-%ile	0.908174	95-%ile	1.132780
10-%ile	0.924741	90-%ile	1.081532
25-%ile	0.957204	75-%ile	1.034460
Median	0.996810		

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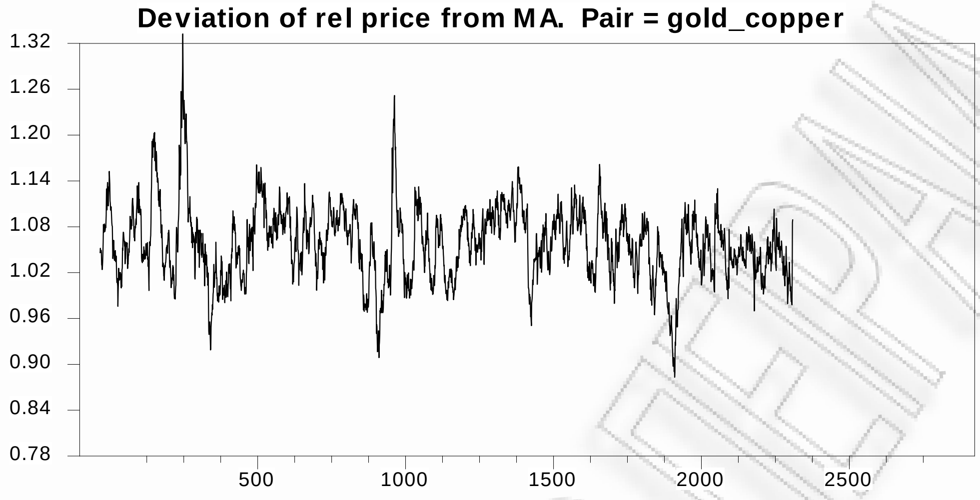
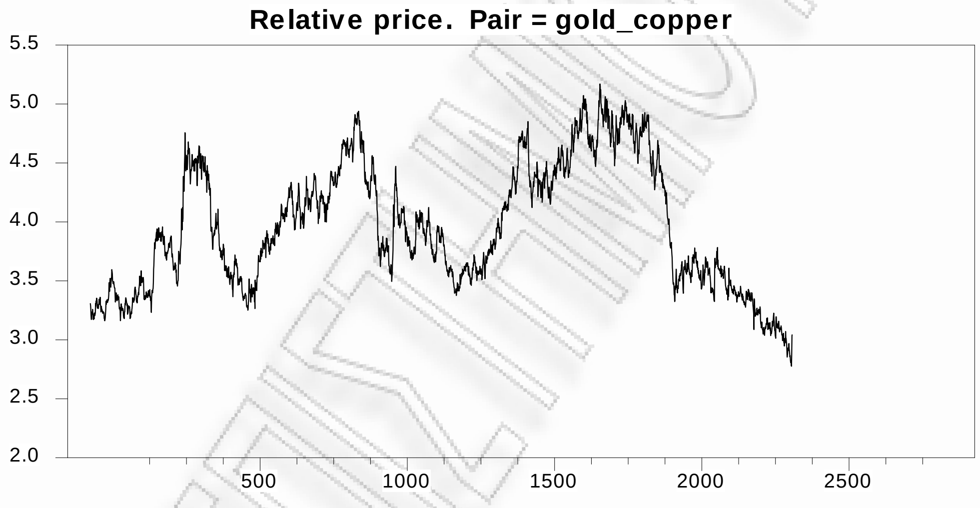
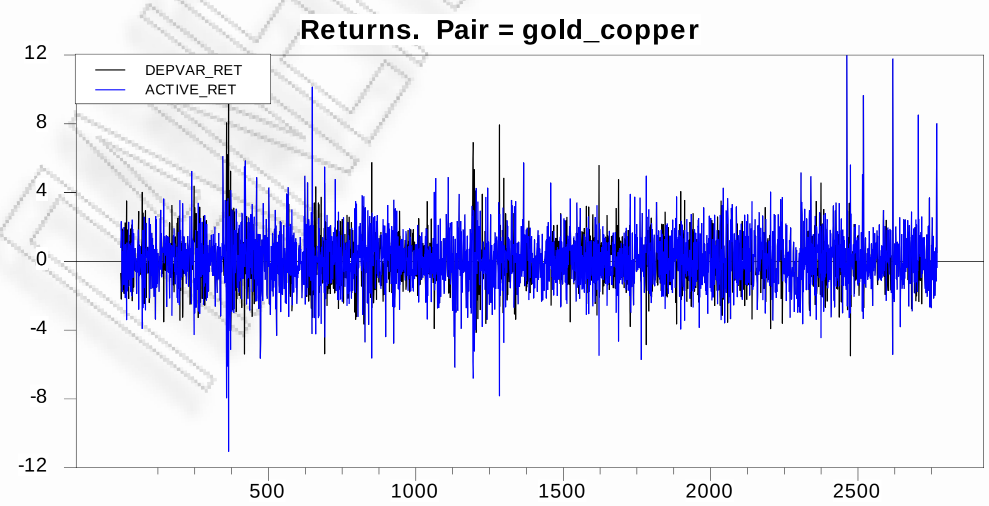

Deviation of rel price from MA. Pair = gold_copper
1.32
1.26
1.20
1.14
1.08
1.02
0.96
0.90
0.84
0.78
500
1000
1500
2000
2500


Relative price. Pair = gold_copper
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
500
1000
1500
2000
2500


Returns. Pair = gold_copper
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = gold_copper

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.009399	Variance	2.727470
Standard Error	1.651505	of Sample Mean	0.031373
t-Statistic (Mean=0)	0.299573	Signif Level	0.764525
Skewness	0.795047	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.562394	Signif Level (Ku=0)	0.000000
Jarque-Bera	2695.240057	Signif Level (JB=0)	0.000000
Minimum	-6.211499	Maximum	11.907779
01-%ile	-3.666504	99-%ile	4.767870
05-%ile	-2.535768	95-%ile	2.598472
10-%ile	-1.929285	90-%ile	1.872203
25-%ile	-0.957426	75-%ile	0.945133
Median	-0.043587		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.65 -2.54 0.50 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.063348	Variance	2.723544
Standard Error	1.650316	of Sample Mean	0.031351
t-Statistic (Mean=0)	2.020622	Signif Level	0.043415

Skewness	0.230028	Signif Level (Sk=0)	0.000001
Kurtosis (excess)	4.558362	Signif Level (Ku=0)	0.000000
Jarque-Bera	2423.506334	Signif Level (JB=0)	0.000000
Minimum	-11.119383	Maximum	11.907779
01-%ile	-4.053625	99-%ile	4.200852
05-%ile	-2.524965	95-%ile	2.615357
10-%ile	-1.831015	90-%ile	1.976946
25-%ile	-0.905411	75-%ile	1.000561
Median	0.066304		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.06 1.65 -2.52 0.46 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.999312	Variance	0.003160
Standard Error	0.056216	of Sample Mean	0.001077
t-Statistic (Mean=0)	927.615936	Signif Level	0.000000
Skewness	0.331124	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.899671	Signif Level (Ku=0)	0.000000
Jarque-Bera	459.202477	Signif Level (JB=0)	0.000000
Minimum	0.795888	Maximum	1.318492
01-%ile	0.861253	99-%ile	1.166230
05-%ile	0.914507	95-%ile	1.082190
10-%ile	0.932006	90-%ile	1.060755
25-%ile	0.963350	75-%ile	1.034900
Median	0.999879		

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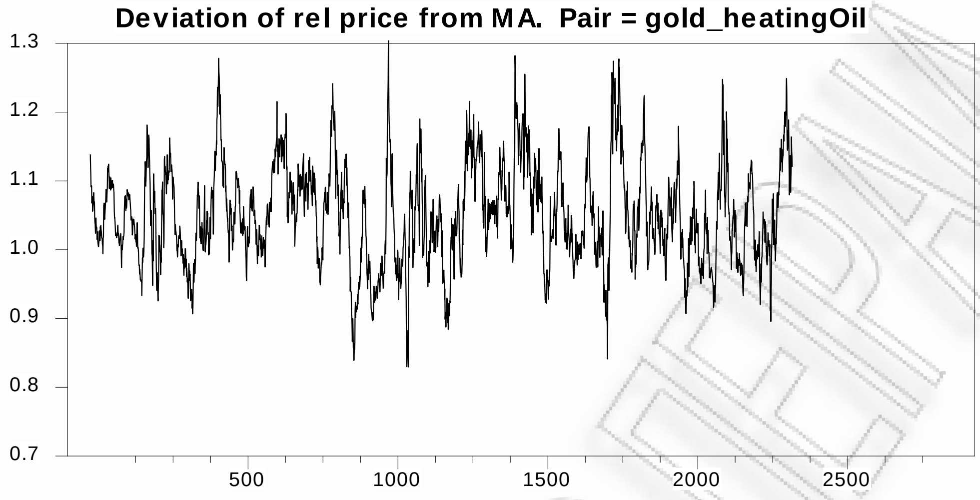
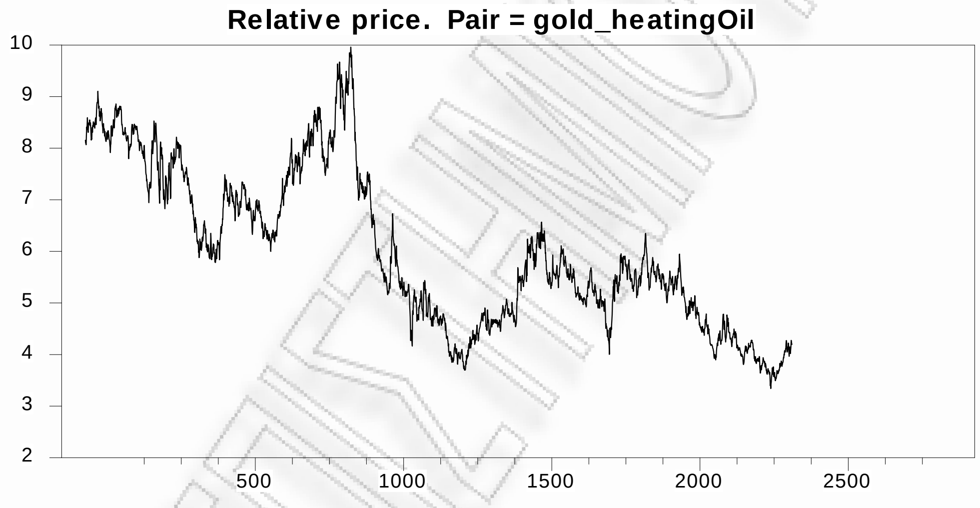
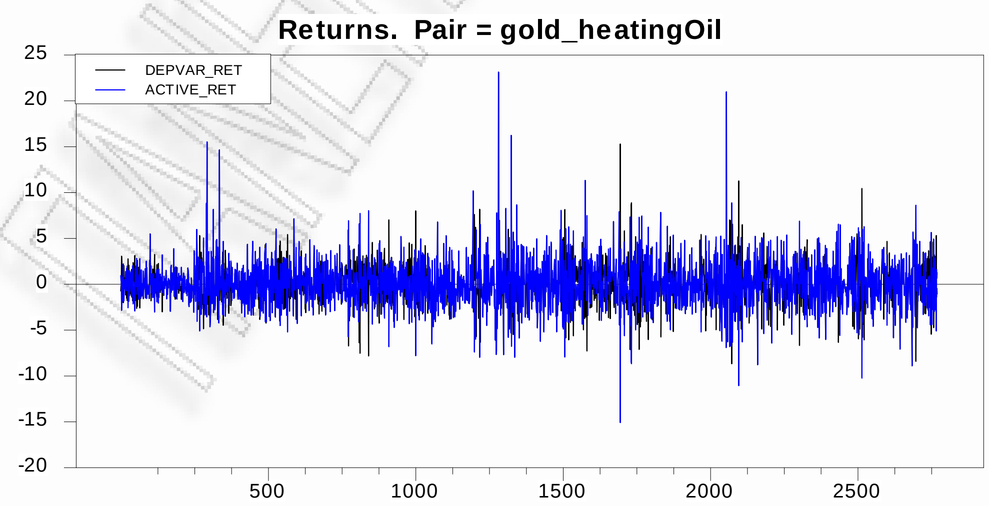

Deviation of rel price from MA. Pair = gold_heatingOil
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = gold_heatingOil
10
9
8
7
6
5
4
3
2
500
1000
1500
2000
2500


Returns. Pair = gold_heatingOil
DEPVAR_RET
ACTIVE_RET
25
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = gold_heatingOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.002381	Variance	6.335453
Standard Error	2.517033	of Sample Mean	0.047816
t-Statistic (Mean=0)	-0.049799	Signif Level	0.960286
Skewness	0.938446	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.761241	Signif Level (Ku=0)	0.000000
Jarque-Bera	5684.833674	Signif Level (JB=0)	0.000000

Minimum	-8.996379	Maximum	23.027192
01-%ile	-6.144760	99-%ile	6.886765
05-%ile	-3.696523	95-%ile	4.011560
10-%ile	-2.866694	90-%ile	2.910929
25-%ile	-1.471758	75-%ile	1.321581
Median	-0.072420		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = -0.00 2.52 -3.70 0.51 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.054966	Variance	6.332437
Standard Error	2.516433	of Sample Mean	0.047804
t-Statistic (Mean=0)	1.149808	Signif Level	0.250322
Skewness	0.652533	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	6.707028	Signif Level (Ku=0)	0.000000
Jarque-Bera	5390.451880	Signif Level (JB=0)	0.000000

Minimum	-15.191394	Maximum	23.027192
01-%ile	-6.317272	99-%ile	6.697625
05-%ile	-3.647569	95-%ile	3.983694
10-%ile	-2.819715	90-%ile	2.961986
25-%ile	-1.355831	75-%ile	1.415366
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.05 2.52 -3.65 0.48 %

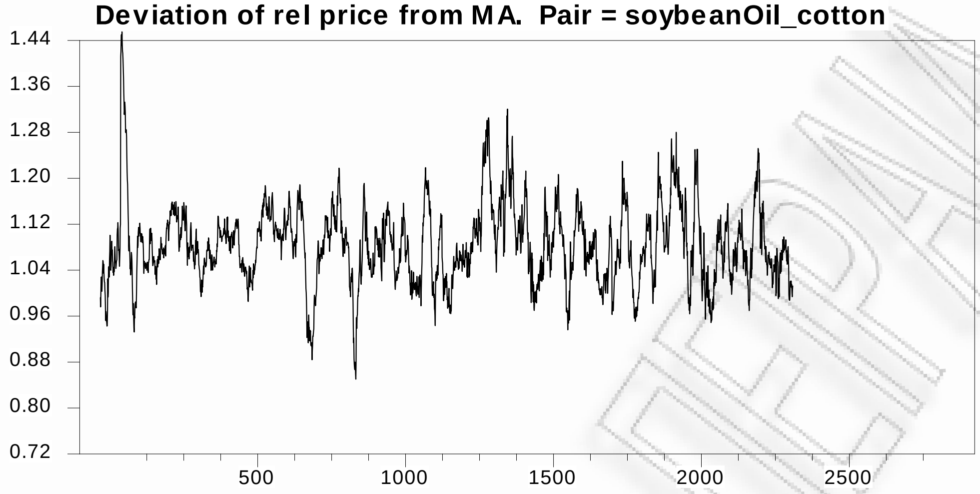
Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.992376	Variance	0.007130
Standard Error	0.084442	of Sample Mean	0.001618
t-Statistic (Mean=0)	613.255173	Signif Level	0.000000
Skewness	0.236928	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.052461	Signif Level (Ku=0)	0.576789
Jarque-Bera	25.788043	Signif Level (JB=0)	0.000003

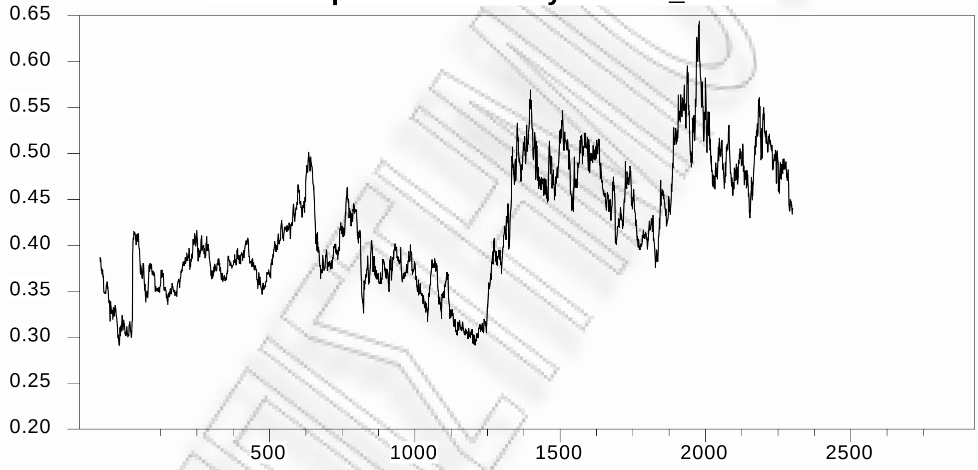
Minimum	0.735037	Maximum	1.286685
01-%ile	0.813312	99-%ile	1.208496
05-%ile	0.862184	95-%ile	1.135548
10-%ile	0.889709	90-%ile	1.104306
25-%ile	0.935225	75-%ile	1.047012
Median	0.987990		

-26-

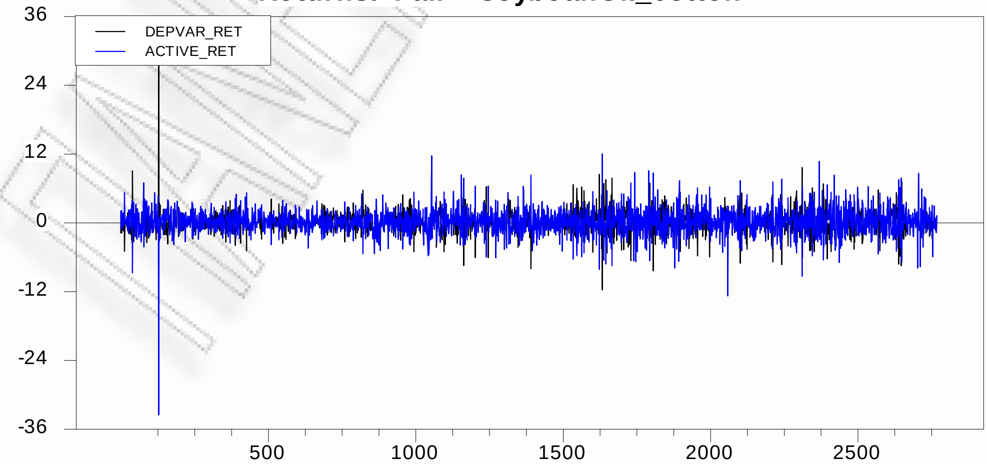
Deviation of rel price from MA. Pair = soybeanOil_cotton



Relative price. Pair = soybeanOil_cotton



Returns. Pair = soybeanOil_cotton



****

******************** Pair = soybeanOil_cotton

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030510	Variance	4.940965
Standard Error	2.222828	of Sample Mean	0.042227
t-Statistic (Mean=0)	0.722520	Signif Level	0.470036
Skewness	1.241976	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.840276	Signif Level (Ku=0)	0.000000
Jarque-Bera	50857.908473	Signif Level (JB=0)	0.000000

Minimum	-12.906913	Maximum	33.687823
01-%ile	-5.723046	99-%ile	5.641720
05-%ile	-3.179187	95-%ile	3.414347
10-%ile	-2.394339	90-%ile	2.484422
25-%ile	-1.168966	75-%ile	1.209437
Median	-0.011833		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.03 2.22 -3.18 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.045184	Variance	4.939854
Standard Error	2.222578	of Sample Mean	0.042222
t-Statistic (Mean=0)	1.070147	Signif Level	0.284646

Skewness	-1.151685	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.011756	Signif Level (Ku=0)	0.000000
Jarque-Bera	51586.714275	Signif Level (JB=0)	0.000000

Minimum	-33.687823	Maximum	11.863640
01-%ile	-5.578641	99-%ile	5.961084
05-%ile	-3.248564	95-%ile	3.352132
10-%ile	-2.397105	90-%ile	2.495540
25-%ile	-1.132331	75-%ile	1.249132
Median	0.007336		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.05 2.22 -3.25 0.49 %

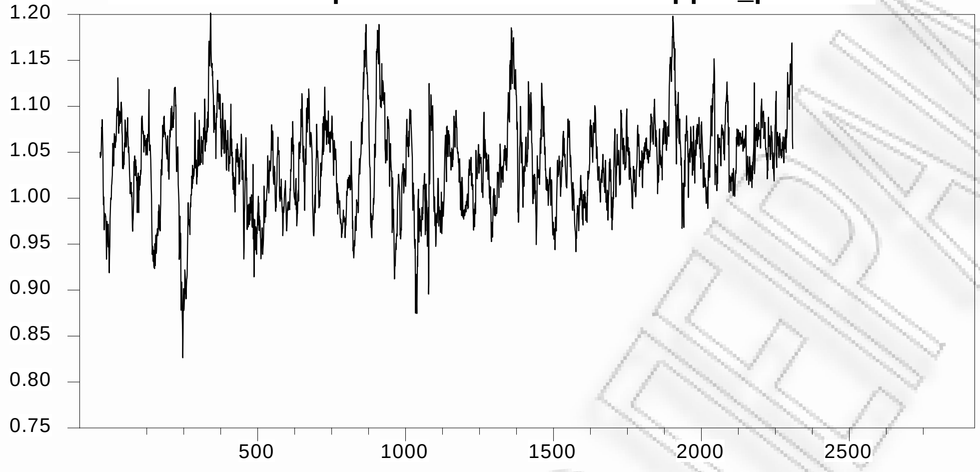
Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.004964	Variance	0.006646
Standard Error	0.081524	of Sample Mean	0.001562
t-Statistic (Mean=0)	643.259618	Signif Level	0.000000
Skewness	0.693695	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.506101	Signif Level (Ku=0)	0.000000
Jarque-Bera	930.970196	Signif Level (JB=0)	0.000000

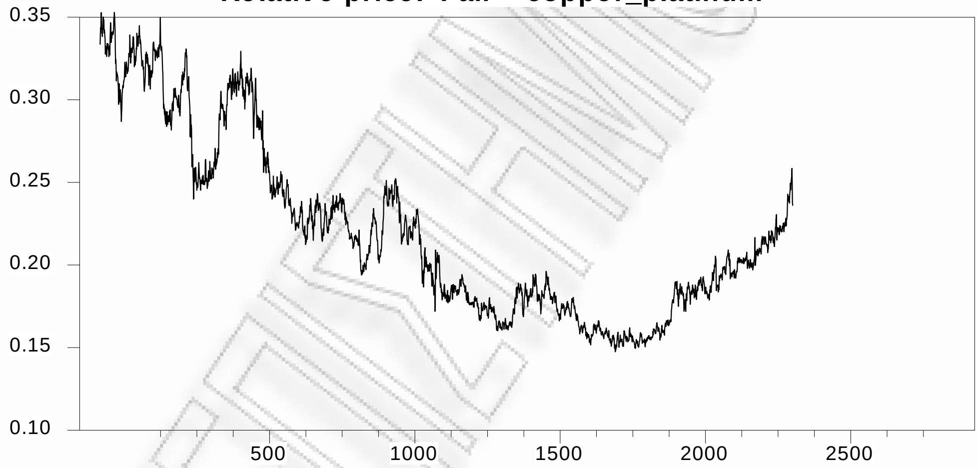
Minimum	0.732739	Maximum	1.436178
01-%ile	0.828376	99-%ile	1.238235
05-%ile	0.882381	95-%ile	1.137942
10-%ile	0.909294	90-%ile	1.101873
25-%ile	0.954967	75-%ile	1.049254
Median	1.000152		

-27-

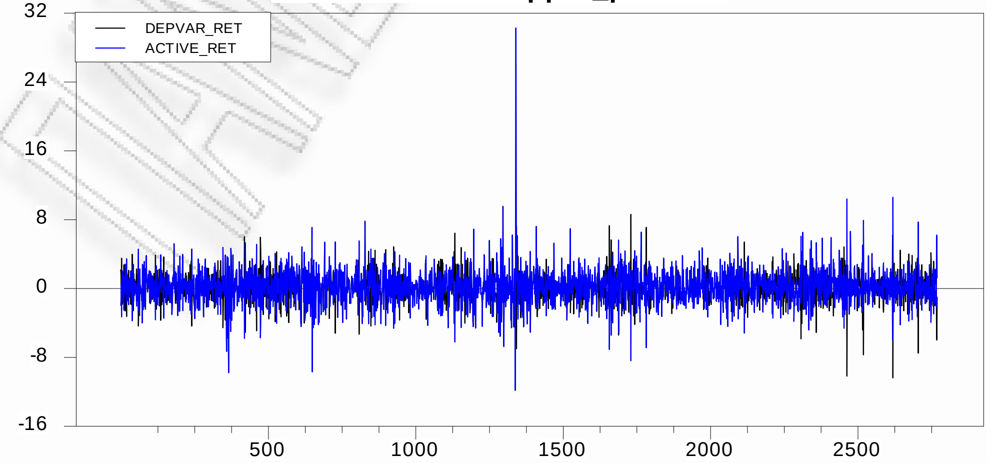
Deviation of rel price from MA. Pair = copper_platinum



Relative price. Pair = copper_platinum



Returns. Pair = copper_platinum



****

********************* Pair = copper_platinum

********************* SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.003913	Variance	3.946900
Standard Error	1.986681	of Sample Mean	0.037741
t-Statistic (Mean=0)	0.103671	Signif Level	0.917438
Skewness	1.129054	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.101568	Signif Level (Ku=0)	0.000000
Jarque-Bera	51999.573891	Signif Level (JB=0)	0.000000

Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.686501	99-%ile	5.193363
05-%ile	-2.915807	95-%ile	3.048069
10-%ile	-2.167735	90-%ile	2.208645
25-%ile	-1.080073	75-%ile	1.108897
Median	-0.006923		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.00 1.99 -2.92 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.091283	Variance	3.938580
Standard Error	1.984586	of Sample Mean	0.037701
t-Statistic (Mean=0)	2.421240	Signif Level	0.015532
Skewness	1.226333	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	20.973810	Signif Level (Ku=0)	0.000000
Jarque-Bera	51484.750050	Signif Level (JB=0)	0.000000

Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.653721	99-%ile	5.284960
05-%ile	-2.964485	95-%ile	2.996688
10-%ile	-2.157719	90-%ile	2.234572
25-%ile	-0.977052	75-%ile	1.185387
Median	0.061856		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.09 1.98 -2.96 0.47 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.996882	Variance	0.003330
Standard Error	0.057710	of Sample Mean	0.001106
t-Statistic (Mean=0)	901.403789	Signif Level	0.000000
Skewness	-0.030328	Signif Level (Sk=0)	0.518457
Kurtosis (excess)	0.630733	Signif Level (Ku=0)	0.000000
Jarque-Bera	45.553862	Signif Level (JB=0)	0.000000

Minimum	0.752044	Maximum	1.188494
01-%ile	0.851937	99-%ile	1.144705
05-%ile	0.905944	95-%ile	1.091749
10-%ile	0.923590	90-%ile	1.064099
25-%ile	0.958878	75-%ile	1.032350
Median	0.999722		

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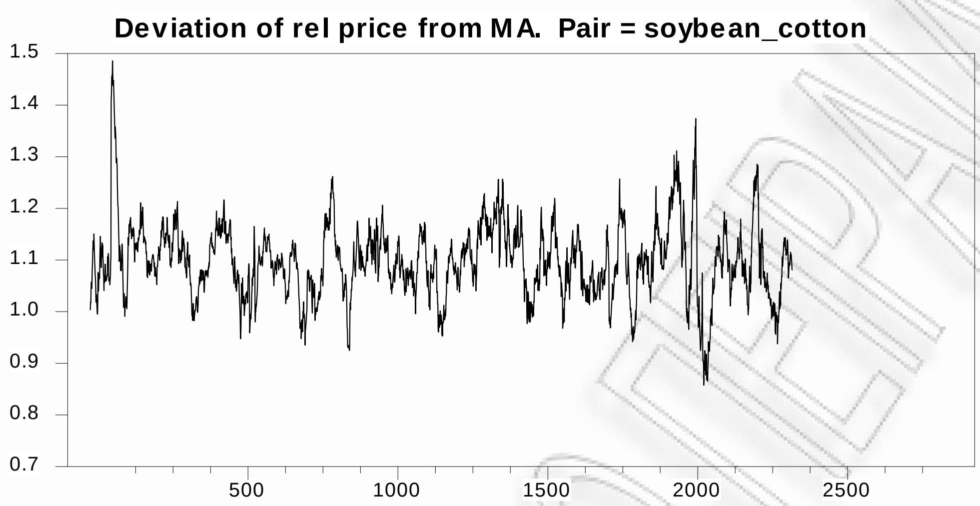
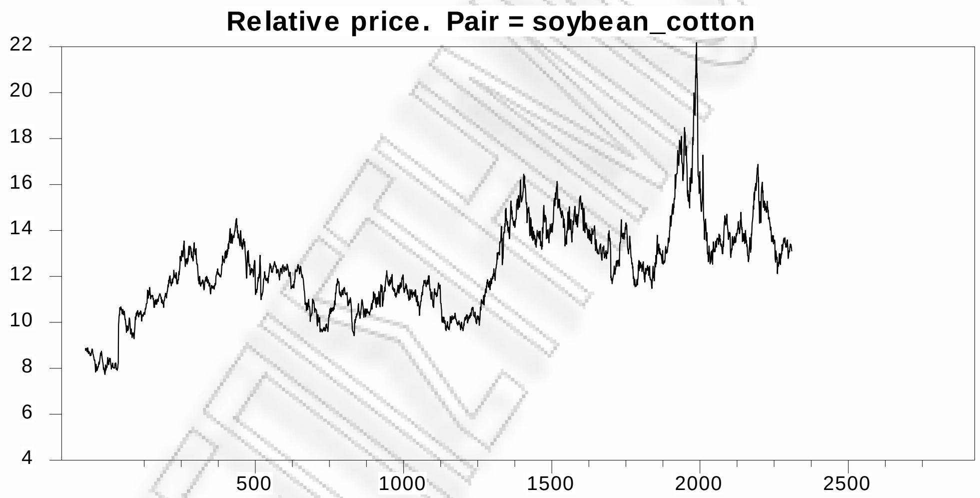
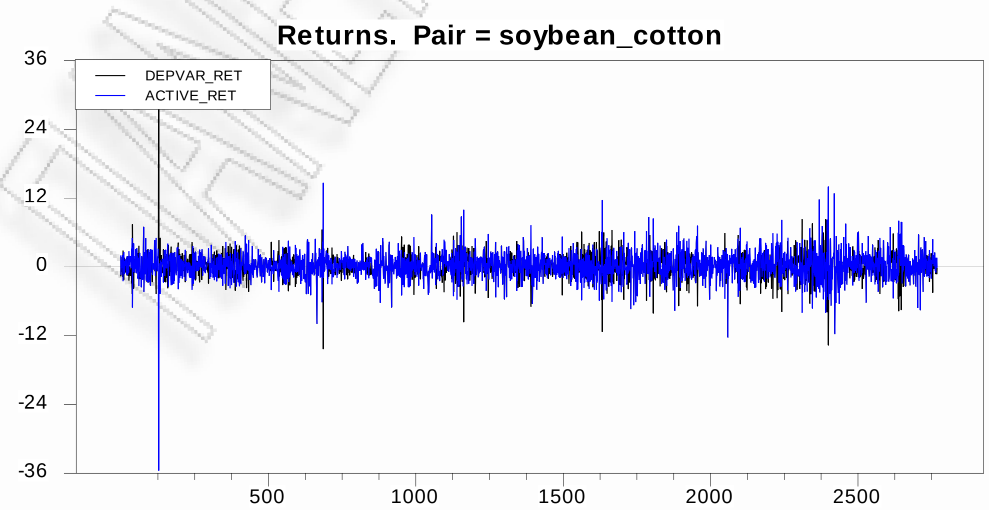

Deviation of rel price from MA. Pair = soybean_cotton
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = soybean_cotton
22
20
18
16
14
12
10
8
6
4
500
1000
1500
2000
2500


Returns. Pair = soybean_cotton
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

********************* Pair = soybean_cotton

********************* SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.047598	Variance	5.364722
Standard Error	2.316187	of Sample Mean	0.044000
t-Statistic (Mean=0)	1.081777	Signif Level	0.279446
Skewness	0.979271	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	22.892304	Signif Level (Ku=0)	0.000000
Jarque-Bera	60949.698417	Signif Level (JB=0)	0.000000
Minimum	-14.465433	Maximum	35.687245
01-%ile	-6.359115	99-%ile	5.642728
05-%ile	-3.508506	95-%ile	3.427508
10-%ile	-2.444753	90-%ile	2.638881
25-%ile	-1.161338	75-%ile	1.277983
Median	0.093618		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.05 2.32 -3.51 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.064582	Variance	5.362816
Standard Error	2.315776	of Sample Mean	0.043992
t-Statistic (Mean=0)	1.468024	Signif Level	0.142211
Skewness	-1.118497	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	23.114199	Signif Level (Ku=0)	0.000000
Jarque-Bera	62263.253145	Signif Level (JB=0)	0.000000

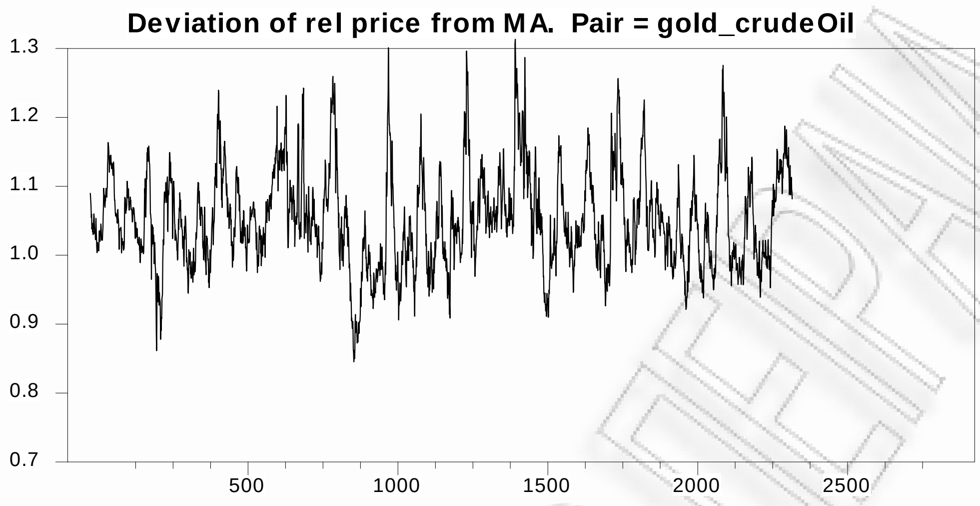
Minimum	-35.687245	Maximum	14.465433
01-%ile	-5.870359	99-%ile	5.865923
05-%ile	-3.402456	95-%ile	3.537351
10-%ile	-2.491714	90-%ile	2.580015
25-%ile	-1.145483	75-%ile	1.269785
Median	0.083848		

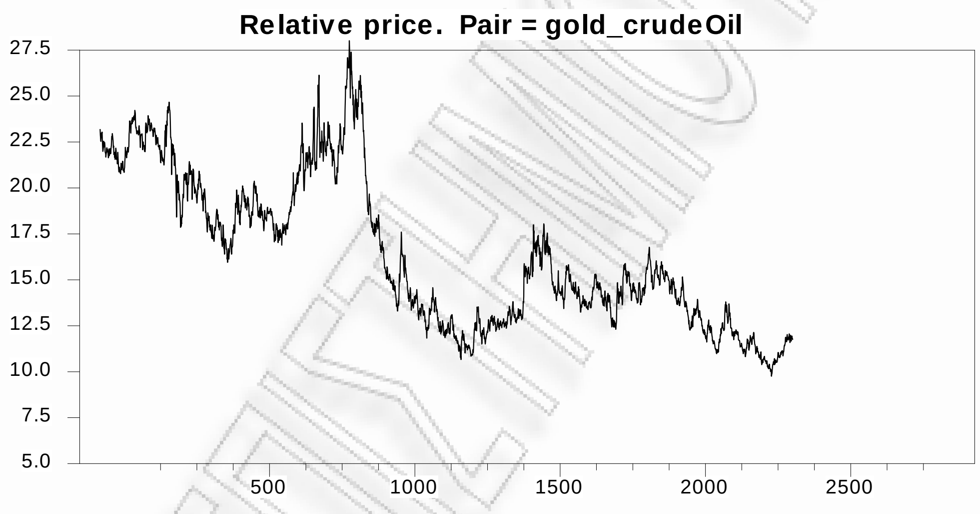
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.06 2.32 -3.40 0.47 %

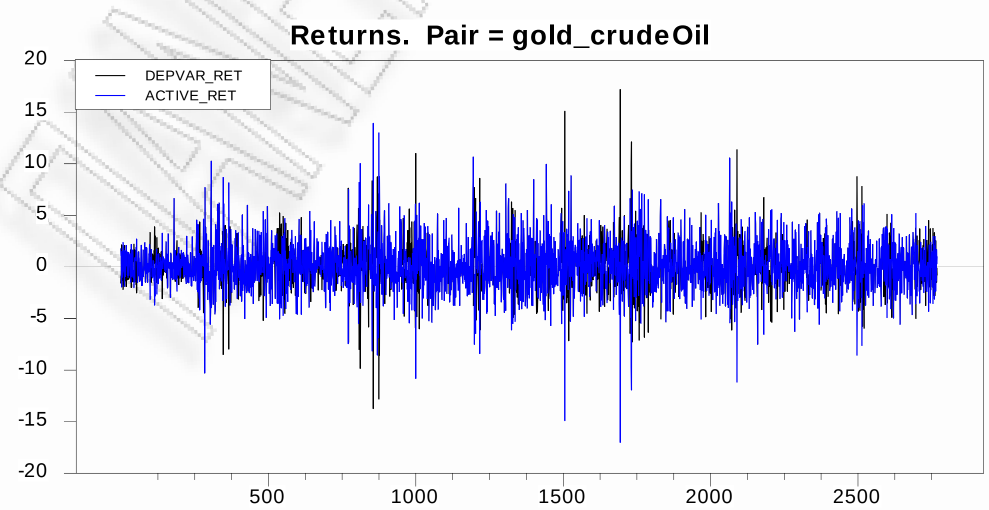
Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.007831	Variance	0.007134
Standard Error	0.084460	of Sample Mean	0.001619
t-Statistic (Mean=0)	622.670001	Signif Level	0.000000
Skewness	0.547508	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.445996	Signif Level (Ku=0)	0.000000
Jarque-Bera	814.852837	Signif Level (JB=0)	0.000000

Minimum	0.729160	Maximum	1.459954
01-%ile	0.812783	99-%ile	1.239391
05-%ile	0.875517	95-%ile	1.141190
10-%ile	0.903977	90-%ile	1.103377
25-%ile	0.958441	75-%ile	1.056252
Median	1.004814		


Deviation of rel price from MA. Pair = gold_crudeOil
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = gold_crudeOil
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
500
1000
1500
2000
2500


Returns. Pair = gold_crudeOil
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = gold_crudeOil

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.004970	Variance	5.845049
Standard Error	2.417654	of Sample Mean	0.045928
t-Statistic (Mean=0)	-0.108224	Signif Level	0.913826
Skewness	0.402744	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.451779	Signif Level (Ku=0)	0.000000
Jarque-Bera	1450.571046	Signif Level (JB=0)	0.000000
Minimum	-13.833198	Maximum	17.102538
01-%ile	-5.574459	99-%ile	6.277606
05-%ile	-3.729054	95-%ile	3.931820
10-%ile	-2.737744	90-%ile	2.933108
25-%ile	-1.420837	75-%ile	1.294938
Median	-0.118586		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 2.42 -3.73 0.51 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.072186	Variance	5.839861
Standard Error	2.416580	of Sample Mean	0.045907
t-Statistic (Mean=0)	1.572436	Signif Level	0.115964

Skewness	-0.010882	Signif Level (Sk=0)	0.815197
Kurtosis (excess)	3.455892	Signif Level (Ku=0)	0.000000
Jarque-Bera	1378.995338	Signif Level (JB=0)	0.000000

Minimum	-17.102538	Maximum	13.833198
01-%ile	-5.533715	99-%ile	6.132527
05-%ile	-3.664951	95-%ile	4.076017
10-%ile	-2.730578	90-%ile	2.914554
25-%ile	-1.296167	75-%ile	1.395863
Median	0.001804		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.07 2.42 -3.66 0.48 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	0.993449	Variance	0.006680
Standard Error	0.081733	of Sample Mean	0.001566
t-Statistic (Mean=0)	634.266608	Signif Level	0.000000
Skewness	0.452095	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.412666	Signif Level (Ku=0)	0.000011
Jarque-Bera	112.080083	Signif Level (JB=0)	0.000000

Minimum	0.753348	Maximum	1.297796
01-%ile	0.818450	99-%ile	1.215287
05-%ile	0.871971	95-%ile	1.136877
10-%ile	0.898764	90-%ile	1.102301
25-%ile	0.938047	75-%ile	1.041866
Median	0.984754		

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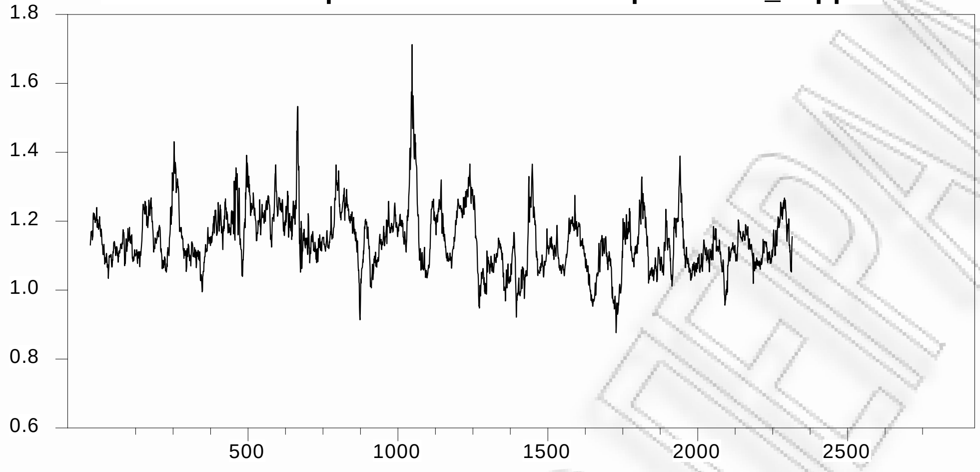
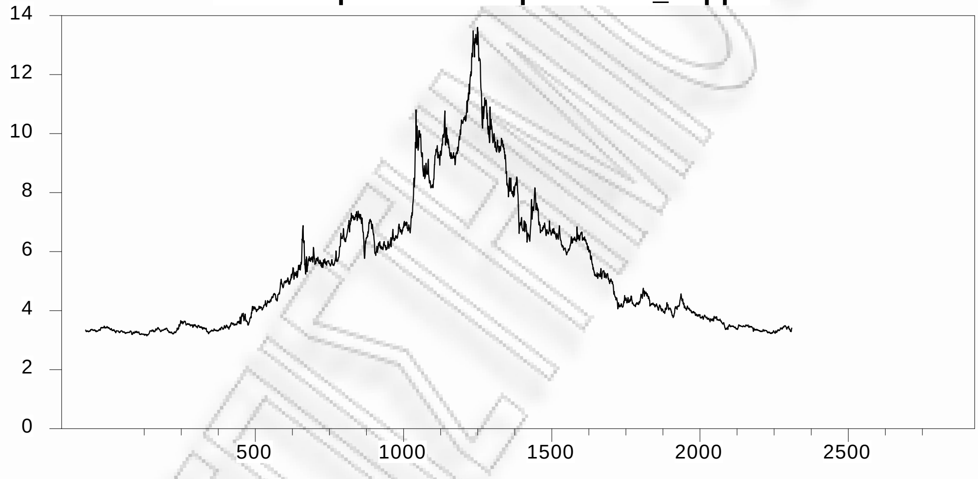
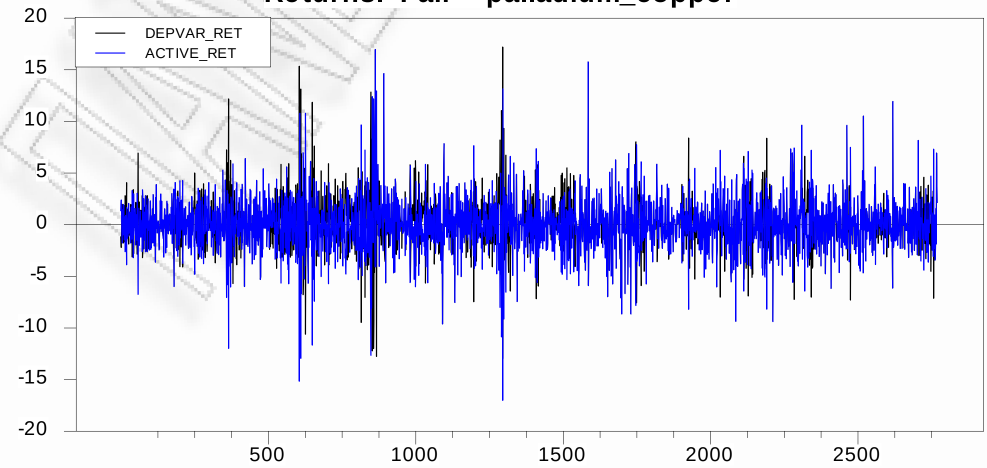
Deviation of rel price from MA. Pair = palladium_copper



Relative price. Pair = palladium_copper



Returns. Pair = palladium_copper



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******************** Pair = palladium_copper

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.035091	Variance	6.600882
Standard Error	2.569218	of Sample Mean	0.048807
t-Statistic (Mean=0)	0.718982	Signif Level	0.472213
Skewness	0.452895	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.976839	Signif Level (Ku=0)	0.000000
Jarque-Bera	2954.507552	Signif Level (JB=0)	0.000000

Minimum	-13.059365	Maximum	17.111132
01-%ile	-6.799694	99-%ile	7.038010
05-%ile	-3.724911	95-%ile	3.963386
10-%ile	-2.732144	90-%ile	2.918848
25-%ile	-1.364029	75-%ile	1.317172
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.04 2.57 -3.72 0.49 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.078319	Variance	6.595978
Standard Error	2.568264	of Sample Mean	0.048789
t-Statistic (Mean=0)	-1.605263	Signif Level	0.108550

Skewness	0.093896	Signif Level (Sk=0)	0.043719
Kurtosis (excess)	5.020527	Signif Level (Ku=0)	0.000000
Jarque-Bera	2914.279019	Signif Level (JB=0)	0.000000

Minimum	-17.111132	Maximum	16.870606
01-%ile	-6.892104	99-%ile	6.913436
05-%ile	-4.038539	95-%ile	3.765672
10-%ile	-2.918328	90-%ile	2.699501
25-%ile	-1.432601	75-%ile	1.265196
	Median	-0.057289	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

Active_Performance = -0.08 2.57 -4.04 0.50 %

Statistics on Series MA_REL

Observations	2723	Skipped/Missing	49
Sample Mean	1.003021	Variance	0.010309
Standard Error	0.101536	of Sample Mean	0.001946
t-Statistic (Mean=0)	515.484024	Signif Level	0.000000
Skewness	0.703889	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.970869	Signif Level (Ku=0)	0.000000
Jarque-Bera	665.564726	Signif Level (JB=0)	0.000000

Minimum	0.690222	Maximum	1.663096
01-%ile	0.790500	99-%ile	1.285980
05-%ile	0.852648	95-%ile	1.173326
10-%ile	0.890629	90-%ile	1.126521
25-%ile	0.935629	75-%ile	1.065579
	Median	0.991773	

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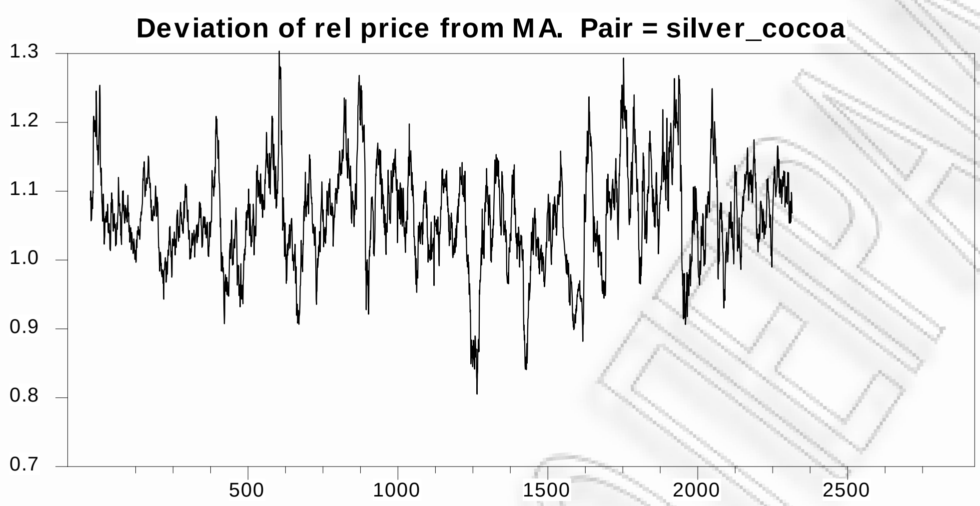
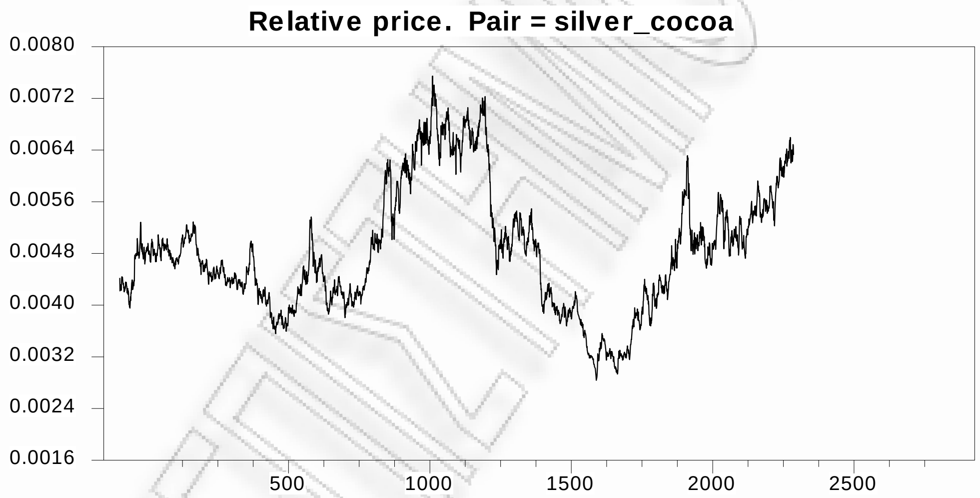
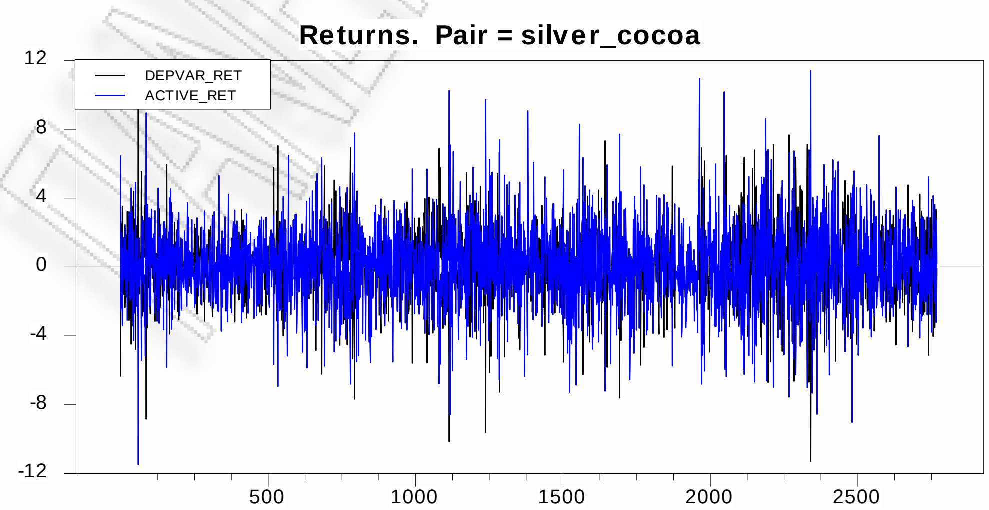

Deviation of rel price from MA. Pair = silver_cocoa
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Relative price. Pair = silver_cocoa
0.0080
0.0072
0.0064
0.0056
0.0048
0.0040
0.0032
0.0024
0.0016
500
1000
1500
2000
2500


Returns. Pair = silver_cocoa
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = silver_cocoa

******************** SMA ---> 1 LMA ---> 50

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.043966	Variance	5.366252
Standard Error	2.316517	of Sample Mean	0.044007
t-Statistic (Mean=0)	0.999090	Signif Level	0.317839
Skewness	0.003227	Signif Level (Sk=0)	0.944743
Kurtosis (excess)	1.494435	Signif Level (Ku=0)	0.000000
Jarque-Bera	257.862042	Signif Level (JB=0)	0.000000
Minimum	-11.358750	Maximum	11.546872
01-%ile	-5.801129	99-%ile	6.035727
05-%ile	-3.641816	95-%ile	3.732680
10-%ile	-2.738549	90-%ile	2.826347
25-%ile	-1.351866	75-%ile	1.445741
Median	0.004736		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.04 2.32 -3.64 0.48 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.076635	Variance	5.362310
Standard Error	2.315666	of Sample Mean	0.043990
t-Statistic (Mean=0)	1.742076	Signif Level	0.081606

Skewness	0.031770	Signif Level (Sk=0)	0.495005
Kurtosis (excess)	1.492666	Signif Level (Ku=0)	0.000000
Jarque-Bera	257.713135	Signif Level (JB=0)	0.000000

Minimum	-11.546872	Maximum	11.358750
01-%ile	-5.927065	99-%ile	6.035727
05-%ile	-3.693343	95-%ile	3.677850
10-%ile	-2.726345	90-%ile	2.835888
25-%ile	-1.304528	75-%ile	1.471198
Median	0.073984		

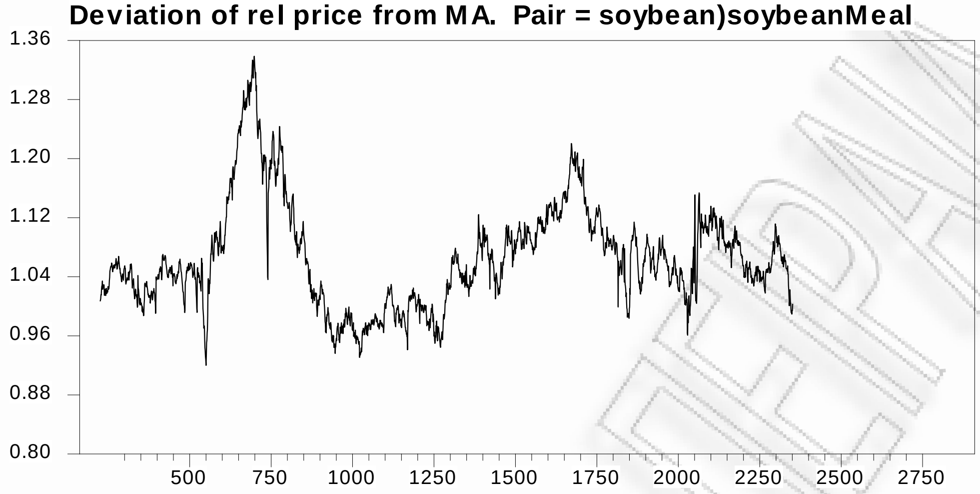
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.08 2.32 -3.69 0.47 %

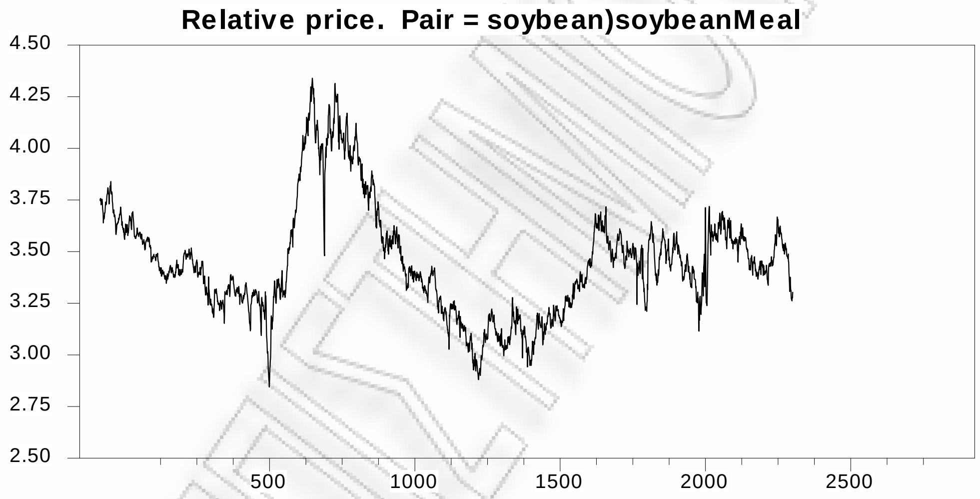
Statistics on Series MA_REL

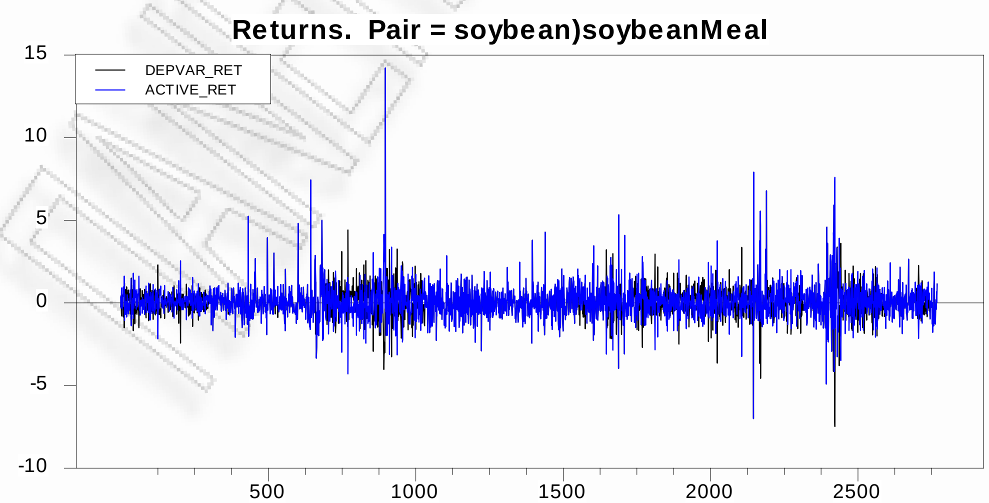
Observations	2723	Skipped/Missing	49
Sample Mean	1.006536	Variance	0.006999
Standard Error	0.083660	of Sample Mean	0.001603
t-Statistic (Mean=0)	627.823551	Signif Level	0.000000
Skewness	-0.045861	Signif Level (Sk=0)	0.328836
Kurtosis (excess)	0.594717	Signif Level (Ku=0)	0.000000
Jarque-Bera	41.083400	Signif Level (JB=0)	0.000000

Minimum	0.706716	Maximum	1.286344
01-%ile	0.778509	99-%ile	1.218966
05-%ile	0.872286	95-%ile	1.151063
10-%ile	0.904413	90-%ile	1.107486
25-%ile	0.957048	75-%ile	1.057878
Median	1.005667		

-1-


Deviation of rel price from MA. Pair = soybean)soybeanMeal
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean)soybeanMeal
4.50
4.25
4.00
3.75
3.50
3.25
3.00
2.75
2.50
500
1000
1500
2000
2500


Returns. Pair = soybean)soybeanMeal
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
500
1000
1500
2000
2500

****

******************** Pair = soybean)soybeanMeal

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000421	Variance	1.069017
Standard Error	1.033933	of Sample Mean	0.019641
t-Statistic (Mean=0)	-0.021434	Signif Level	0.982901
Skewness	1.329044	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.139716	Signif Level (Ku=0)	0.000000
Jarque-Bera	47646.605195	Signif Level (JB=0)	0.000000

Minimum	-7.541035	Maximum	14.159056
01-%ile	-2.395240	99-%ile	3.164576
05-%ile	-1.419159	95-%ile	1.425752
10-%ile	-1.031134	90-%ile	1.007217
25-%ile	-0.514368	75-%ile	0.474729
	Median	-0.037627	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 1.03 -1.42 0.47 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.026563	Variance	1.068311
Standard Error	1.033591	of Sample Mean	0.019635
t-Statistic (Mean=0)	1.352858	Signif Level	0.176211

Skewness	1.835540	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.975193	Signif Level (Ku=0)	0.000000
Jarque-Bera	47624.847308	Signif Level (JB=0)	0.000000

Minimum	-7.060439	Maximum	14.159056
01-%ile	-2.264694	99-%ile	3.248148
05-%ile	-1.390747	95-%ile	1.479576
10-%ile	-1.007573	90-%ile	1.034469
25-%ile	-0.502692	75-%ile	0.483417
	Median	-0.021697	

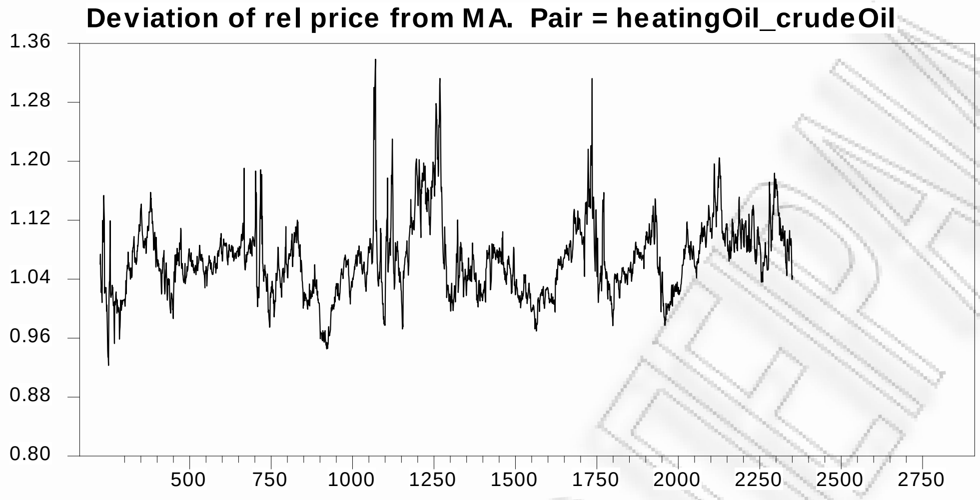
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.03 -1.39 0.46 %

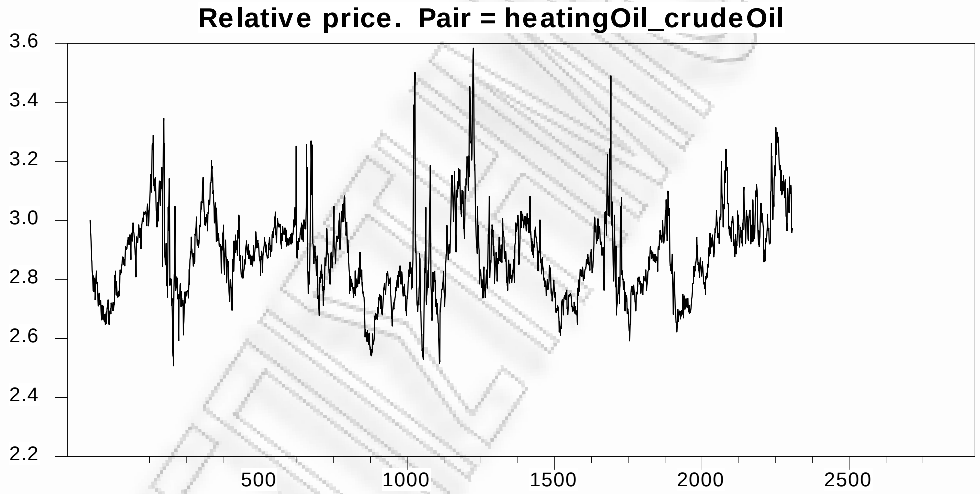
Statistics on Series MA_REL

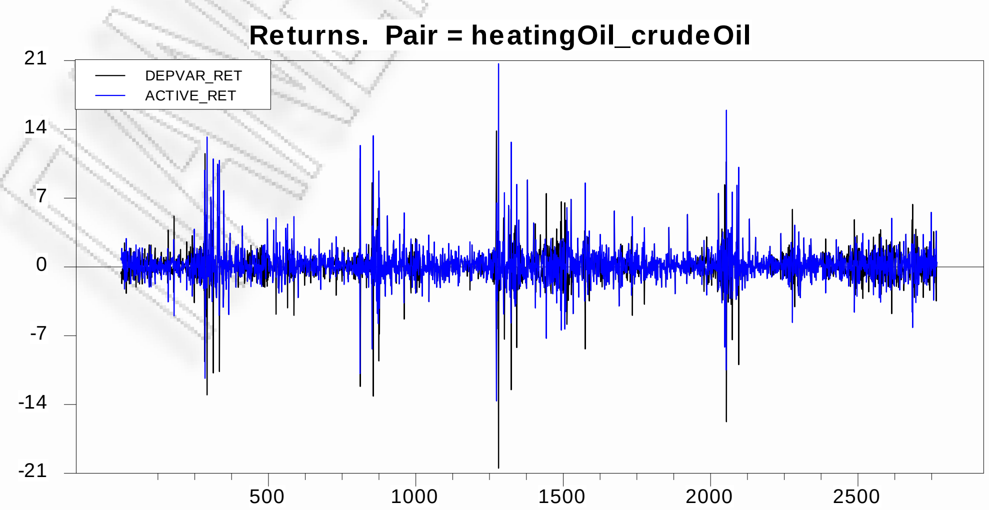
Observations	2473	Skipped/Missing	299
Sample Mean	1.001043	Variance	0.006802
Standard Error	0.082476	of Sample Mean	0.001659
t-Statistic (Mean=0)	603.580661	Signif Level	0.000000
Skewness	0.965097	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.327863	Signif Level (Ku=0)	0.000000
Jarque-Bera	565.581836	Signif Level (JB=0)	0.000000

Minimum	0.831631	Maximum	1.318596
01-%ile	0.865169	99-%ile	1.269621
05-%ile	0.887208	95-%ile	1.159067
10-%ile	0.901207	90-%ile	1.105906
25-%ile	0.946079	75-%ile	1.040408
	Median	0.988911	

-2-


Deviation of rel price from MA. Pair = heatingOil_crudeOil
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = heatingOil_crudeOil
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
500
1000
1500
2000
2500


Returns. Pair = heatingOil_crudeOil
DEPVAR_RET
ACTIVE_RET
21
14
7
0
-7
-14
-21
500
1000
1500
2000
2500

****

******************** Pair = heatingOil_crudeOil

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.014758	Variance	2.990445
Standard Error	1.729290	of Sample Mean	0.032851
t-Statistic (Mean=0)	0.449253	Signif Level	0.653284
Skewness	-0.979650	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.556673	Signif Level (Ku=0)	0.000000
Jarque-Bera	54095.579900	Signif Level (JB=0)	0.000000
Minimum	-20.584528	Maximum	13.741360
01-%ile	-4.169521	99-%ile	5.036791
05-%ile	-2.135145	95-%ile	2.275982
10-%ile	-1.481046	90-%ile	1.480858
25-%ile	-0.707339	75-%ile	0.689096
Median		0.017143	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.01 1.73 -2.14 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.108583	Variance	2.978868
Standard Error	1.725940	of Sample Mean	0.032787
t-Statistic (Mean=0)	3.311713	Signif Level	0.000939

Skewness	1.552687	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.299513	Signif Level (Ku=0)	0.000000
Jarque-Bera	53493.302185	Signif Level (JB=0)	0.000000

Minimum	-13.741360	Maximum	20.584528
01-%ile	-4.147136	99-%ile	5.493431
05-%ile	-2.070219	95-%ile	2.308523
10-%ile	-1.420805	90-%ile	1.565258
25-%ile	-0.634077	75-%ile	0.764235
	Median	0.053501	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.11 1.73 -2.07 0.42 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.002117	Variance	0.003434
Standard Error	0.058602	of Sample Mean	0.001178
t-Statistic (Mean=0)	850.387168	Signif Level	0.000000
Skewness	0.916621	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.445417	Signif Level (Ku=0)	0.000000
Jarque-Bera	962.496010	Signif Level (JB=0)	0.000000

Minimum	0.835093	Maximum	1.318469
01-%ile	0.882691	99-%ile	1.173442
05-%ile	0.922485	95-%ile	1.108586
10-%ile	0.936205	90-%ile	1.072223
25-%ile	0.962436	75-%ile	1.030580
	Median	0.998588	

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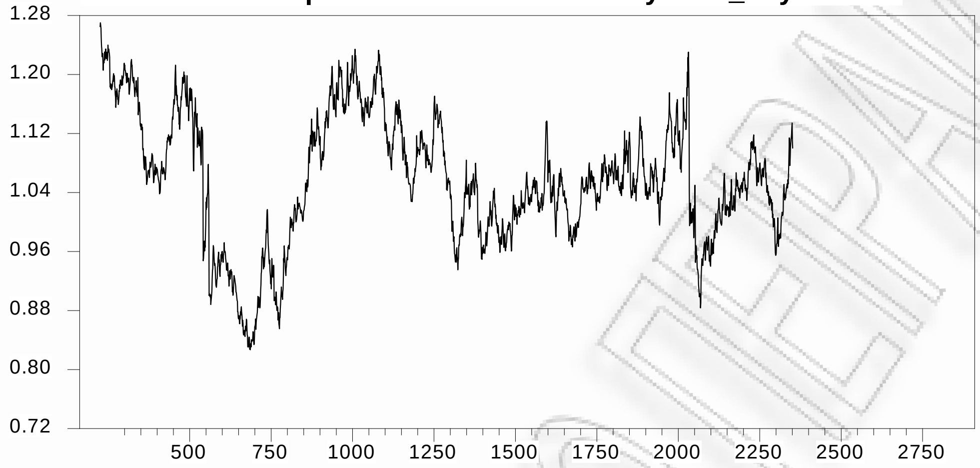
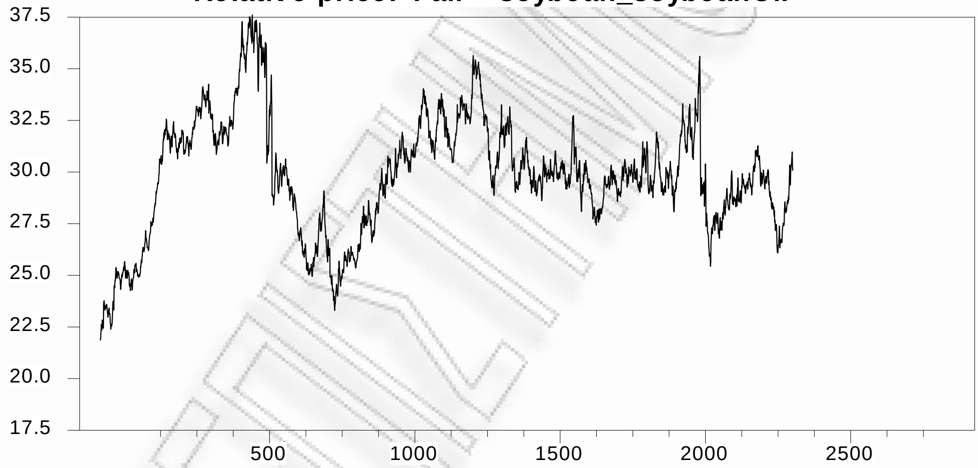
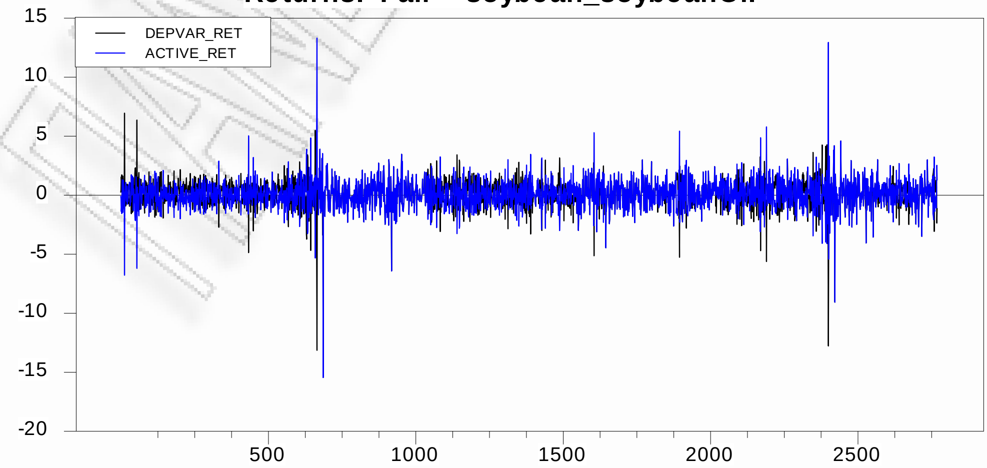
Deviation of rel price from MA. Pair = soybean_soybeanOil



Relative price. Pair = soybean_soybeanOil



Returns. Pair = soybean_soybeanOil



****

******************** Pair = soybean_soybeanOil

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022759	Variance	1.548062
Standard Error	1.244211	of Sample Mean	0.023636
t-Statistic (Mean=0)	0.962875	Signif Level	0.335694
Skewness	-1.805608	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.845722	Signif Level (Ku=0)	0.000000
Jarque-Bera	46979.254862	Signif Level (JB=0)	0.000000
Minimum	-15.532950	Maximum	6.866004
01-%ile	-3.121745	99-%ile	2.864887
05-%ile	-1.743204	95-%ile	1.801140
10-%ile	-1.343896	90-%ile	1.363836
25-%ile	-0.658107	75-%ile	0.745133
Median	0.056297		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.24 -1.74 0.42 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.005662	Variance	1.548548
Standard Error	1.244407	of Sample Mean	0.023640
t-Statistic (Mean=0)	0.239515	Signif Level	0.810724

Skewness	-0.048928	Signif Level (Sk=0)	0.293297
Kurtosis (excess)	19.701941	Signif Level (Ku=0)	0.000000
Jarque-Bera	44818.159460	Signif Level (JB=0)	0.000000

Minimum	-15.532950	Maximum	13.227875
01-%ile	-2.850893	99-%ile	2.930090
05-%ile	-1.758467	95-%ile	1.791210
10-%ile	-1.346609	90-%ile	1.363841
25-%ile	-0.702335	75-%ile	0.720276
	Median	-0.006425	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.01 1.24 -1.76 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.004347	Variance	0.010145
Standard Error	0.100724	of Sample Mean	0.002025
t-Statistic (Mean=0)	495.863219	Signif Level	0.000000
Skewness	-0.175455	Signif Level (Sk=0)	0.000371
Kurtosis (excess)	-0.300700	Signif Level (Ku=0)	0.002303
Jarque-Bera	22.005362	Signif Level (JB=0)	0.000017

Minimum	0.736326	Maximum	1.252000
01-%ile	0.757913	99-%ile	1.201048
05-%ile	0.822952	95-%ile	1.166682
10-%ile	0.875678	90-%ile	1.143059
25-%ile	0.941096	75-%ile	1.075737
	Median	1.001831	

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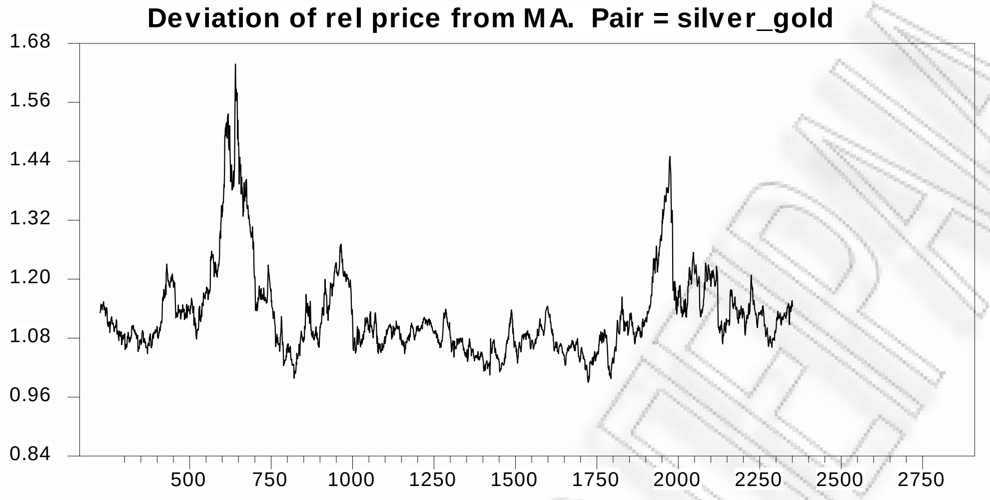
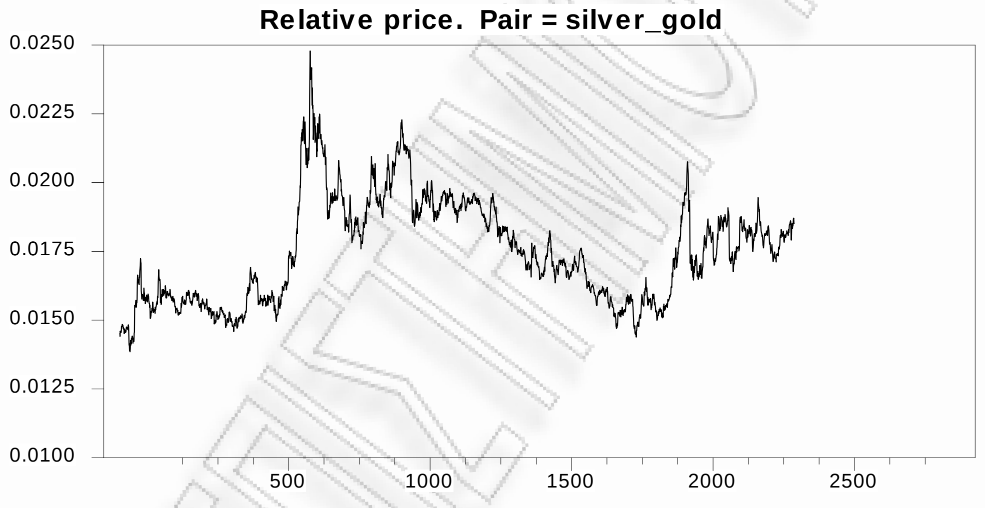
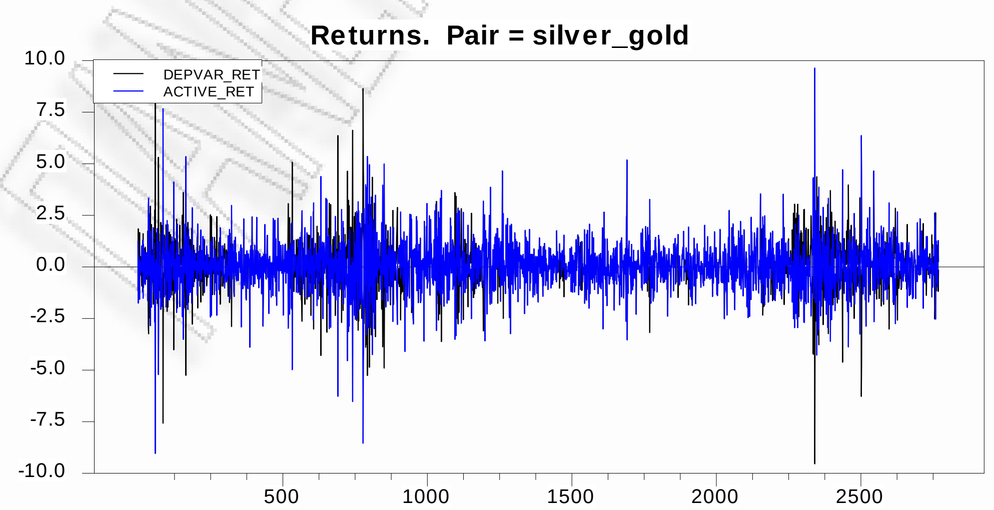

Deviation of rel price from MA. Pair = silver_gold
1.68
1.56
1.44
1.32
1.20
1.08
0.96
0.84
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = silver_gold
0.0250
0.0225
0.0200
0.0175
0.0150
0.0125
0.0100
500
1000
1500
2000
2500


Returns. Pair = silver_gold
DEPVAR_RET
ACTIVE_RET
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
500
1000
1500
2000
2500

****

******************** Pair = silver_gold

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018778	Variance	1.475875
Standard Error	1.214856	of Sample Mean	0.023078
t-Statistic (Mean=0)	0.813642	Signif Level	0.415920
Skewness	0.010534	Signif Level (Sk=0)	0.820998
Kurtosis (excess)	6.051425	Signif Level (Ku=0)	0.000000
Jarque-Bera	4228.105978	Signif Level (JB=0)	0.000000

Minimum	-9.590524	Maximum	9.087904
01-%ile	-3.282010	99-%ile	3.105876
05-%ile	-1.838538	95-%ile	1.873336
10-%ile	-1.325501	90-%ile	1.347578
25-%ile	-0.591186	75-%ile	0.628350
Median	0.006533		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.21 -1.84 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.014876	Variance	1.476006
Standard Error	1.214910	of Sample Mean	0.023079
t-Statistic (Mean=0)	0.644562	Signif Level	0.519264

Skewness	0.023606	Signif Level (Sk=0)	0.612136
Kurtosis (excess)	6.049843	Signif Level (Ku=0)	0.000000
Jarque-Bera	4226.101209	Signif Level (JB=0)	0.000000

Minimum	-9.087904	Maximum	9.590524
01-%ile	-3.062992	99-%ile	3.284160
05-%ile	-1.839324	95-%ile	1.882341
10-%ile	-1.341133	90-%ile	1.330902
25-%ile	-0.595672	75-%ile	0.628019
	Median	-0.000000	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.01 1.21 -1.84 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.012990	Variance	0.011059
Standard Error	0.105161	of Sample Mean	0.002115
t-Statistic (Mean=0)	479.029670	Signif Level	0.000000
Skewness	2.086935	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	5.505864	Signif Level (Ku=0)	0.000000
Jarque-Bera	4918.768913	Signif Level (JB=0)	0.000000

Minimum	0.852081	Maximum	1.606422
01-%ile	0.880223	99-%ile	1.434814
05-%ile	0.903569	95-%ile	1.248810
10-%ile	0.920996	90-%ile	1.122696
25-%ile	0.948451	75-%ile	1.037752
	Median	0.985132	

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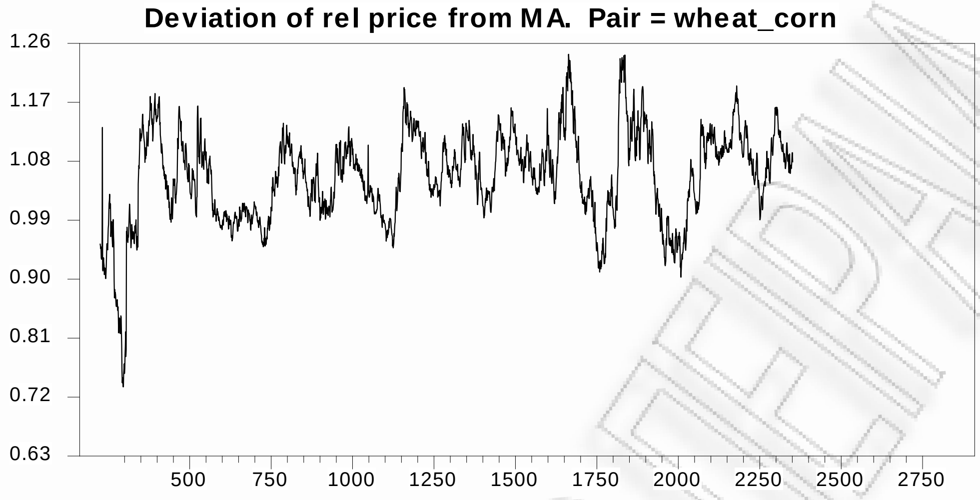
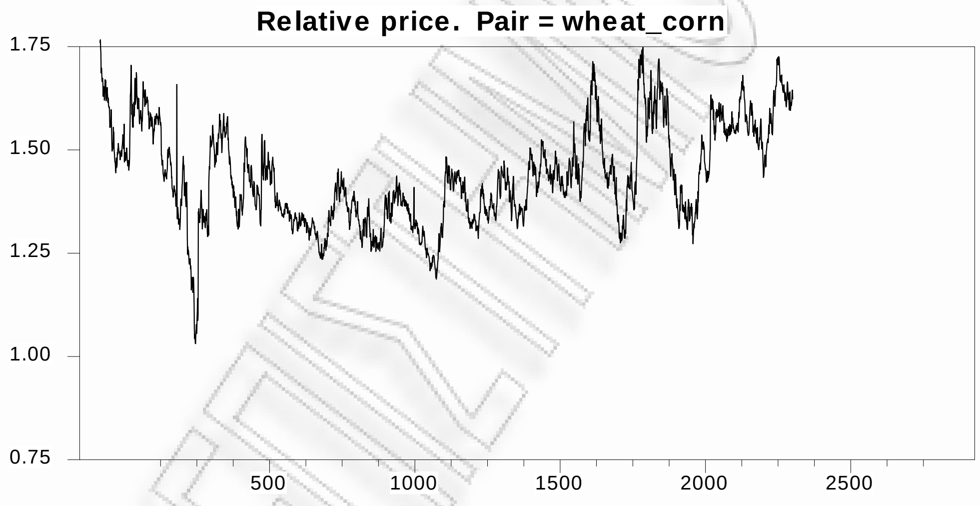
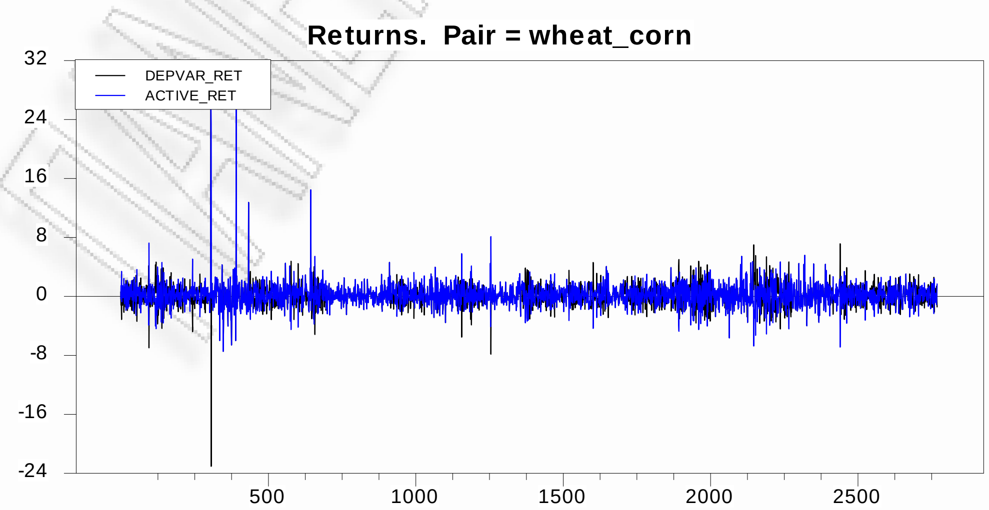

Deviation of rel price from MA. Pair = wheat_corn
1.26
1.17
1.08
0.99
0.90
0.81
0.72
0.63
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = wheat_corn
1.75
1.50
1.25
1.00
0.75
500
1000
1500
2000
2500


Returns. Pair = wheat_corn
DEPVAR_RET
ACTIVE_RET
32
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = wheat_corn

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.011072	Variance	2.974005
Standard Error	1.724530	of Sample Mean	0.032761
t-Statistic (Mean=0)	0.337962	Signif Level	0.735418
Skewness	2.730782	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	68.283882	Signif Level (Ku=0)	0.000000
Jarque-Bera	541790.217454	Signif Level (JB=0)	0.000000

Minimum	-23.187712	Maximum	30.020972
01-%ile	-3.476776	99-%ile	4.173708
05-%ile	-2.166937	95-%ile	2.260124
10-%ile	-1.689766	90-%ile	1.697152
25-%ile	-0.893765	75-%ile	0.853195
Median	-0.039146		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.72 -2.17 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.084695	Variance	2.966951
Standard Error	1.722484	of Sample Mean	0.032722
t-Statistic (Mean=0)	2.588325	Signif Level	0.009695

Skewness	4.335112	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	67.825625	Signif Level (Ku=0)	0.000000
Jarque-Bera	539824.068289	Signif Level (JB=0)	0.000000

Minimum	-7.588072	Maximum	30.020972
01-%ile	-3.829141	99-%ile	3.887096
05-%ile	-2.194329	95-%ile	2.250962
10-%ile	-1.642421	90-%ile	1.743274
25-%ile	-0.793355	75-%ile	0.938464
	Median	0.043921	

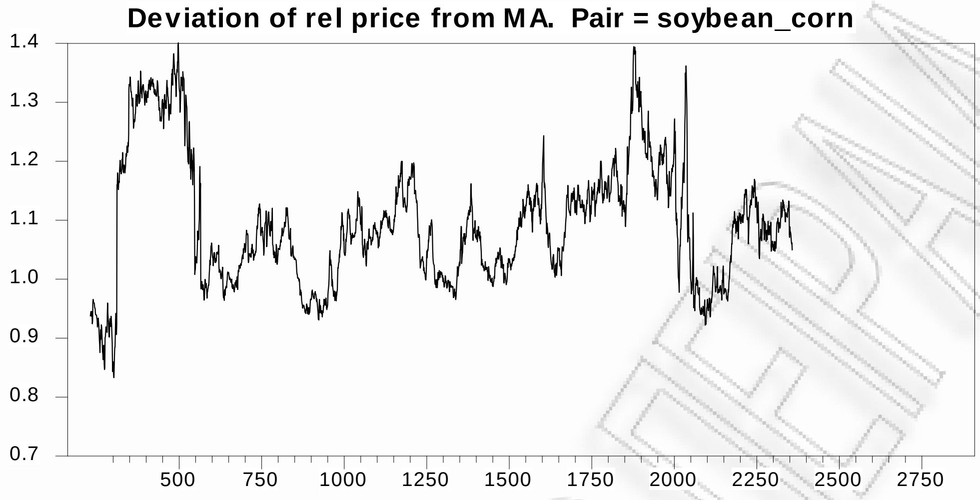
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.08 1.72 -2.19 0.43 %

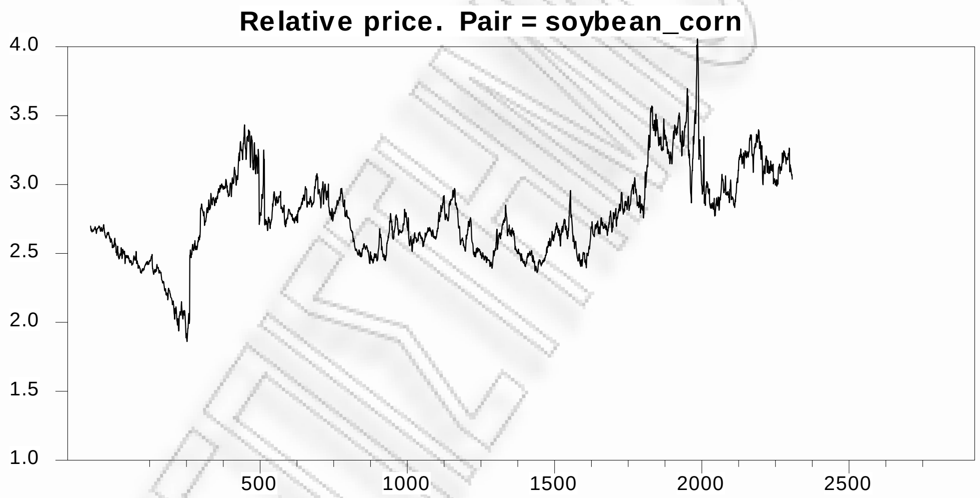
Statistics on Series MA_REL

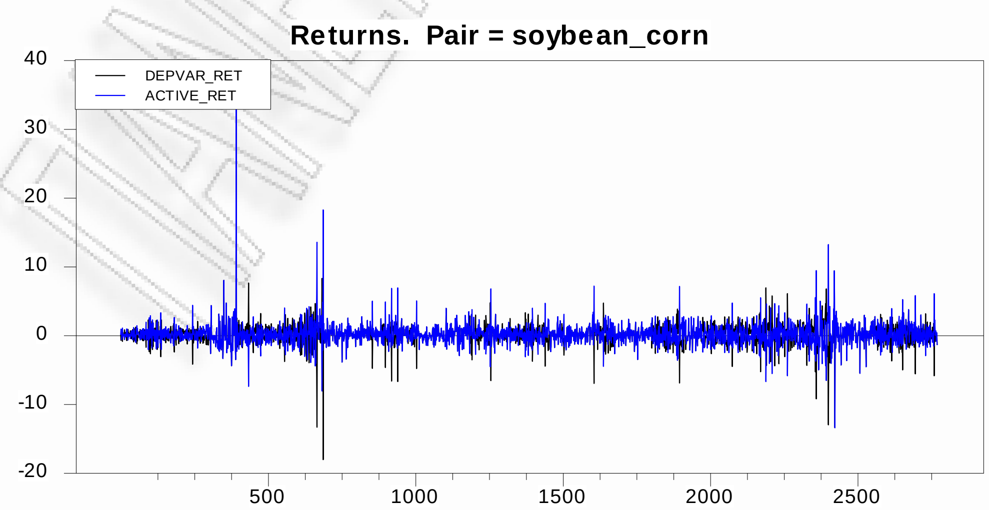
Observations	2473	Skipped/Missing	299
Sample Mean	1.003526	Variance	0.006734
Standard Error	0.082059	of Sample Mean	0.001650
t-Statistic (Mean=0)	608.152255	Signif Level	0.000000
Skewness	-0.586050	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.475306	Signif Level (Ku=0)	0.000000
Jarque-Bera	365.833767	Signif Level (JB=0)	0.000000

Minimum	0.631459	Maximum	1.222037
01-%ile	0.752940	99-%ile	1.188295
05-%ile	0.876749	95-%ile	1.123633
10-%ile	0.903682	90-%ile	1.099584
25-%ile	0.949891	75-%ile	1.059795
	Median	1.010133	

-6-


Deviation of rel price from MA. Pair = soybean_corn
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_corn
4.0
3.5
3.0
2.5
2.0
1.5
1.0
500
1000
1500
2000
2500


Returns. Pair = soybean_corn
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
500
1000
1500
2000
2500

****

********************* Pair = soybean_corn

********************* SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018639	Variance	2.666566
Standard Error	1.632962	of Sample Mean	0.031021
t-Statistic (Mean=0)	0.600843	Signif Level	0.547994
Skewness	1.968128	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	76.216099	Signif Level (Ku=0)	0.000000
Jarque-Bera	672474.116889	Signif Level (JB=0)	0.000000

Minimum	-18.156908	Maximum	33.572249
01-%ile	-4.518416	99-%ile	3.746851
05-%ile	-2.138780	95-%ile	2.141820
10-%ile	-1.496651	90-%ile	1.566307
25-%ile	-0.654477	75-%ile	0.760979
Median	0.016422		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.63 -2.14 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.074366	Variance	2.661381
Standard Error	1.631374	of Sample Mean	0.030991
t-Statistic (Mean=0)	2.399612	Signif Level	0.016478

Skewness	4.013745	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	75.870765	Signif Level (Ku=0)	0.000000
Jarque-Bera	672061.440318	Signif Level (JB=0)	0.000000

Minimum	-13.520310	Maximum	33.572249
01-%ile	-3.624096	99-%ile	4.541555
05-%ile	-2.020321	95-%ile	2.250066
10-%ile	-1.476793	90-%ile	1.569585
25-%ile	-0.670175	75-%ile	0.738435
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.07 1.63 -2.02 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.023377	Variance	0.015398
Standard Error	0.124087	of Sample Mean	0.002495
t-Statistic (Mean=0)	410.128199	Signif Level	0.000000
Skewness	0.620655	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.029576	Signif Level (Ku=0)	0.764327
Jarque-Bera	158.861953	Signif Level (JB=0)	0.000000

Minimum	0.719608	Maximum	1.380451
01-%ile	0.794810	99-%ile	1.322169
05-%ile	0.851198	95-%ile	1.282452
10-%ile	0.880667	90-%ile	1.225080
25-%ile	0.933617	75-%ile	1.084411
Median	1.009831		

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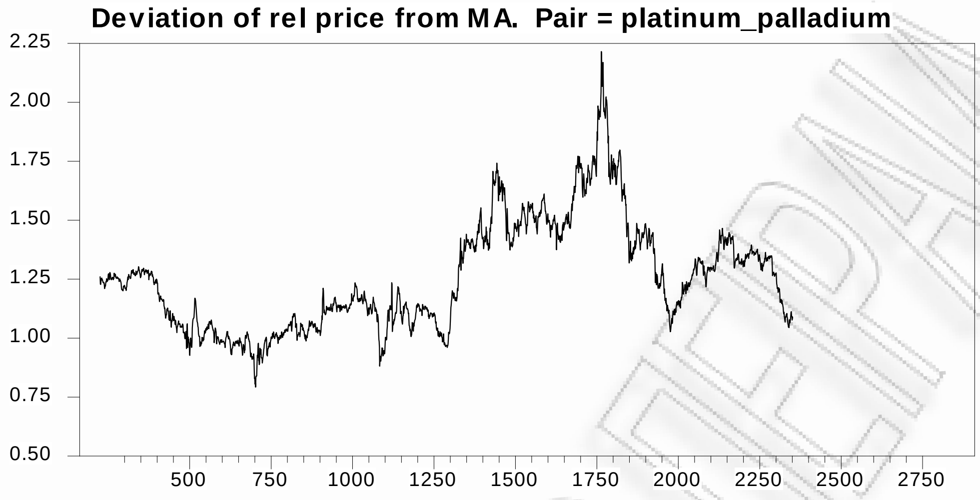
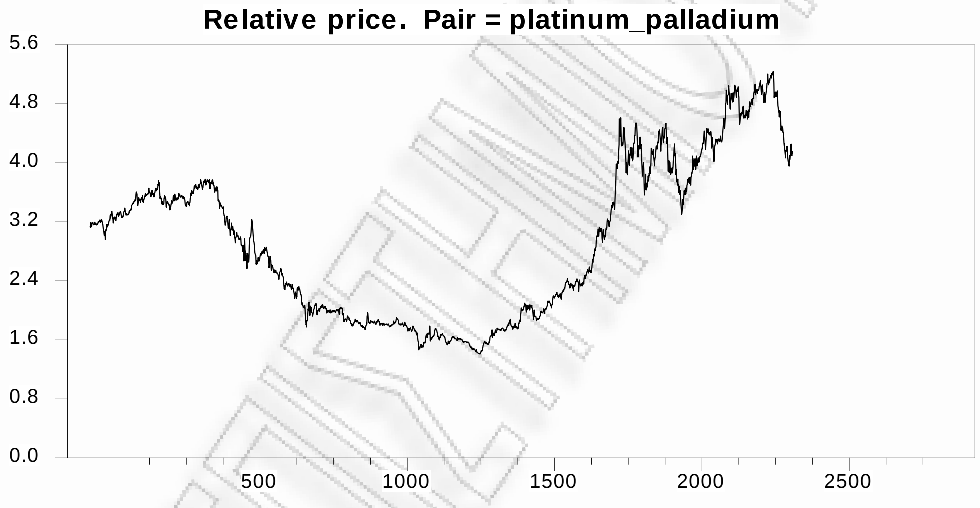
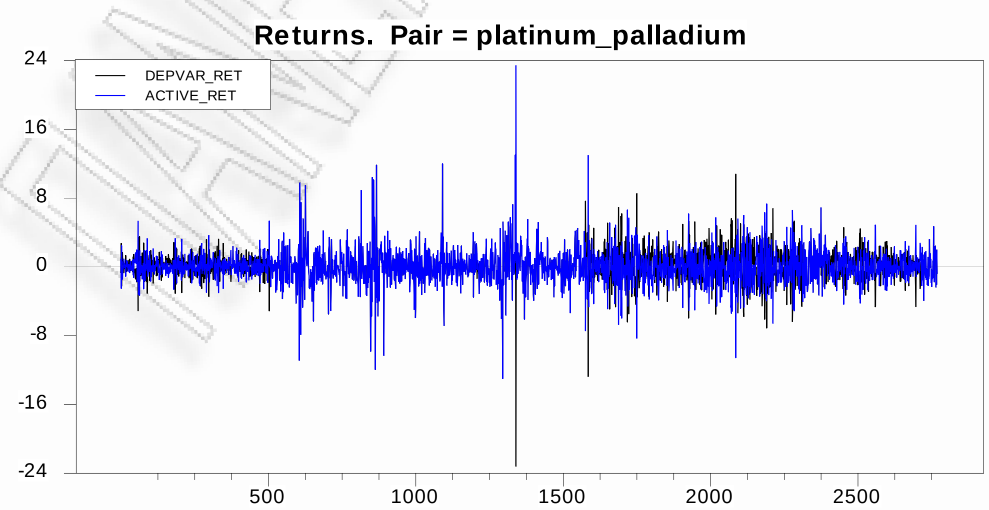

Deviation of rel price from MA. Pair = platinum_palladium
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = platinum_palladium
5.6
4.8
4.0
3.2
2.4
1.6
0.8
0.0
500
1000
1500
2000
2500


Returns. Pair = platinum_palladium
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = platinum_palladium

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.033564	Variance	4.011642
Standard Error	2.002908	of Sample Mean	0.038049
t-Statistic (Mean=0)	0.882115	Signif Level	0.377791
Skewness	-0.535602	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	12.067461	Signif Level (Ku=0)	0.000000
Jarque-Bera	16945.945198	Signif Level (JB=0)	0.000000

Minimum	-23.298456	Maximum	12.896863
01-%ile	-5.453415	99-%ile	5.149221
05-%ile	-2.875062	95-%ile	3.038467
10-%ile	-2.047033	90-%ile	2.165283
25-%ile	-0.927409	75-%ile	0.984723
Median	0.026603		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = 0.03 2.00 -2.88 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.080778	Variance	4.006241
Standard Error	2.001560	of Sample Mean	0.038023
t-Statistic (Mean=0)	-2.124444	Signif Level	0.033721

Skewness	0.724980	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	12.181170	Signif Level (Ku=0)	0.000000
Jarque-Bera	17374.549803	Signif Level (JB=0)	0.000000

Minimum	-13.105920	Maximum	23.298456
01-%ile	-5.243030	99-%ile	5.382605
05-%ile	-3.027994	95-%ile	2.972486
10-%ile	-2.136216	90-%ile	2.050077
25-%ile	-1.045023	75-%ile	0.828645
Median	-0.097877		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.08 2.00 -3.03 0.47 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.042587	Variance	0.072488
Standard Error	0.269235	of Sample Mean	0.005414
t-Statistic (Mean=0)	192.571750	Signif Level	0.000000
Skewness	0.822672	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.465847	Signif Level (Ku=0)	0.000002
Jarque-Bera	301.311198	Signif Level (JB=0)	0.000000

Minimum	0.502637	Maximum	2.157977
01-%ile	0.645993	99-%ile	1.862194
05-%ile	0.709274	95-%ile	1.558334
10-%ile	0.741479	90-%ile	1.412352
25-%ile	0.825330	75-%ile	1.220460
Median	1.004271		

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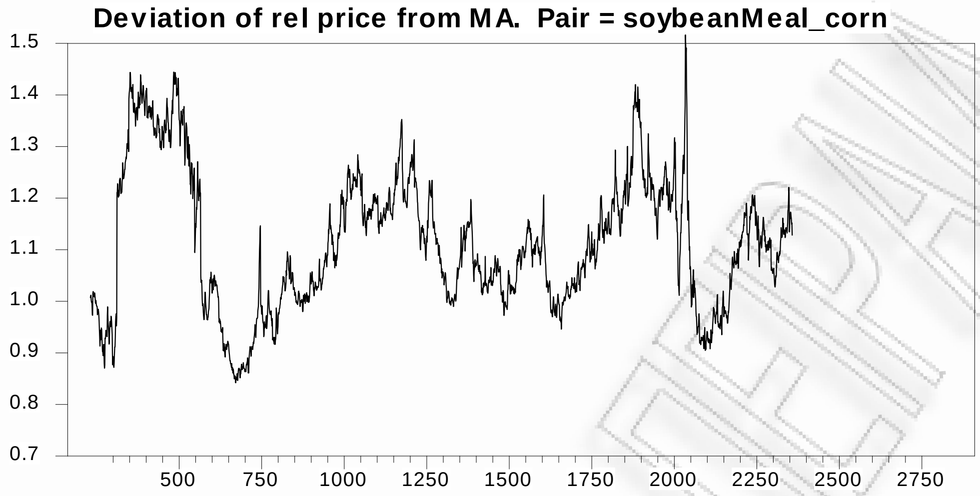
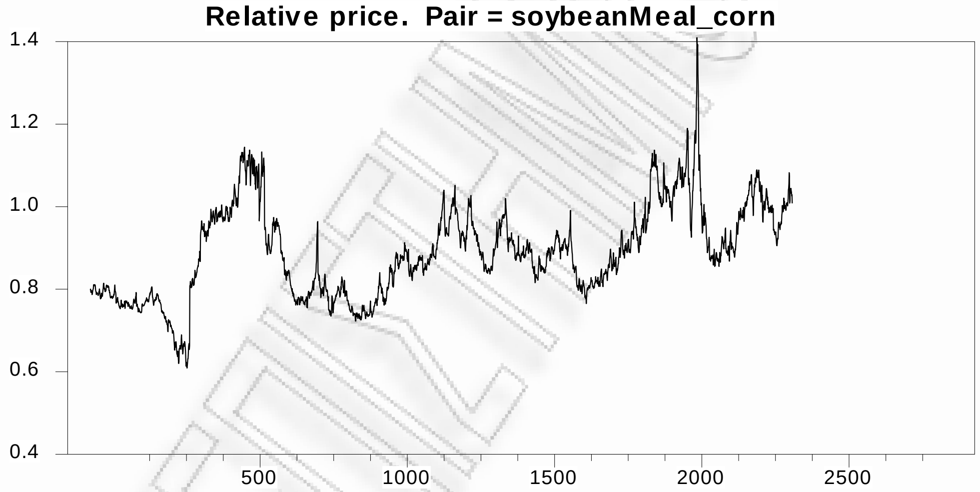
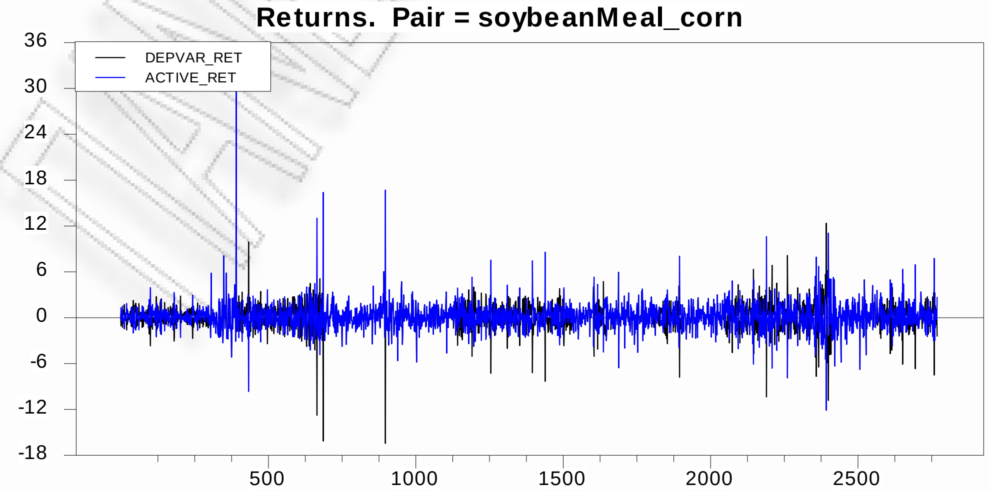

Deviation of rel price from MA. Pair = soybeanMeal_corn
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanMeal_corn
1.4
1.2
1.0
0.8
0.6
0.4
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_corn
DEPVAR_RET
ACTIVE_RET
36
30
24
18
12
6
0
-6
-12
-18
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_corn

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.027405	Variance	3.271722
Standard Error	1.808790	of Sample Mean	0.034361
t-Statistic (Mean=0)	0.797547	Signif Level	0.425202
Skewness	1.327603	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	48.245724	Signif Level (Ku=0)	0.000000
Jarque-Bera	269560.575111	Signif Level (JB=0)	0.000000
Minimum	-16.583341	Maximum	32.997932
01-%ile	-4.941308	99-%ile	4.050668
05-%ile	-2.455365	95-%ile	2.457314
10-%ile	-1.728488	90-%ile	1.860235
25-%ile	-0.824091	75-%ile	0.906750
Median		0.052865	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.81 -2.46 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.029021	Variance	3.271630
Standard Error	1.808765	of Sample Mean	0.034361
t-Statistic (Mean=0)	0.844595	Signif Level	0.398410

Skewness	2.982433	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	48.137308	Signif Level (Ku=0)	0.000000
Jarque-Bera	271648.067064	Signif Level (JB=0)	0.000000
Minimum	-12.235515	Maximum	32.997932
01-%ile	-3.940904	99-%ile	4.884434
05-%ile	-2.447308	95-%ile	2.465808
10-%ile	-1.785270	90-%ile	1.803400
25-%ile	-0.888536	75-%ile	0.855423
Median	-0.020877		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.81 -2.45 0.45 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.026045	Variance	0.023843
Standard Error	0.154413	of Sample Mean	0.003105
t-Statistic (Mean=0)	330.441290	Signif Level	0.000000
Skewness	0.377769	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.398282	Signif Level (Ku=0)	0.000054
Jarque-Bera	75.165550	Signif Level (JB=0)	0.000000
Minimum	0.710957	Maximum	1.495440
01-%ile	0.735867	99-%ile	1.382104
05-%ile	0.795765	95-%ile	1.322272
10-%ile	0.837326	90-%ile	1.250833
25-%ile	0.911040	75-%ile	1.129308
Median	1.012418		

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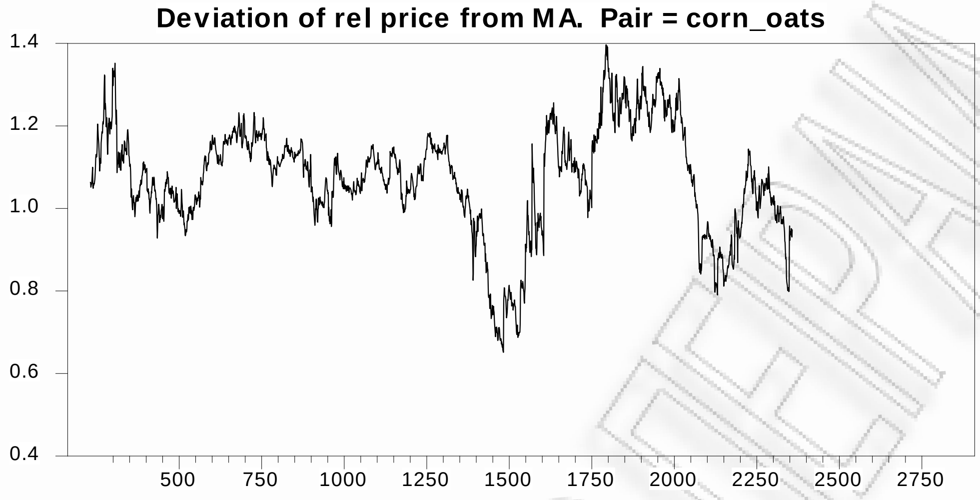
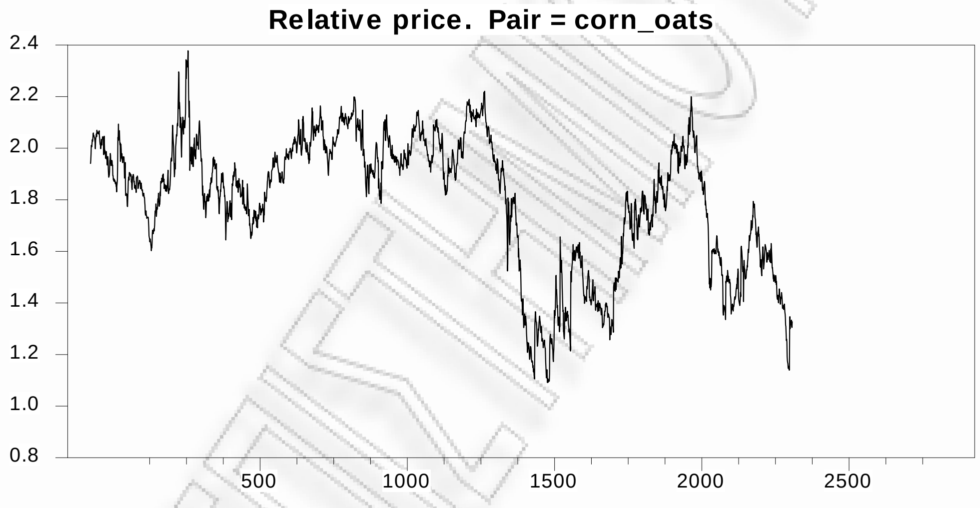
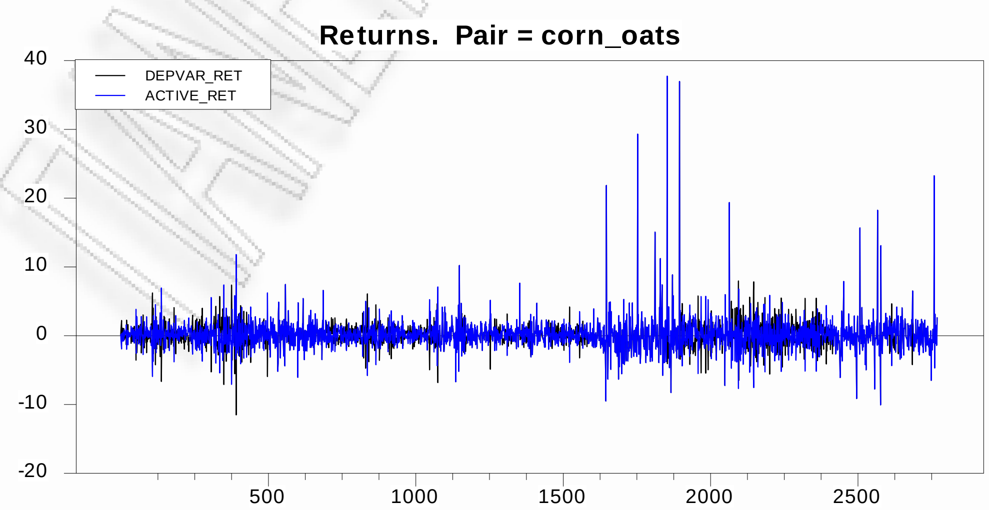

Deviation of rel price from MA. Pair = corn_oats
1.4
1.2
1.0
0.8
0.6
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = corn_oats
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
500
1000
1500
2000
2500


Returns. Pair = corn_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
500
1000
1500
2000
2500

****

******************** Pair = corn_oats

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.007345	Variance	5.392940
Standard Error	2.322270	of Sample Mean	0.044116
t-Statistic (Mean=0)	0.166487	Signif Level	0.867786
Skewness	4.890516	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	67.317399	Signif Level (Ku=0)	0.000000
Jarque-Bera	534260.441385	Signif Level (JB=0)	0.000000

Minimum	-11.661956	Maximum	37.584567
01-%ile	-5.104269	99-%ile	5.655687
05-%ile	-2.839969	95-%ile	2.742127
10-%ile	-1.999840	90-%ile	1.900938
25-%ile	-0.981165	75-%ile	0.864683
Median	-0.068176		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 2.32 -2.84 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.038250	Variance	5.391530
Standard Error	2.321967	of Sample Mean	0.044110
t-Statistic (Mean=0)	0.867158	Signif Level	0.385930

Skewness	4.917796	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	67.090078	Signif Level (Ku=0)	0.000000
Jarque-Bera	530856.342619	Signif Level (JB=0)	0.000000
Minimum	-10.197236	Maximum	37.584567
01-%ile	-5.301155	99-%ile	5.701292
05-%ile	-2.867946	95-%ile	2.760609
10-%ile	-2.009000	90-%ile	1.907833
25-%ile	-0.948950	75-%ile	0.871765
	Median	-0.007908	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.04 2.32 -2.87 0.45 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	0.988640	Variance	0.023269
Standard Error	0.152540	of Sample Mean	0.003067
t-Statistic (Mean=0)	322.303718	Signif Level	0.000000
Skewness	-0.613069	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.603727	Signif Level (Ku=0)	0.000000
Jarque-Bera	192.471442	Signif Level (JB=0)	0.000000
Minimum	0.499615	Maximum	1.366633
01-%ile	0.555013	99-%ile	1.285238
05-%ile	0.678412	95-%ile	1.220569
10-%ile	0.783081	90-%ile	1.167442
25-%ile	0.910825	75-%ile	1.086154
	Median	1.003740	

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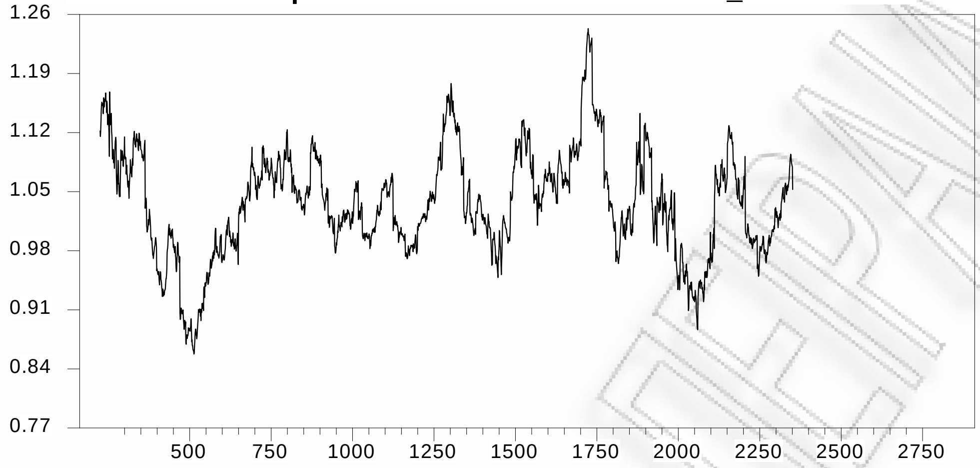
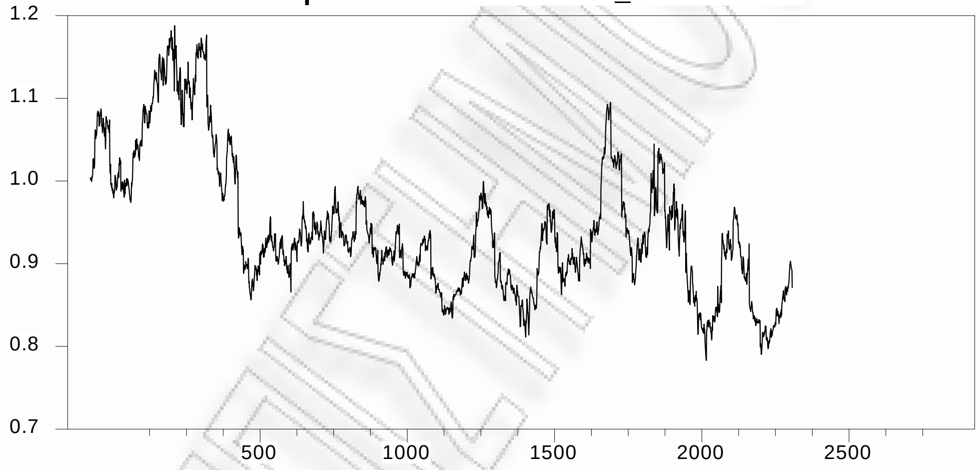
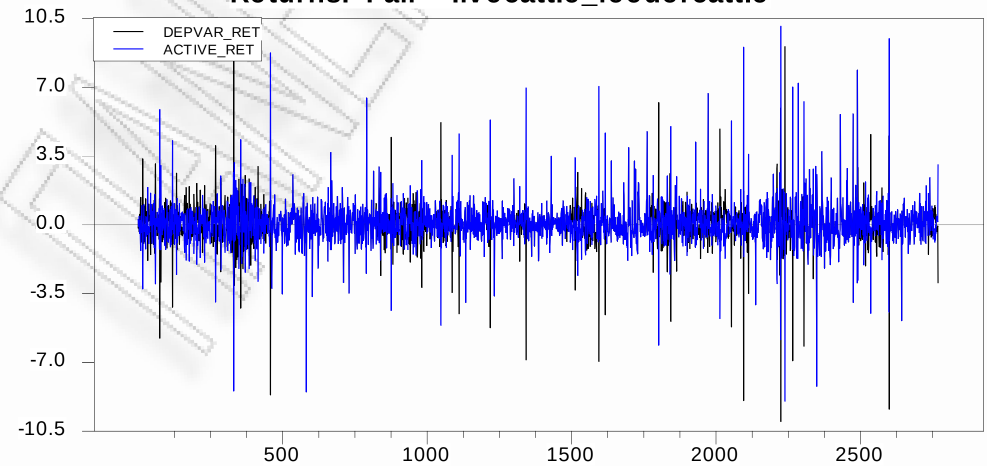
Deviation of rel price from MA. Pair = livecattle_feedercattle



Relative price. Pair = livecattle_feedercattle



Returns. Pair = livecattle_feedercattle



****

******************** Pair = livecattle_feedercattle

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000245	Variance	1.223698
Standard Error	1.106209	of Sample Mean	0.021014
t-Statistic (Mean=0)	-0.011655	Signif Level	0.990702
Skewness	-0.699388	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.182778	Signif Level (Ku=0)	0.000000
Jarque-Bera	42712.139854	Signif Level (JB=0)	0.000000

Minimum	-10.059802	Maximum	9.021523
01-%ile	-3.406924	99-%ile	2.927325
05-%ile	-1.363140	95-%ile	1.311686
10-%ile	-0.933457	90-%ile	0.970670
25-%ile	-0.444826	75-%ile	0.471812
Median	0.003105		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 1.11 -1.36 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.032244	Variance	1.222658
Standard Error	1.105739	of Sample Mean	0.021006
t-Statistic (Mean=0)	1.535045	Signif Level	0.124887
Skewness	0.938279	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	19.106442	Signif Level (Ku=0)	0.000000
Jarque-Bera	42555.356272	Signif Level (JB=0)	0.000000

Minimum	-9.021523	Maximum	10.059802
01-%ile	-2.832545	99-%ile	3.511323
05-%ile	-1.280921	95-%ile	1.379904
10-%ile	-0.934140	90-%ile	0.970670
25-%ile	-0.456399	75-%ile	0.457666
	Median	0.005272	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.11 -1.28 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	0.984342	Variance	0.005326
Standard Error	0.072979	of Sample Mean	0.001468
t-Statistic (Mean=0)	670.752160	Signif Level	0.000000
Skewness	0.044359	Signif Level (Sk=0)	0.368107
Kurtosis (excess)	0.308076	Signif Level (Ku=0)	0.001791

Jarque-Bera	10.590777	Signif Level (JB=0)	0.005015

Minimum	0.777377	Maximum	1.226021
01-%ile	0.805397	99-%ile	1.159357
05-%ile	0.863614	95-%ile	1.104373
10-%ile	0.893296	90-%ile	1.074624
25-%ile	0.938080	75-%ile	1.033484
	Median	0.983966	

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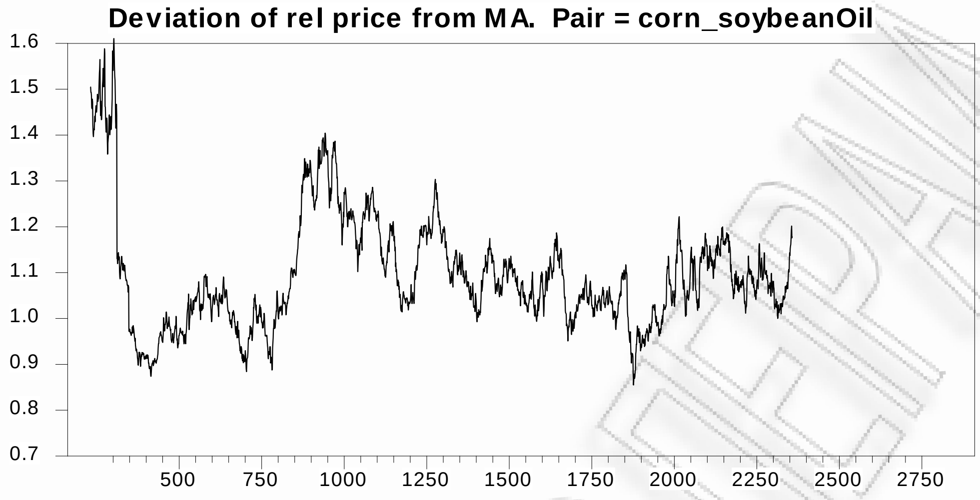
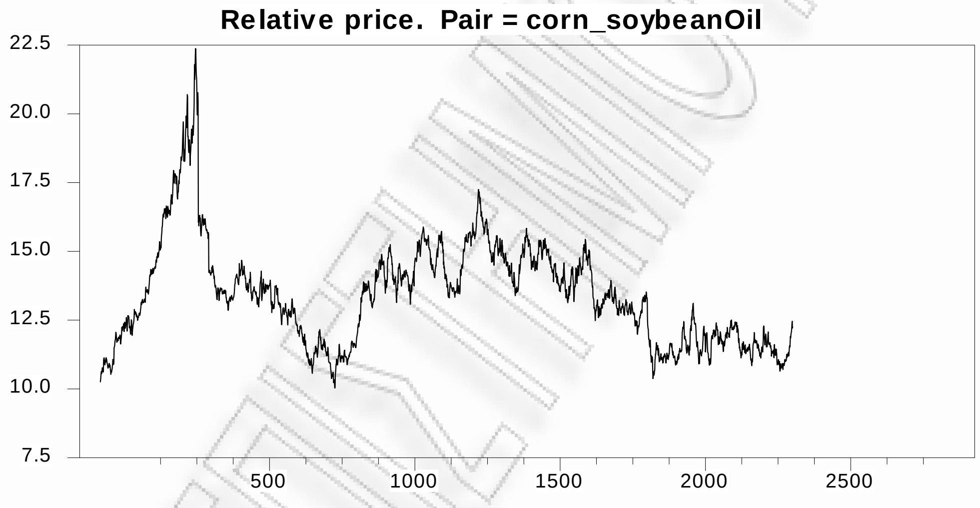
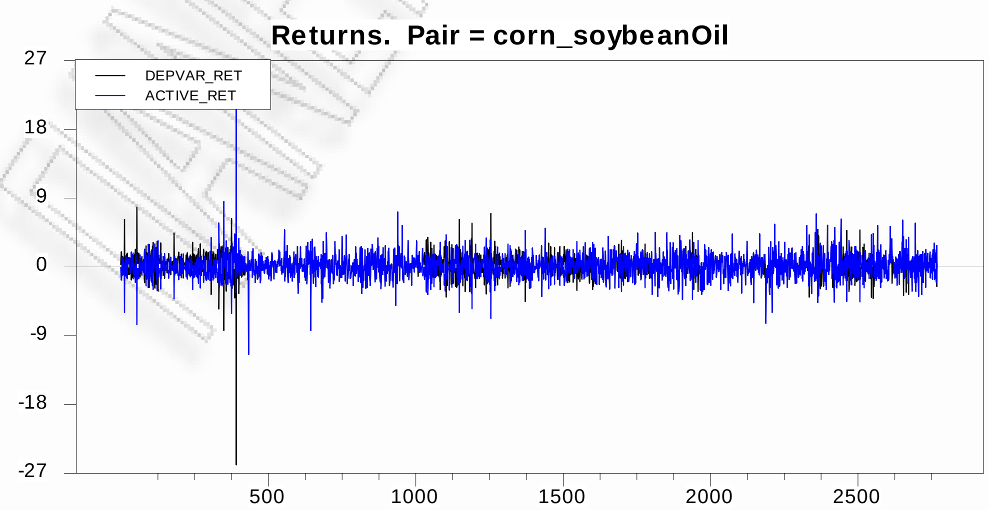

Deviation of rel price from MA. Pair = corn_soybeanOil
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = corn_soybeanOil
22.5
20.0
17.5
15.0
12.5
10.0
7.5
500
1000
1500
2000
2500


Returns. Pair = corn_soybeanOil
DEPVAR_RET
ACTIVE_RET
27
18
9
0
-9
-18
-27
500
1000
1500
2000
2500

****

********************* Pair = corn_soybeanOil

********************* SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022716	Variance	2.607125
Standard Error	1.614659	of Sample Mean	0.030673
t-Statistic (Mean=0)	0.740579	Signif Level	0.459012
Skewness	-1.541697	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	26.658832	Signif Level (Ku=0)	0.000000
Jarque-Bera	83153.165661	Signif Level (JB=0)	0.000000

Minimum	-26.029427	Maximum	7.705406
01-%ile	-3.723503	99-%ile	4.328790
05-%ile	-2.408582	95-%ile	2.408979
10-%ile	-1.733030	90-%ile	1.805792
25-%ile	-0.894354	75-%ile	0.925156
Median	0.043607		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.61 -2.41 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.011767	Variance	2.607503
Standard Error	1.614776	of Sample Mean	0.030676

t-Statistic (Mean=0)	-0.383593	Signif Level	0.701309
Skewness	1.408262	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	26.605359	Signif Level (Ku=0)	0.000000
Jarque-Bera	82642.528517	Signif Level (JB=0)	0.000000

Minimum	-11.591903	Maximum	26.029427
01-%ile	-3.731784	99-%ile	4.090857
05-%ile	-2.421038	95-%ile	2.394943
10-%ile	-1.764993	90-%ile	1.779725
25-%ile	-0.934587	75-%ile	0.880811
	Median	-0.038615	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.01 1.61 -2.42 0.45 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	0.985904	Variance	0.021030
Standard Error	0.145018	of Sample Mean	0.002916
t-Statistic (Mean=0)	338.084137	Signif Level	0.000000
Skewness	1.215208	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.857941	Signif Level (Ku=0)	0.000000
Jarque-Bera	964.353265	Signif Level (JB=0)	0.000000

Minimum	0.706836	Maximum	1.585851
01-%ile	0.756445	99-%ile	1.453280
05-%ile	0.789744	95-%ile	1.290188
10-%ile	0.833054	90-%ile	1.174453
25-%ile	0.896295	75-%ile	1.046937
	Median	0.956708	

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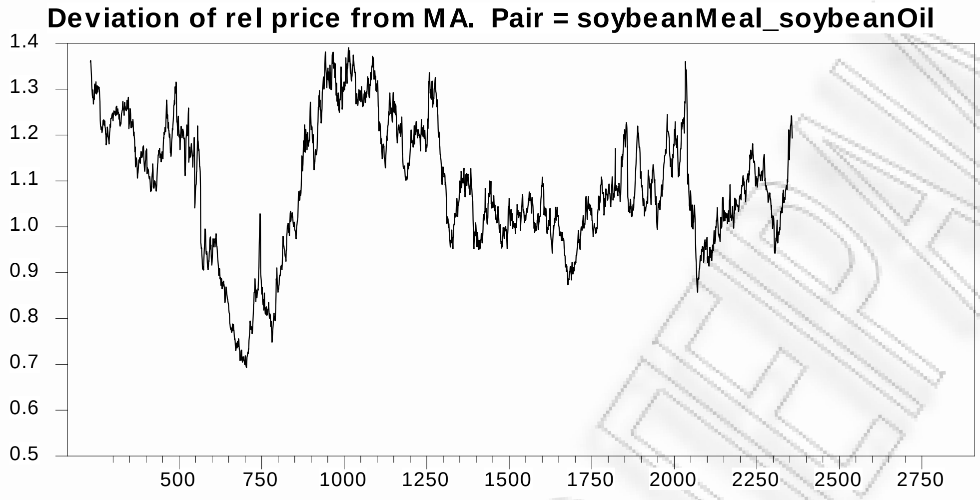
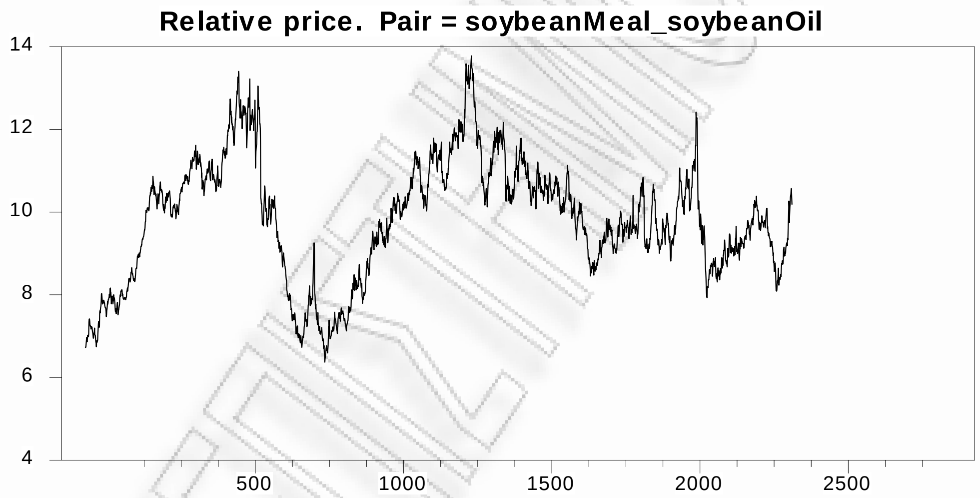
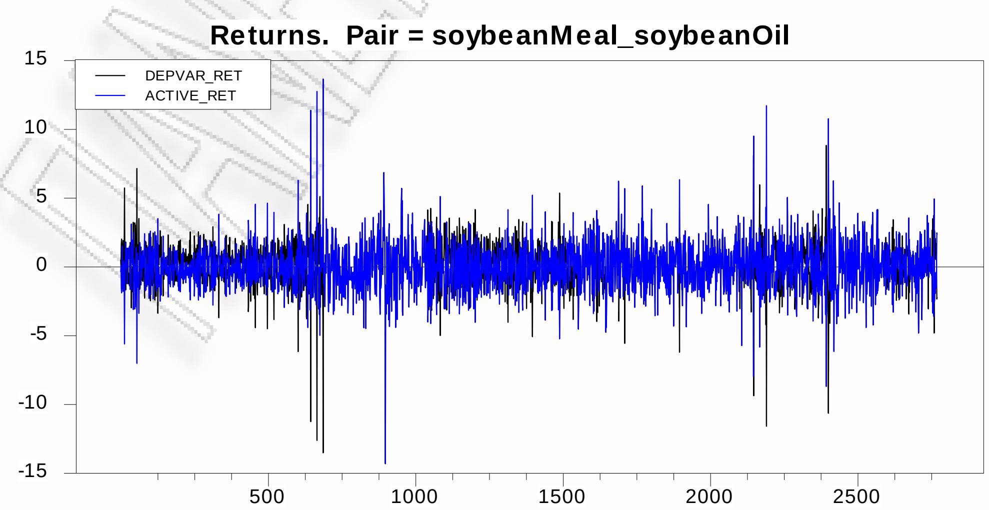

Deviation of rel price from MA. Pair = soybeanMeal_soybeanOil
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
0.5
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanMeal_soybeanOil
14
12
10
8
6
4
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_soybeanOil
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_soybeanOil

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.036021	Variance	3.051191
Standard Error	1.746766	of Sample Mean	0.033183
t-Statistic (Mean=0)	1.085531	Signif Level	0.277781
Skewness	-0.785063	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.398734	Signif Level (Ku=0)	0.000000
Jarque-Bera	5011.941007	Signif Level (JB=0)	0.000000

Minimum	-14.377052	Maximum	8.763069
01-%ile	-4.373552	99-%ile	3.957606
05-%ile	-2.568975	95-%ile	2.622996
10-%ile	-1.985613	90-%ile	2.051847
25-%ile	-0.976966	75-%ile	1.107380
Median	0.071895		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.04 1.75 -2.57 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.022519	Variance	3.051981
Standard Error	1.746992	of Sample Mean	0.033187

t-Statistic (Mean=0)	-0.678537	Signif Level	0.497488
Skewness	0.428909	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.352749	Signif Level (Ku=0)	0.000000
Jarque-Bera	4744.560259	Signif Level (JB=0)	0.000000

Minimum	-14.377052	Maximum	13.588306
01-%ile	-4.026949	99-%ile	4.143405
05-%ile	-2.604359	95-%ile	2.613541
10-%ile	-2.035278	90-%ile	1.995117
25-%ile	-1.085837	75-%ile	1.005014
	Median	-0.054023	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.02 1.75 -2.60 0.45 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.009766	Variance	0.027671
Standard Error	0.166345	of Sample Mean	0.003345
t-Statistic (Mean=0)	301.871811	Signif Level	0.000000
Skewness	-0.271487	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.234355	Signif Level (Ku=0)	0.017522
Jarque-Bera	36.038175	Signif Level (JB=0)	0.000000

Minimum	0.550764	Maximum	1.362690
01-%ile	0.587465	99-%ile	1.324247
05-%ile	0.702936	95-%ile	1.271898
10-%ile	0.802011	90-%ile	1.231205
25-%ile	0.906480	75-%ile	1.139964
	Median	1.003524	

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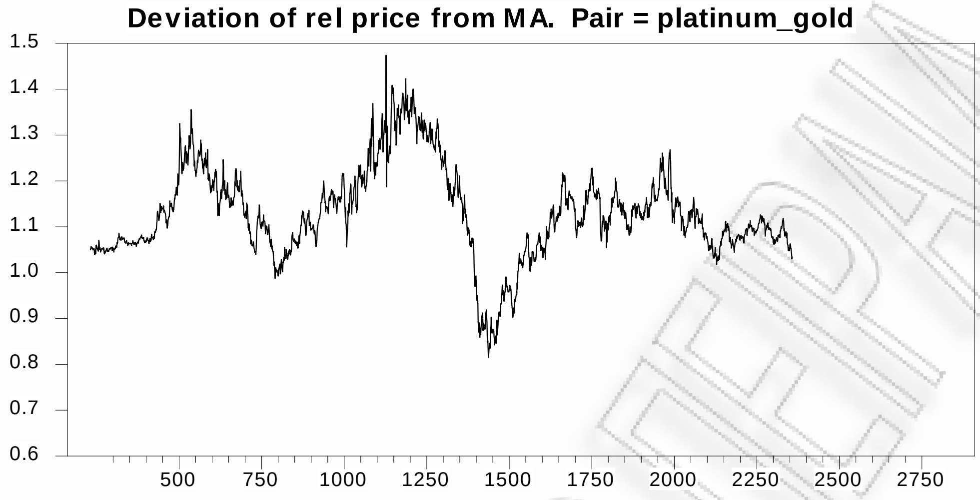
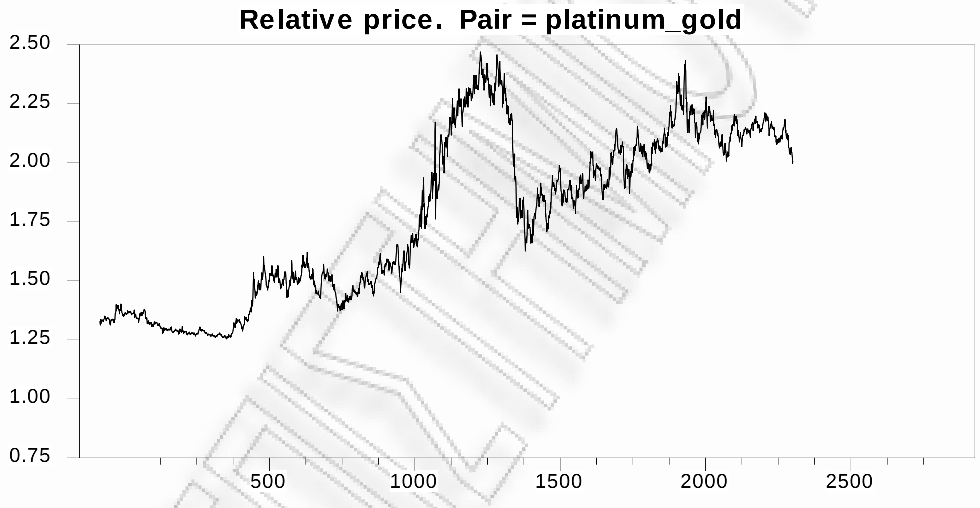
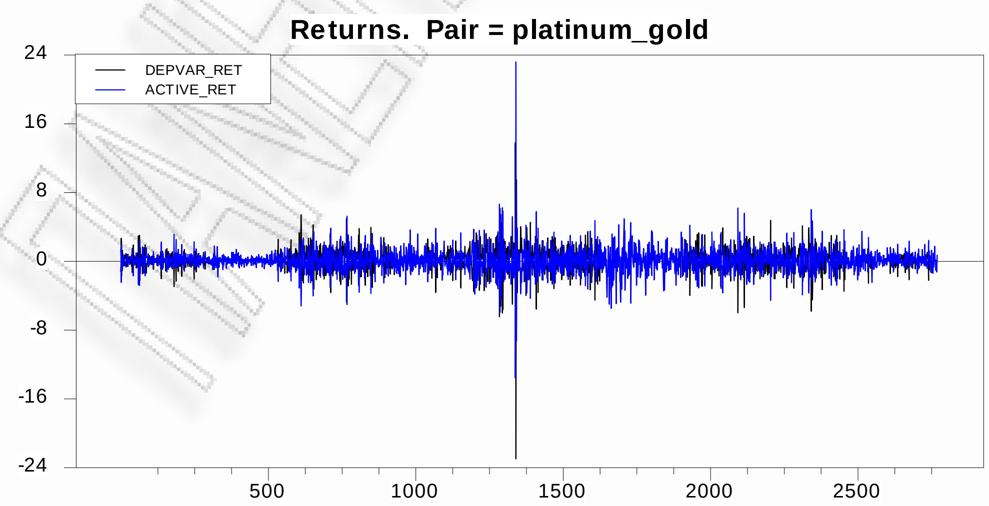

Deviation of rel price from MA. Pair = platinum_gold
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = platinum_gold
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
500
1000
1500
2000
2500


Returns. Pair = platinum_gold
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = platinum_gold

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.029221	Variance	1.866778
Standard Error	1.366301	of Sample Mean	0.025955
t-Statistic (Mean=0)	1.125805	Signif Level	0.260346
Skewness	-1.514723	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	35.323129	Signif Level (Ku=0)	0.000000
Jarque-Bera	145119.694952	Signif Level (JB=0)	0.000000

Minimum	-23.089649	Maximum	13.681595
01-%ile	-3.604782	99-%ile	3.355483
05-%ile	-1.984238	95-%ile	2.061826
10-%ile	-1.404106	90-%ile	1.421705
25-%ile	-0.579246	75-%ile	0.686800
Median	0.031917		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.37 -1.98 0.42 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.011296	Variance	1.867505
Standard Error	1.366567	of Sample Mean	0.025960
t-Statistic (Mean=0)	-0.435121	Signif Level	0.663508
Skewness	1.363529	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	35.211135	Signif Level (Ku=0)	0.000000
Jarque-Bera	144006.658471	Signif Level (JB=0)	0.000000

Minimum	-13.681595	Maximum	23.089649
01-%ile	-3.499052	99-%ile	3.435753
05-%ile	-1.983452	95-%ile	2.033537
10-%ile	-1.404106	90-%ile	1.412415
25-%ile	-0.659618	75-%ile	0.616322
Median	-0.004587		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.01 1.37 -1.98 0.45 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.041407	Variance	0.013605
Standard Error	0.116640	of Sample Mean	0.002346
t-Statistic (Mean=0)	444.000909	Signif Level	0.000000
Skewness	0.141106	Signif Level (Sk=0)	0.004197
Kurtosis (excess)	0.701002	Signif Level (Ku=0)	0.000000
Jarque-Bera	58.841646	Signif Level (JB=0)	0.000000

Minimum	0.676758	Maximum	1.443459
01-%ile	0.738260	99-%ile	1.328033
05-%ile	0.845957	95-%ile	1.264071
10-%ile	0.930798	90-%ile	1.205097
25-%ile	0.971972	75-%ile	1.099934
Median	1.030731		

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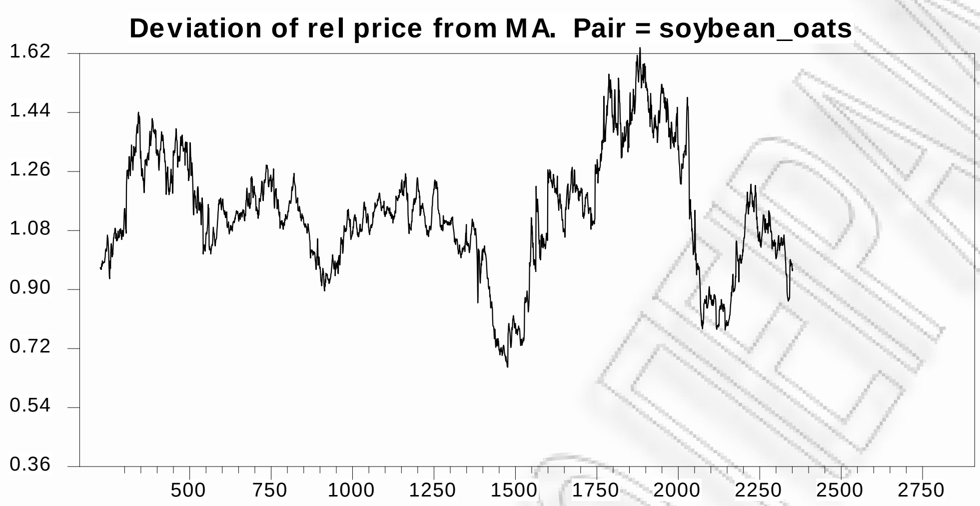
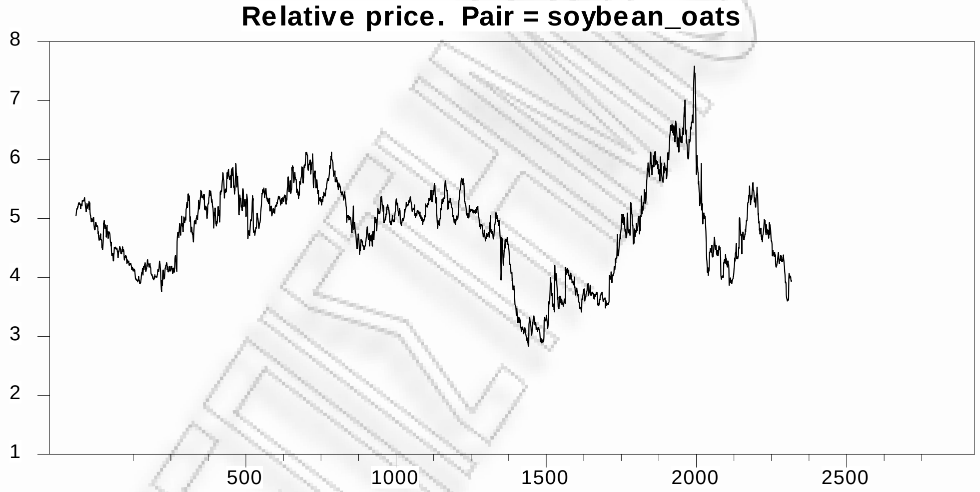
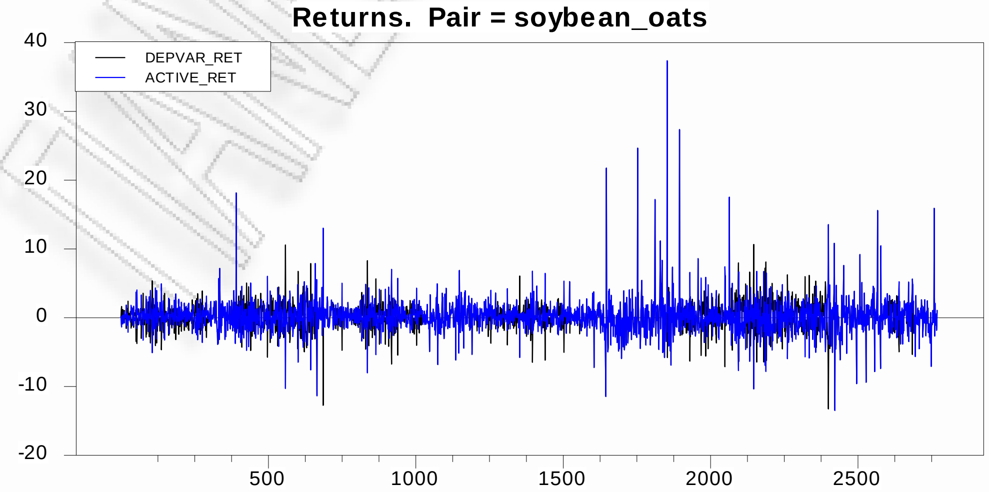

Deviation of rel price from MA. Pair = soybean_oats
1.62
1.44
1.26
1.08
0.90
0.72
0.54
0.36
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_oats
8
7
6
5
4
3
2
1
500
1000
1500
2000
2500


Returns. Pair = soybean_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
500
1000
1500
2000
2500

****

******************** Pair = soybean_oats

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.016252	Variance	5.964254
Standard Error	2.442182	of Sample Mean	0.046394
t-Statistic (Mean=0)	0.350311	Signif Level	0.726132
Skewness	2.767555	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	36.111552	Signif Level (Ku=0)	0.000000
Jarque-Bera	154100.116052	Signif Level (JB=0)	0.000000

Minimum	-13.618441	Maximum	37.210784
01-%ile	-5.903439	99-%ile	6.642461
05-%ile	-3.293106	95-%ile	3.106230
10-%ile	-2.314150	90-%ile	2.209474
25-%ile	-1.084896	75-%ile	1.037507
Median	-0.027660		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.44 -3.29 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.070517	Variance	5.959544
Standard Error	2.441218	of Sample Mean	0.046375
t-Statistic (Mean=0)	1.520567	Signif Level	0.128483
Skewness	2.871803	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	35.910249	Signif Level (Ku=0)	0.000000
Jarque-Bera	152697.687961	Signif Level (JB=0)	0.000000

Minimum	-13.618441	Maximum	37.210784
01-%ile	-5.862783	99-%ile	6.541989
05-%ile	-3.125499	95-%ile	3.231875
10-%ile	-2.209474	90-%ile	2.304161
25-%ile	-1.045742	75-%ile	1.073276
Median	0.000480		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.07 2.44 -3.13 0.45 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.013729	Variance	0.043981
Standard Error	0.209716	of Sample Mean	0.004217
t-Statistic (Mean=0)	240.382448	Signif Level	0.000000
Skewness	0.024395	Signif Level (Sk=0)	0.620623
Kurtosis (excess)	0.054800	Signif Level (Ku=0)	0.578564
Jarque-Bera	0.554727	Signif Level (JB=0)	0.757779

Minimum	0.469809	Maximum	1.603894
01-%ile	0.534684	99-%ile	1.501719
05-%ile	0.622262	95-%ile	1.377909
10-%ile	0.723219	90-%ile	1.303923
25-%ile	0.898220	75-%ile	1.129645
Median	1.008130		

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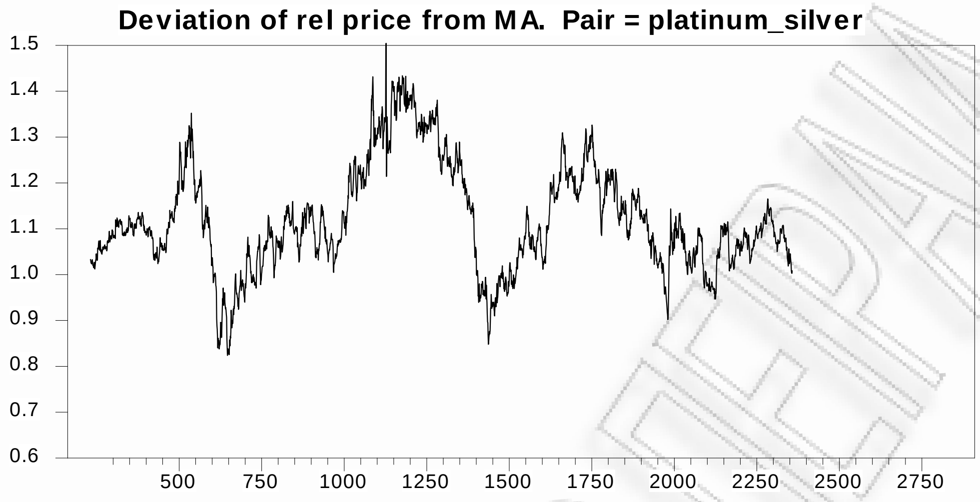
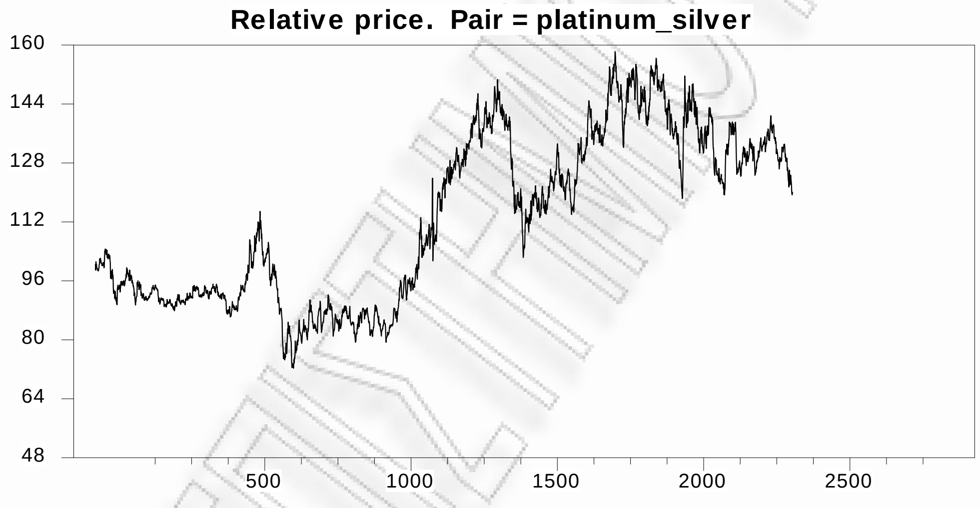
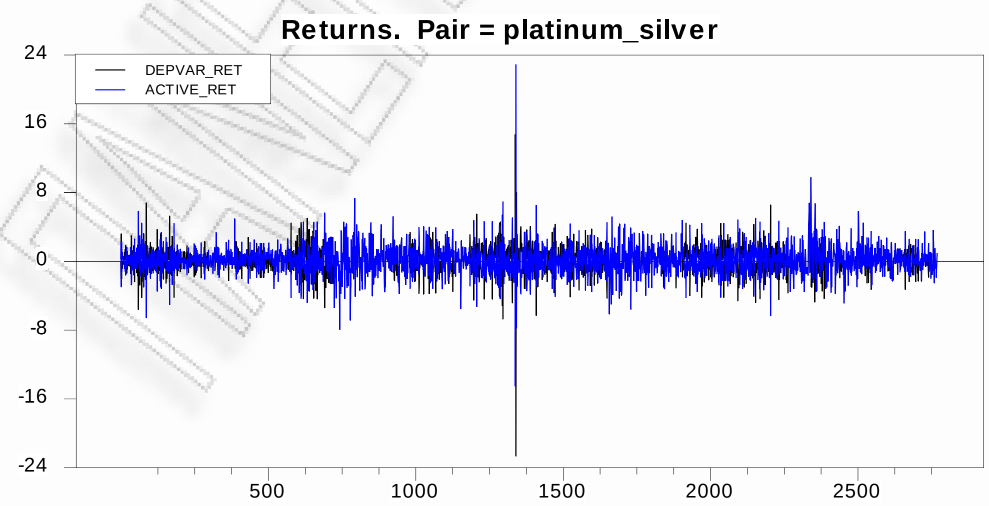

Deviation of rel price from MA. Pair = platinum_silver
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500 750 1000 1250 1500 1750 2000 2250 2500 2750


Relative price. Pair = platinum_silver
160
144
128
112
96
80
64
48
500 1000 1500 2000 2500


Returns. Pair = platinum_silver
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500 1000 1500 2000 2500

****

******************** Pair = platinum_silver

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022861	Variance	2.880563
Standard Error	1.697222	of Sample Mean	0.032242
t-Statistic (Mean=0)	0.709052	Signif Level	0.478352
Skewness	-0.607325	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	15.038889	Signif Level (Ku=0)	0.000000
Jarque-Bera	26283.346343	Signif Level (JB=0)	0.000000

Minimum	-22.761392	Maximum	14.637253
01-%ile	-4.405745	99-%ile	4.262631
05-%ile	-2.595632	95-%ile	2.679068
10-%ile	-1.844801	90-%ile	1.922779
25-%ile	-0.871783	75-%ile	0.924093
Median	0.006132		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.70 -2.60 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.049057	Variance	2.878679
Standard Error	1.696667	of Sample Mean	0.032231
t-Statistic (Mean=0)	1.522025	Signif Level	0.128117

Skewness	0.704972	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	14.944122	Signif Level (Ku=0)	0.000000
Jarque-Bera	26014.462853	Signif Level (JB=0)	0.000000

Minimum	-14.637253	Maximum	22.761392
01-%ile	-4.144774	99-%ile	4.454875
05-%ile	-2.549330	95-%ile	2.703262
10-%ile	-1.833642	90-%ile	1.937973
25-%ile	-0.874777	75-%ile	0.928080
	Median	0.002450	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.05 1.70 -2.55 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.030827	Variance	0.018324
Standard Error	0.135366	of Sample Mean	0.002722
t-Statistic (Mean=0)	378.693483	Signif Level	0.000000
Skewness	0.475858	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.043137	Signif Level (Ku=0)	0.661925
Jarque-Bera	93.522959	Signif Level (JB=0)	0.000000

Minimum	0.686932	Maximum	1.478624
01-%ile	0.733203	99-%ile	1.368515
05-%ile	0.837338	95-%ile	1.289462
10-%ile	0.871272	90-%ile	1.233281
25-%ile	0.945868	75-%ile	1.114145
	Median	1.007677	

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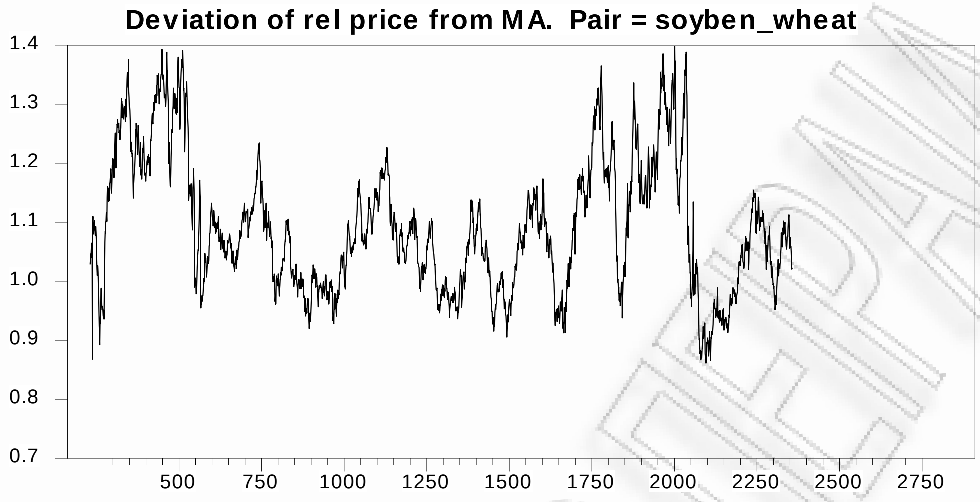
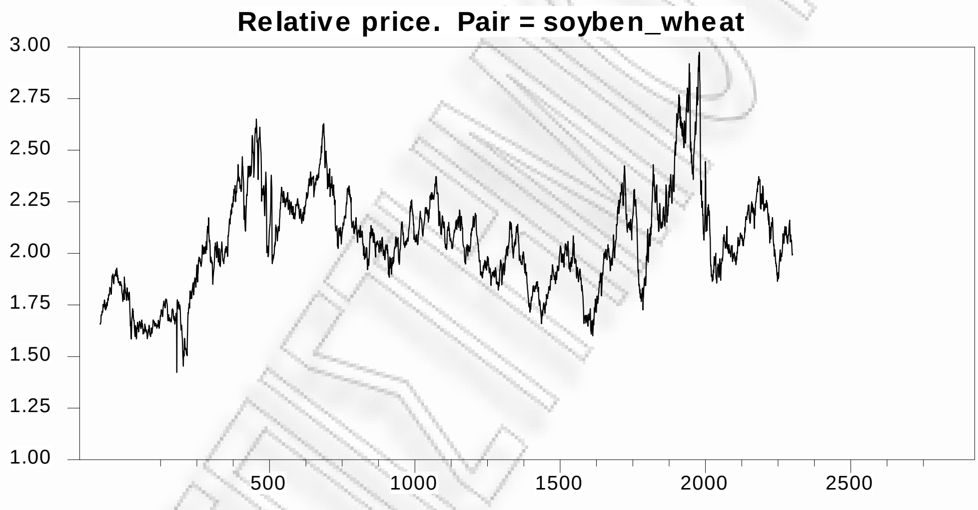
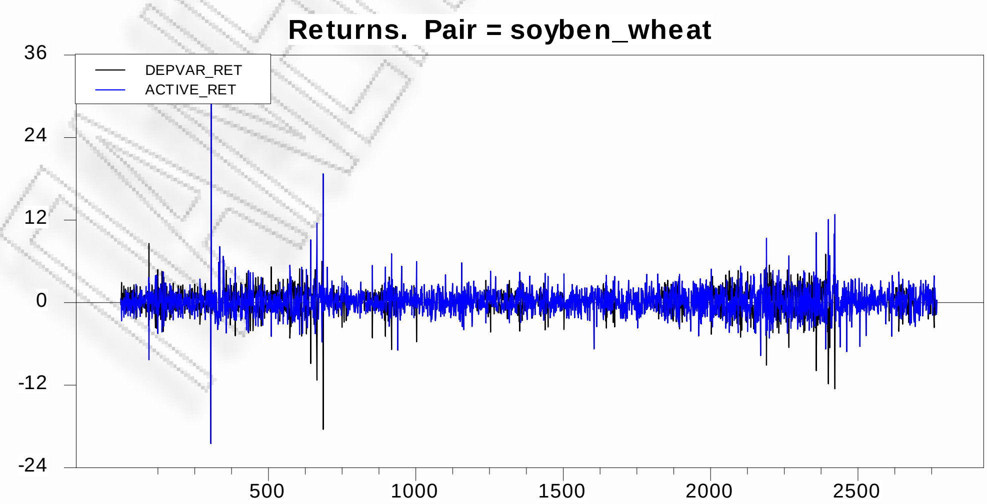

Deviation of rel price from MA. Pair = soyben_wheat
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soyben_wheat
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
500
1000
1500
2000
2500


Returns. Pair = soyben_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
500
1000
1500
2000
2500

****

******************** Pair = soyben_wheat

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.028673	Variance	3.966073
Standard Error	1.991500	of Sample Mean	0.037832
t-Statistic (Mean=0)	0.757906	Signif Level	0.448572
Skewness	0.962669	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	45.991872	Signif Level (Ku=0)	0.000000
Jarque-Bera	244651.496642	Signif Level (JB=0)	0.000000
Minimum	-20.641139	Maximum	35.710739
01-%ile	-4.993450	99-%ile	4.316930
05-%ile	-2.784960	95-%ile	2.681696
10-%ile	-2.030549	90-%ile	2.107653
25-%ile	-0.987005	75-%ile	1.119243
Median	0.067765		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.99 -2.78 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.072044	Variance	3.961703
Standard Error	1.990403	of Sample Mean	0.037811
t-Statistic (Mean=0)	1.905345	Signif Level	0.056839
Skewness	2.299390	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	45.815636	Signif Level (Ku=0)	0.000000
Jarque-Bera	244797.210540	Signif Level (JB=0)	0.000000

Minimum	-20.641139	Maximum	35.710739
01-%ile	-4.377474	99-%ile	5.010050
05-%ile	-2.691058	95-%ile	2.787047
10-%ile	-2.048148	90-%ile	2.083545
25-%ile	-1.001246	75-%ile	1.100169
Median	0.055188		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.07 1.99 -2.69 0.43 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.020160	Variance	0.017105
Standard Error	0.130785	of Sample Mean	0.002630
t-Statistic (Mean=0)	387.901281	Signif Level	0.000000
Skewness	0.565413	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.321220	Signif Level (Ku=0)	0.001130
Jarque-Bera	142.398639	Signif Level (JB=0)	0.000000

Minimum	0.752531	Maximum	1.377035
01-%ile	0.788909	99-%ile	1.332595
05-%ile	0.841847	95-%ile	1.276928
10-%ile	0.867446	90-%ile	1.224956
25-%ile	0.918378	75-%ile	1.097336
Median	1.003321		

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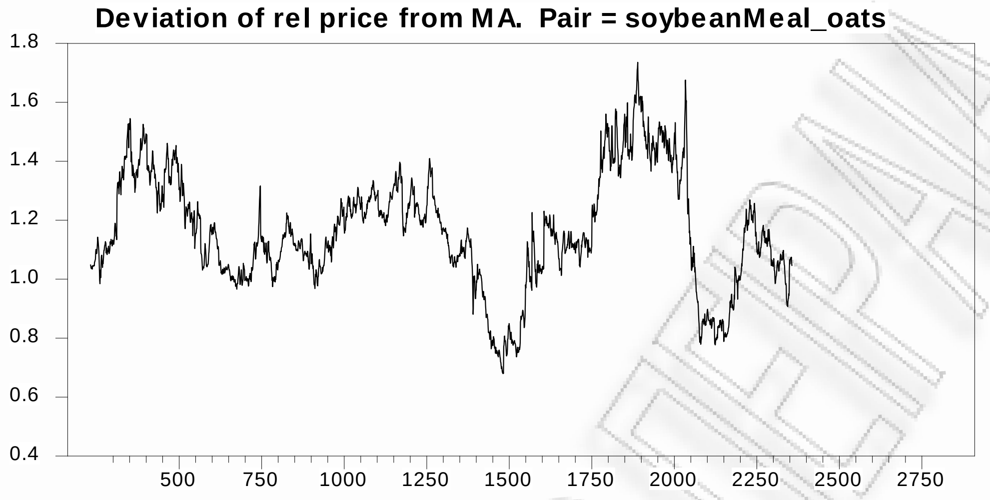
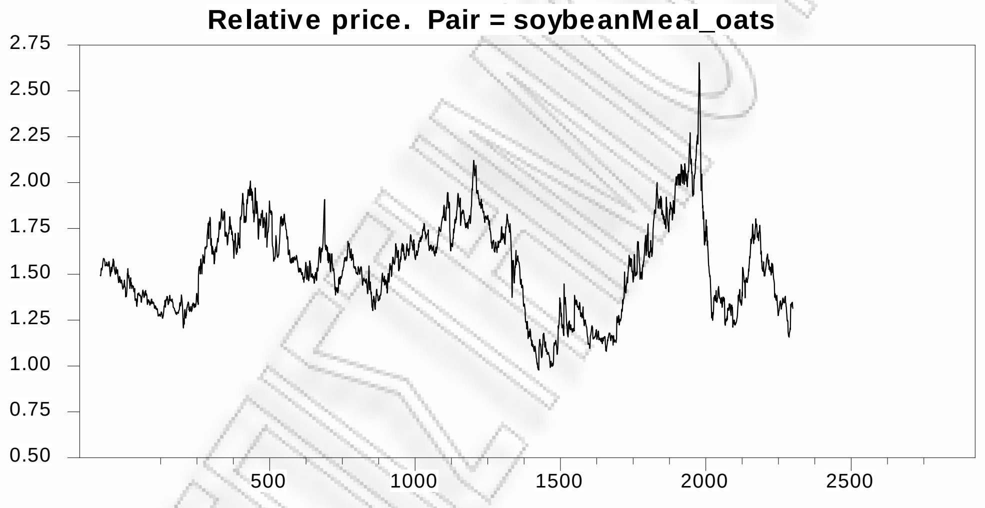
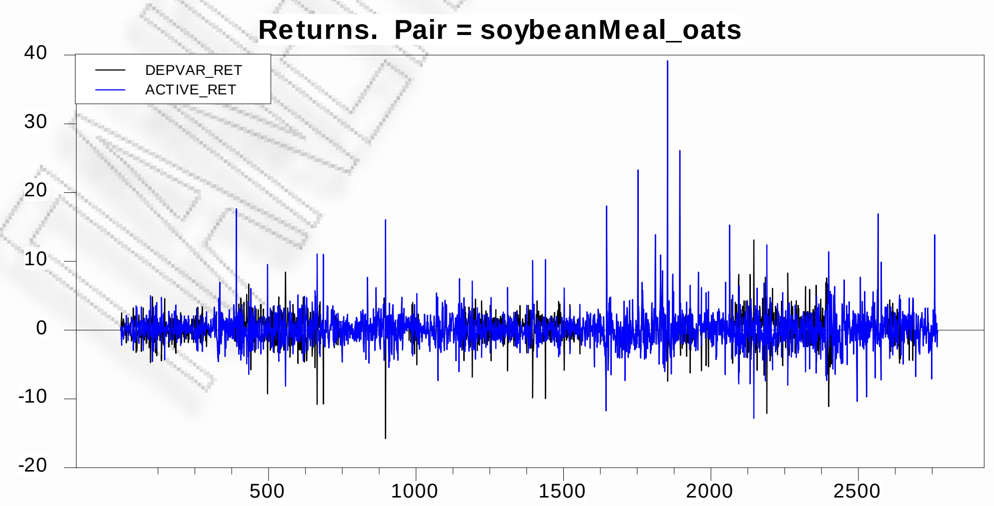

Deviation of rel price from MA. Pair = soybeanMeal_oats
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanMeal_oats
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_oats

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.024126	Variance	6.367407
Standard Error	2.523372	of Sample Mean	0.047936
t-Statistic (Mean=0)	0.503303	Signif Level	0.614791
Skewness	2.251131	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	31.992886	Signif Level (Ku=0)	0.000000
Jarque-Bera	120517.156797	Signif Level (JB=0)	0.000000

Minimum	-15.914524	Maximum	39.009537
01-%ile	-6.214759	99-%ile	6.812070
05-%ile	-3.479263	95-%ile	3.280542
10-%ile	-2.455063	90-%ile	2.408699
25-%ile	-1.209037	75-%ile	1.229352
Median	-0.003729		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.52 -3.48 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.037002	Variance	6.366620
Standard Error	2.523216	of Sample Mean	0.047933
t-Statistic (Mean=0)	0.771952	Signif Level	0.440208
Skewness	2.671704	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	31.930094	Signif Level (Ku=0)	0.000000
Jarque-Bera	121009.907090	Signif Level (JB=0)	0.000000

Minimum	-12.975490	Maximum	39.009537
01-%ile	-6.027720	99-%ile	6.919984
05-%ile	-3.364497	95-%ile	3.429053
10-%ile	-2.470060	90-%ile	2.389671
25-%ile	-1.265102	75-%ile	1.164670
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.04 2.52 -3.36 0.45 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.015823	Variance	0.050550
Standard Error	0.224833	of Sample Mean	0.004521
t-Statistic (Mean=0)	224.683373	Signif Level	0.000000
Skewness	0.058481	Signif Level (Sk=0)	0.235400
Kurtosis (excess)	-0.232935	Signif Level (Ku=0)	0.018218
Jarque-Bera	7.000552	Signif Level (JB=0)	0.030189

Minimum	0.455722	Maximum	1.683813
01-%ile	0.537419	99-%ile	1.525443
05-%ile	0.607565	95-%ile	1.398760
10-%ile	0.704223	90-%ile	1.328819
25-%ile	0.877424	75-%ile	1.159088
Median	0.994430		

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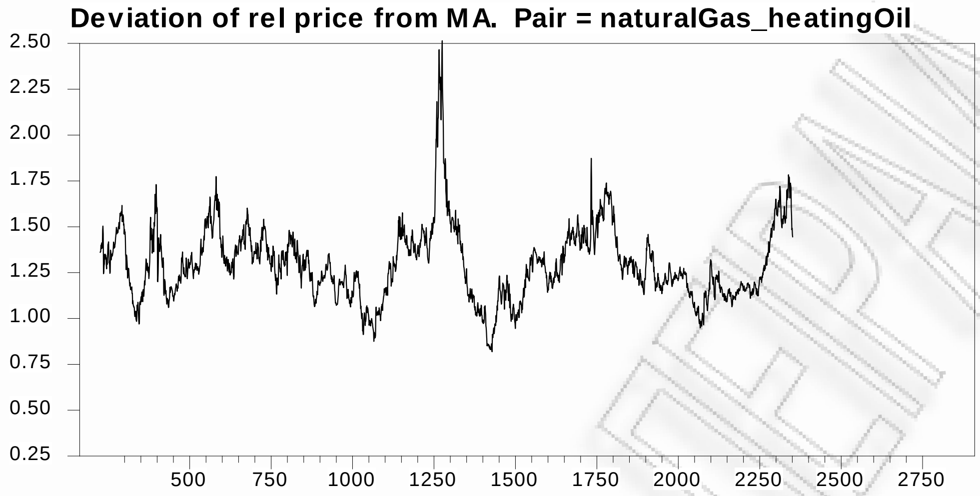
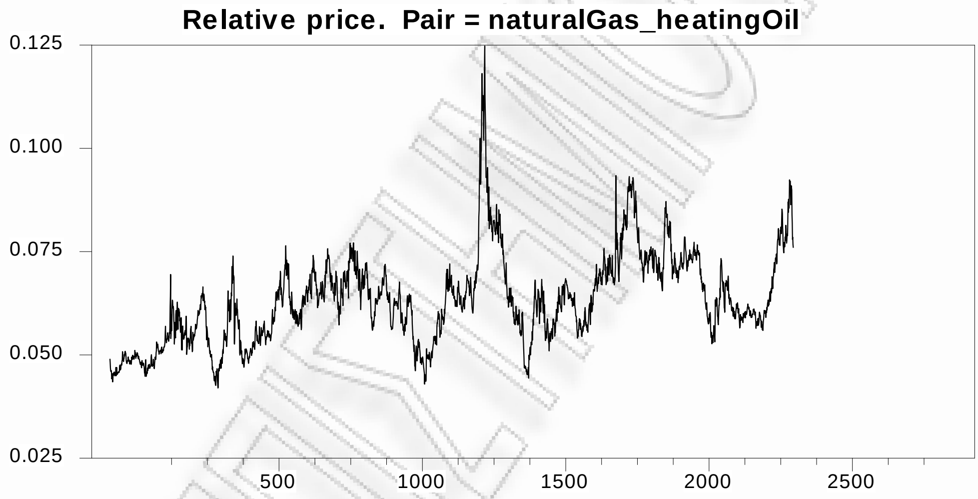
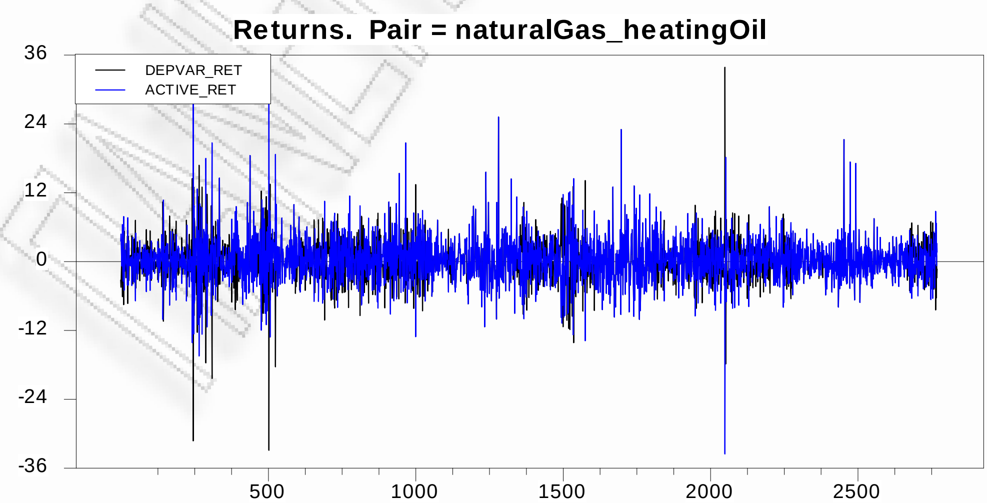

Deviation of rel price from MA. Pair = naturalGas_heatingOil
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = naturalGas_heatingOil
0.125
0.100
0.075
0.050
0.025
500
1000
1500
2000
2500


Returns. Pair = naturalGas_heatingOil
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = naturalGas_heatingOil

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.101100	Variance	15.483541
Standard Error	3.934913	of Sample Mean	0.074751
t-Statistic (Mean=0)	1.352489	Signif Level	0.176329
Skewness	0.274805	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	8.000125	Signif Level (Ku=0)	0.000000
Jarque-Bera	7424.440841	Signif Level (JB=0)	0.000000

Minimum	-33.060497	Maximum	33.706014
01-%ile	-9.182690	99-%ile	11.200996
05-%ile	-5.472645	95-%ile	6.195050
10-%ile	-4.120209	90-%ile	4.473757
25-%ile	-2.137703	75-%ile	2.063937
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = 0.10 3.93 -5.47 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.142814	Variance	15.473363
Standard Error	3.933620	of Sample Mean	0.074726
t-Statistic (Mean=0)	1.911164	Signif Level	0.056087
Skewness	0.649226	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.944554	Signif Level (Ku=0)	0.000000

Jarque-Bera	7481.921048	Signif Level (JB=0)	0.000000

Minimum	-33.706014	Maximum	33.060497
01-%ile	-9.415070	99-%ile	10.758629
05-%ile	-5.502176	95-%ile	5.933241
10-%ile	-4.216448	90-%ile	4.432866
25-%ile	-2.014235	75-%ile	2.172456
	Median	0.000000	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.14 3.93 -5.50 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.034287	Variance	0.055277
Standard Error	0.235111	of Sample Mean	0.004728
t-Statistic (Mean=0)	218.766152	Signif Level	0.000000
Skewness	1.106317	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.794318	Signif Level (Ku=0)	0.000000
Jarque-Bera	1987.941776	Signif Level (JB=0)	0.000000

Minimum	0.477773	Maximum	2.450448
01-%ile	0.578348	99-%ile	1.793056
05-%ile	0.700512	95-%ile	1.409046
10-%ile	0.764905	90-%ile	1.315240
25-%ile	0.879200	75-%ile	1.167932
	Median	1.014476	

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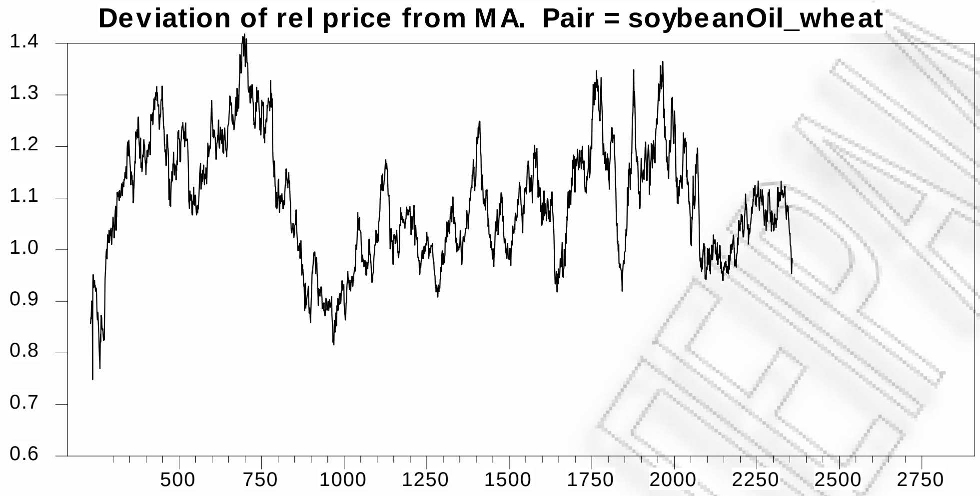
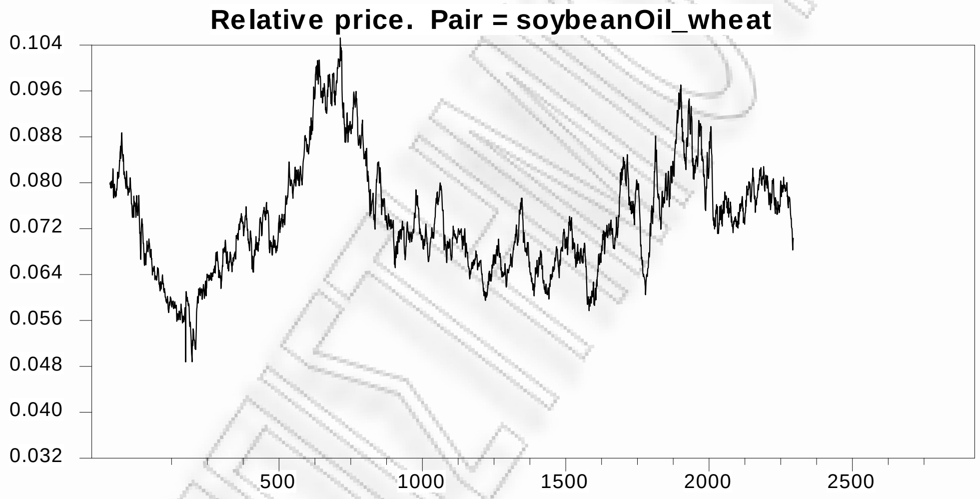
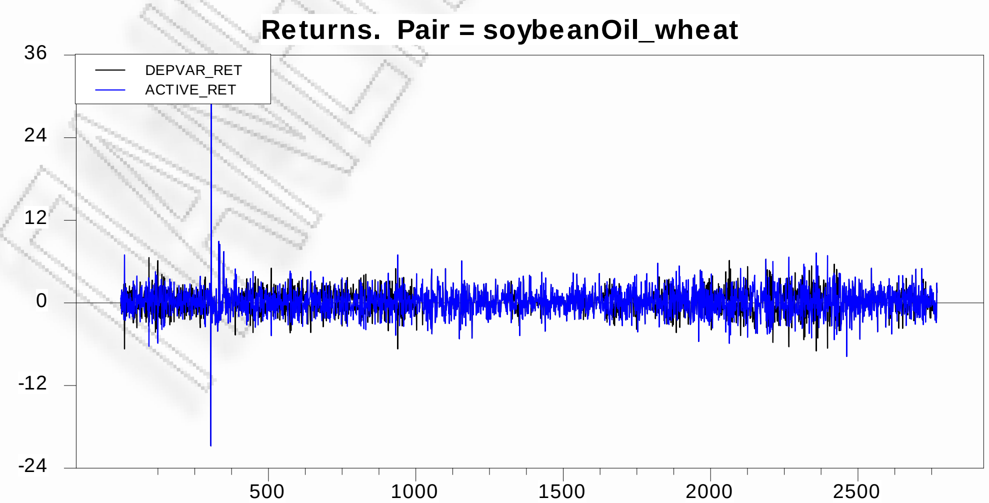

Deviation of rel price from MA. Pair = soybeanOil_wheat
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanOil_wheat
0.104
0.096
0.088
0.080
0.072
0.064
0.056
0.048
0.040
0.032
500
1000
1500
2000
2500


Returns. Pair = soybeanOil_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
500
1000
1500
2000
2500

****

********************* Pair = soybeanOil_wheat

********************* SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.012711	Variance	3.790040
Standard Error	1.946803	of Sample Mean	0.036983
t-Statistic (Mean=0)	0.343705	Signif Level	0.731095
Skewness	1.712860	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	43.379645	Signif Level (Ku=0)	0.000000
Jarque-Bera	218623.719817	Signif Level (JB=0)	0.000000

Minimum	-20.912624	Maximum	35.226140
01-%ile	-4.337912	99-%ile	4.503759
05-%ile	-2.908811	95-%ile	2.899991
10-%ile	-2.192702	90-%ile	2.240235
25-%ile	-1.144355	75-%ile	1.123596
Median	0.018198		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.95 -2.91 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.046931	Variance	3.787999
Standard Error	1.946278	of Sample Mean	0.036973
t-Statistic (Mean=0)	1.269314	Signif Level	0.204436
Skewness	1.777261	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	43.299597	Signif Level (Ku=0)	0.000000
Jarque-Bera	217926.420307	Signif Level (JB=0)	0.000000

Minimum	-20.912624	Maximum	35.226140
01-%ile	-4.337912	99-%ile	4.461430
05-%ile	-2.827823	95-%ile	2.913351
10-%ile	-2.146839	90-%ile	2.284635
25-%ile	-1.093461	75-%ile	1.156182
Median	0.021890		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

Active_Performance = 0.05 1.95 -2.83 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.018756	Variance	0.018441
Standard Error	0.135796	of Sample Mean	0.002731
t-Statistic (Mean=0)	373.072880	Signif Level	0.000000
Skewness	0.138344	Signif Level (Sk=0)	0.005001
Kurtosis (excess)	-0.447867	Signif Level (Ku=0)	0.000006
Jarque-Bera	28.557042	Signif Level (JB=0)	0.000001

Minimum	0.618397	Maximum	1.397733
01-%ile	0.737418	99-%ile	1.325730
05-%ile	0.801489	95-%ile	1.250230
10-%ile	0.848249	90-%ile	1.203655
25-%ile	0.916257	75-%ile	1.116336
Median	1.013680		

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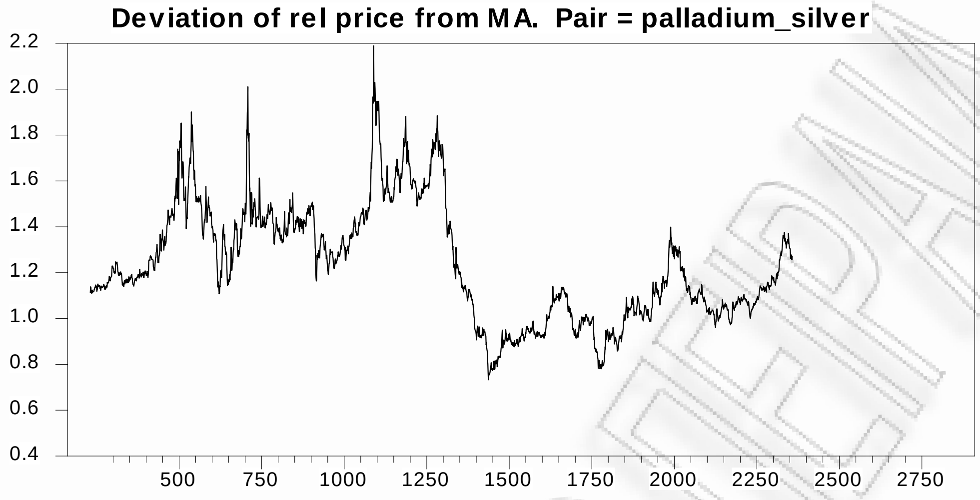
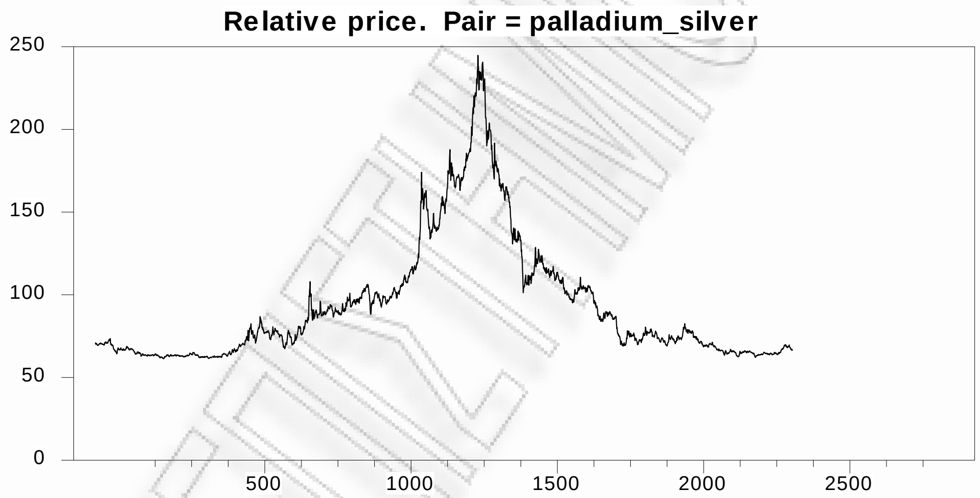
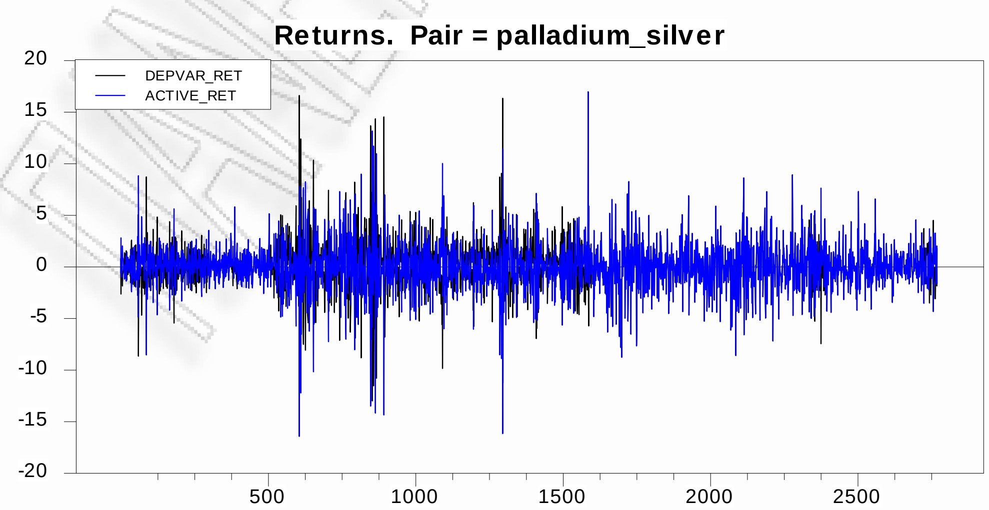

Deviation of rel price from MA. Pair = palladium_silver
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
500 750 1000 1250 1500 1750 2000 2250 2500 2750


Relative price. Pair = palladium_silver
250
200
150
100
50
0
500 1000 1500 2000 2500


Returns. Pair = palladium_silver
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500 1000 1500 2000 2500

****

******************** Pair = palladium_silver

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022754	Variance	5.581679
Standard Error	2.362558	of Sample Mean	0.044881
t-Statistic (Mean=0)	0.506984	Signif Level	0.612207
Skewness	0.497065	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.120386	Signif Level (Ku=0)	0.000000
Jarque-Bera	4439.074638	Signif Level (JB=0)	0.000000

Minimum	-13.081972	Maximum	16.880296
01-%ile	-6.143306	99-%ile	6.456501
05-%ile	-3.590127	95-%ile	3.614580
10-%ile	-2.445802	90-%ile	2.544375
25-%ile	-1.141549	75-%ile	1.165808
Median	-0.023274		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = 0.02 2.36 -3.59 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.073336	Variance	5.576817
Standard Error	2.361529	of Sample Mean	0.044862
t-Statistic (Mean=0)	-1.634722	Signif Level	0.102221
Skewness	-0.207855	Signif Level (Sk=0)	0.000008

Kurtosis (excess)	6.124414	Signif Level (Ku=0)	0.000000
Jarque-Bera	4350.615916	Signif Level (JB=0)	0.000000

Minimum	-16.526643	Maximum	16.880296
01-%ile	-6.352240	99-%ile	6.376878
05-%ile	-3.702167	95-%ile	3.485521
10-%ile	-2.583312	90-%ile	2.447087
25-%ile	-1.202973	75-%ile	1.090562
	Median	-0.055207	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.07 2.36 -3.70 0.46 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.025293	Variance	0.085576
Standard Error	0.292534	of Sample Mean	0.005883
t-Statistic (Mean=0)	174.294467	Signif Level	0.000000
Skewness	0.478678	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.312683	Signif Level (Ku=0)	0.001527
Jarque-Bera	104.515358	Signif Level (JB=0)	0.000000

Minimum	0.439789	Maximum	2.134667
01-%ile	0.504753	99-%ile	1.775795
05-%ile	0.626409	95-%ile	1.556218
10-%ile	0.666180	90-%ile	1.422960
25-%ile	0.800820	75-%ile	1.234525
	Median	0.972248	

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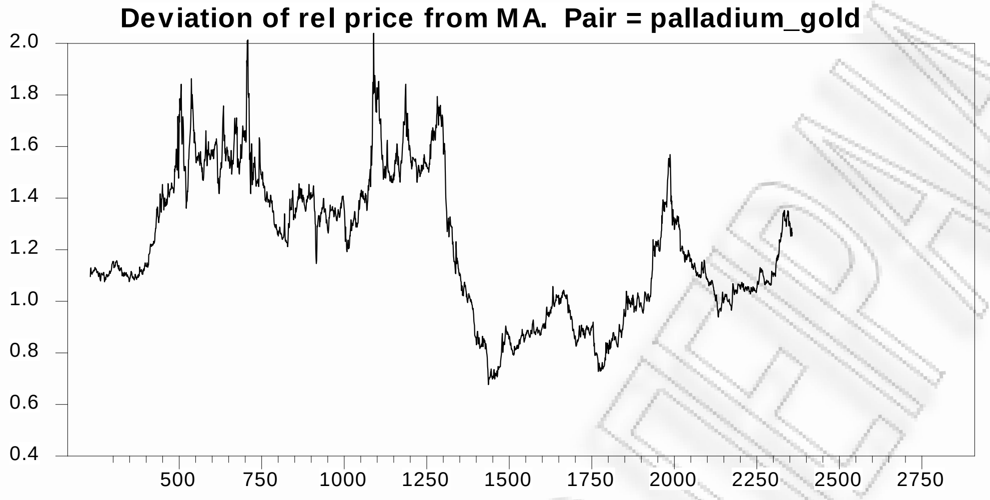
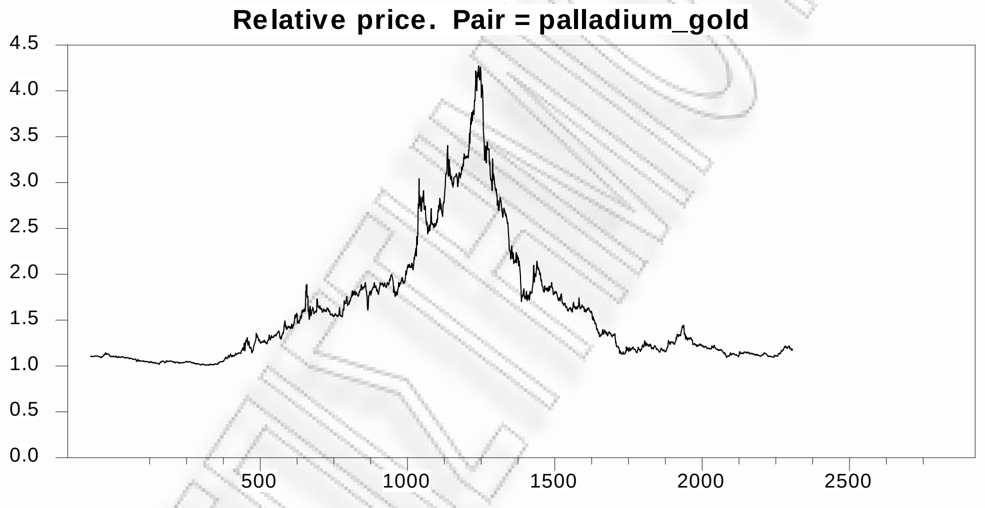
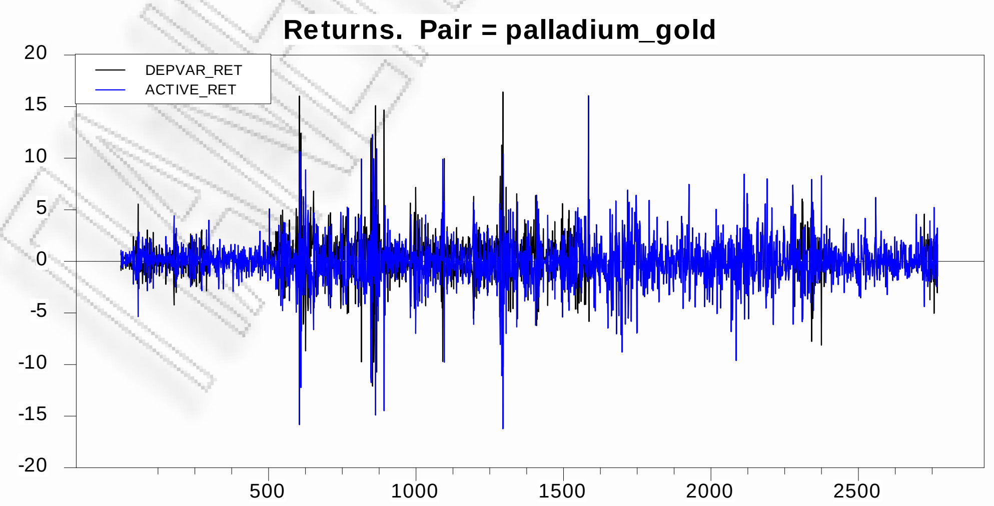

Deviation of rel price from MA. Pair = palladium_gold
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = palladium_gold
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
500
1000
1500
2000
2500


Returns. Pair = palladium_gold
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = palladium_gold

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030282	Variance	4.805463
Standard Error	2.192137	of Sample Mean	0.041644
t-Statistic (Mean=0)	0.727176	Signif Level	0.467180
Skewness	0.567981	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.728753	Signif Level (Ku=0)	0.000000
Jarque-Bera	7045.732800	Signif Level (JB=0)	0.000000

Minimum	-12.194106	Maximum	16.325261
01-%ile	-5.734283	99-%ile	6.200432
05-%ile	-3.221750	95-%ile	3.260593
10-%ile	-2.172185	90-%ile	2.310960
25-%ile	-1.006343	75-%ile	1.081906
Median	-0.001154		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.19 -3.22 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.123453	Variance	4.791134
Standard Error	2.188866	of Sample Mean	0.041582
t-Statistic (Mean=0)	-2.968932	Signif Level	0.003014
Skewness	-0.263968	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.747038	Signif Level (Ku=0)	0.000000
Jarque-Bera	6961.596964	Signif Level (JB=0)	0.000000

Minimum	-16.325261	Maximum	15.953790
01-%ile	-6.233586	99-%ile	5.723784
05-%ile	-3.252577	95-%ile	3.198595
10-%ile	-2.310960	90-%ile	2.184711
25-%ile	-1.177051	75-%ile	0.864637
Median	-0.095418		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.12 2.19 -3.25 0.48 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.042556	Variance	0.101315
Standard Error	0.318299	of Sample Mean	0.006401
t-Statistic (Mean=0)	162.882856	Signif Level	0.000000
Skewness	0.191465	Signif Level (Sk=0)	0.000102
Kurtosis (excess)	-0.866143	Signif Level (Ku=0)	0.000000
Jarque-Bera	92.411800	Signif Level (JB=0)	0.000000

Minimum	0.413562	Maximum	1.998478
01-%ile	0.461122	99-%ile	1.725615
05-%ile	0.580069	95-%ile	1.558826
10-%ile	0.628400	90-%ile	1.464552
25-%ile	0.800528	75-%ile	1.289576
Median	0.998936		

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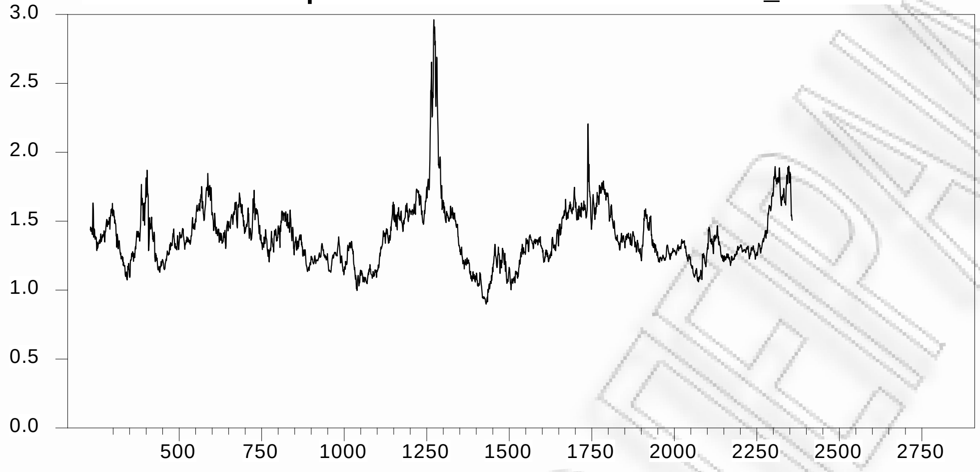
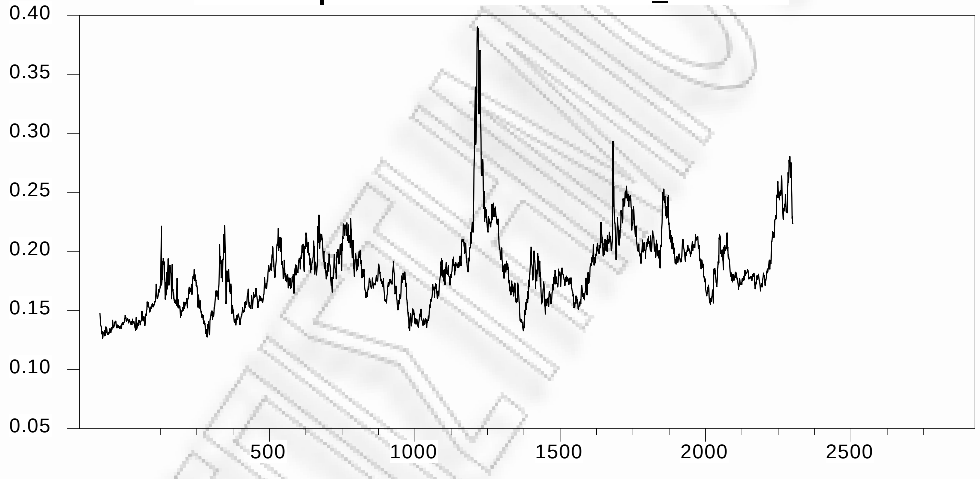
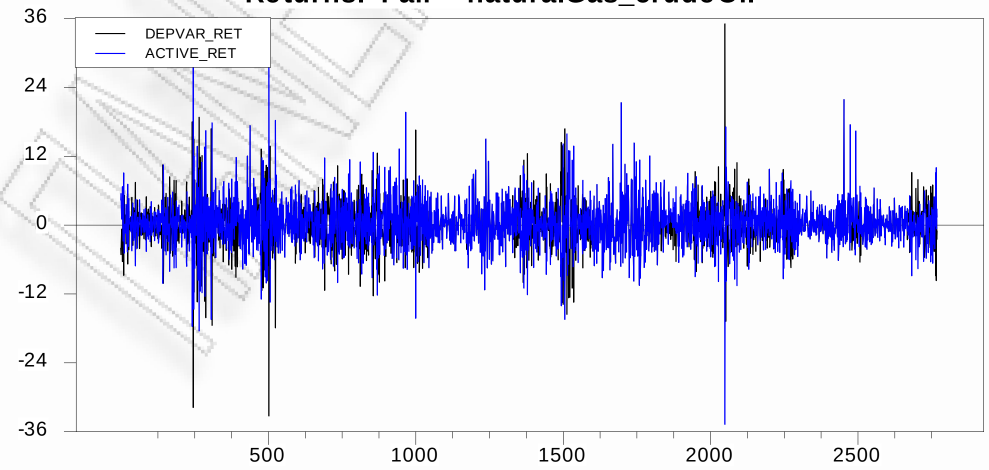
Deviation of rel price from MA. Pair = naturalGas_crudeOil



Relative price. Pair = naturalGas_crudeOil



Returns. Pair = naturalGas_crudeOil



****

******************** Pair = naturalGas_crudeOil

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.105483	Variance	16.414342
Standard Error	4.051462	of Sample Mean	0.076965
t-Statistic (Mean=0)	1.370533	Signif Level	0.170632
Skewness	0.195499	Signif Level (Sk=0)	0.000027
Kurtosis (excess)	7.194324	Signif Level (Ku=0)	0.000000
Jarque-Bera	5993.578412	Signif Level (JB=0)	0.000000

Minimum	-33.437412	Maximum	34.901311
01-%ile	-9.868484	99-%ile	11.743784
05-%ile	-5.764741	95-%ile	6.493298
10-%ile	-4.318486	90-%ile	4.725616
25-%ile	-2.085847	75-%ile	2.132210
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.11 4.05 -5.76 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.121333	Variance	16.410746
Standard Error	4.051018	of Sample Mean	0.076957
t-Statistic (Mean=0)	1.576645	Signif Level	0.114991
Skewness	0.390331	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.171045	Signif Level (Ku=0)	0.000000
Jarque-Bera	6007.679614	Signif Level (JB=0)	0.000000

Minimum	-34.901311	Maximum	33.437412
01-%ile	-9.894930	99-%ile	11.577428
05-%ile	-5.861180	95-%ile	6.315364
10-%ile	-4.382648	90-%ile	4.697676
25-%ile	-2.047361	75-%ile	2.163188
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.12 4.05 -5.86 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.037976	Variance	0.069591
Standard Error	0.263800	of Sample Mean	0.005305
t-Statistic (Mean=0)	195.669780	Signif Level	0.000000
Skewness	1.751816	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.685669	Signif Level (Ku=0)	0.000000
Jarque-Bera	7351.502490	Signif Level (JB=0)	0.000000

Minimum	0.466235	Maximum	2.867452
01-%ile	0.587288	99-%ile	2.016775
05-%ile	0.691578	95-%ile	1.442421
10-%ile	0.746209	90-%ile	1.329362
25-%ile	0.869946	75-%ile	1.191837
Median	0.995028		

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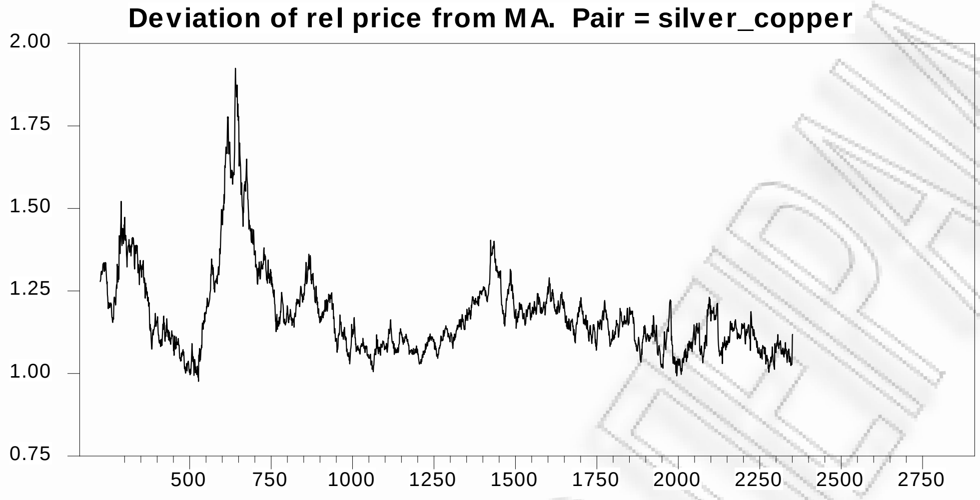
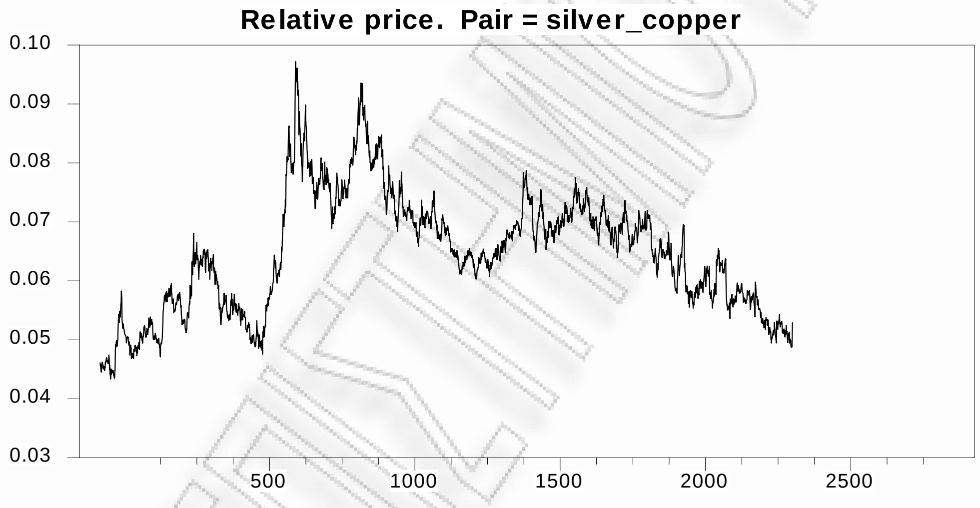
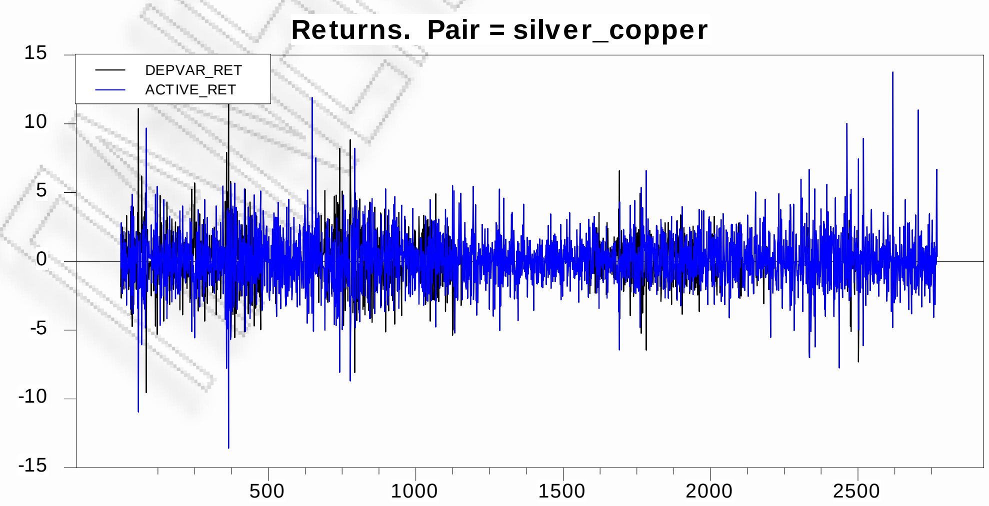

Deviation of rel price from MA. Pair = silver_copper
2.00
1.75
1.50
1.25
1.00
0.75
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = silver_copper
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
500
1000
1500
2000
2500


Returns. Pair = silver_copper
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = silver_copper

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.025844	Variance	3.736357
Standard Error	1.932966	of Sample Mean	0.036720
t-Statistic (Mean=0)	0.703819	Signif Level	0.481605
Skewness	0.499363	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.173754	Signif Level (Ku=0)	0.000000
Jarque-Bera	2126.473768	Signif Level (JB=0)	0.000000
Minimum	-9.616879	Maximum	13.690975
01-%ile	-4.809632	99-%ile	5.049778
05-%ile	-2.954076	95-%ile	2.996497
10-%ile	-2.202539	90-%ile	2.279886
25-%ile	-1.068965	75-%ile	1.108465
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.93 -2.95 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030473	Variance	3.736096
Standard Error	1.932898	of Sample Mean	0.036719
t-Statistic (Mean=0)	0.829885	Signif Level	0.406675
Skewness	0.189588	Signif Level (Sk=0)	0.000047

Kurtosis (excess)	4.189112	Signif Level (Ku=0)	0.000000
Jarque-Bera	2042.739067	Signif Level (JB=0)	0.000000

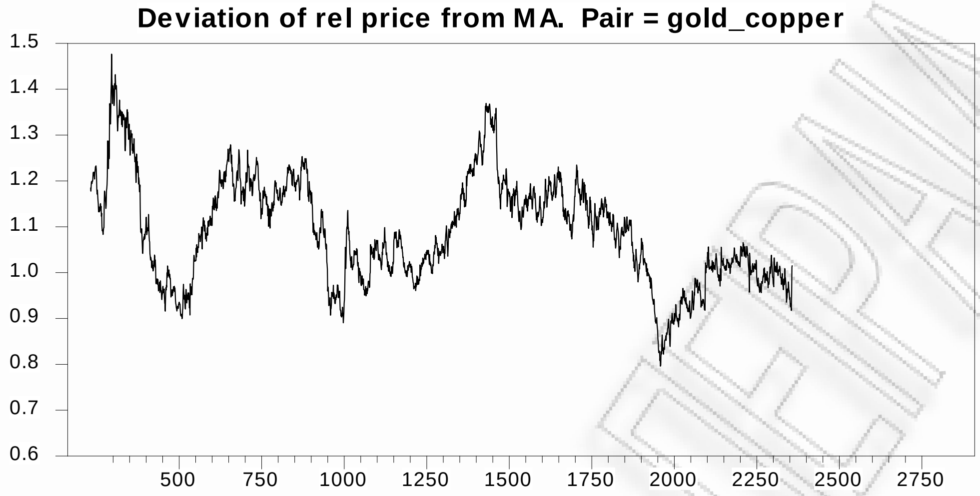
Minimum	-13.655939	Maximum	13.690975
01-%ile	-4.889511	99-%ile	5.074498
05-%ile	-2.879486	95-%ile	3.087884
10-%ile	-2.211304	90-%ile	2.269544
25-%ile	-1.087090	75-%ile	1.086693
Median	0.000000		

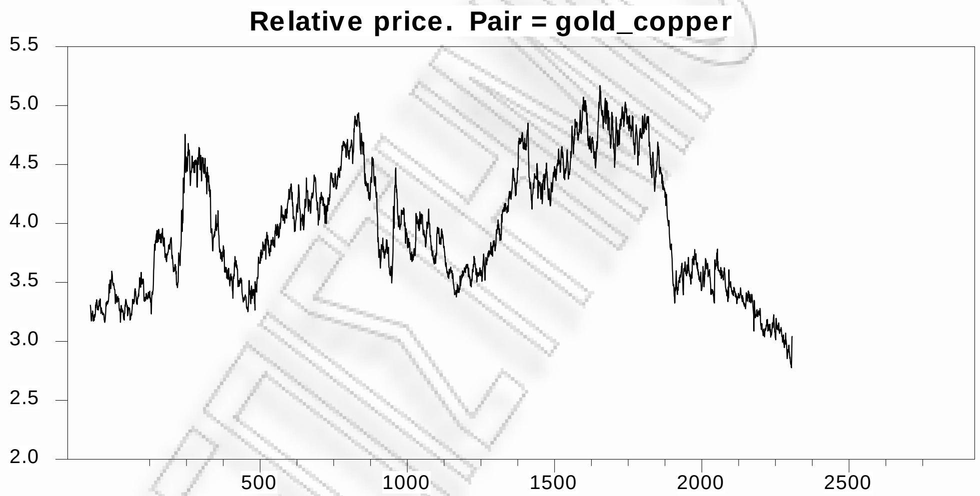
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.93 -2.88 0.44 %

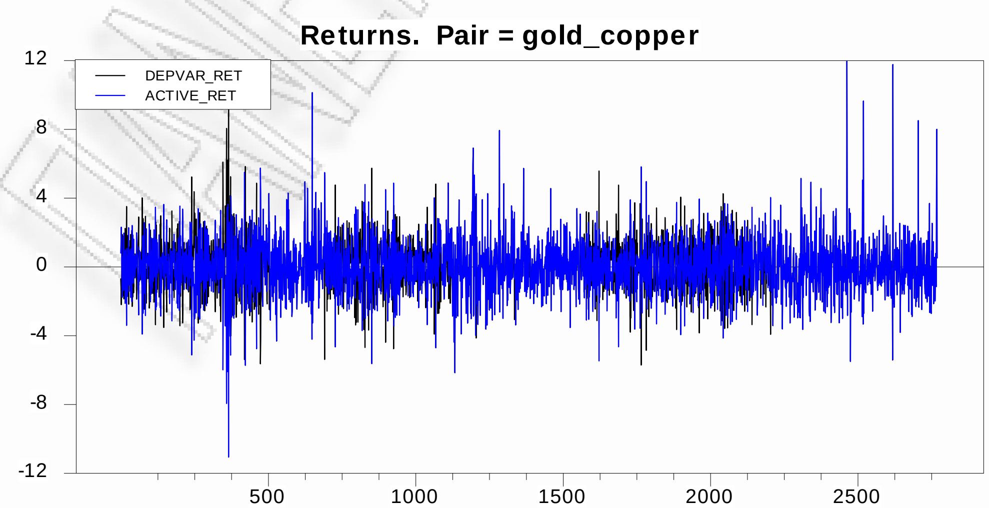
Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.006475	Variance	0.023643
Standard Error	0.153762	of Sample Mean	0.003092
t-Statistic (Mean=0)	325.512263	Signif Level	0.000000
Skewness	1.975942	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	5.431970	Signif Level (Ku=0)	0.000000
Jarque-Bera	4649.620192	Signif Level (JB=0)	0.000000

Minimum	0.772060	Maximum	1.875436
01-%ile	0.808571	99-%ile	1.586627
05-%ile	0.843296	95-%ile	1.285790
10-%ile	0.865713	90-%ile	1.183942
25-%ile	0.903766	75-%ile	1.057273
Median	0.971915		


Deviation of rel price from MA. Pair = gold_copper
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
0.6
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = gold_copper
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
500
1000
1500
2000
2500


Returns. Pair = gold_copper
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = gold_copper

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.009399	Variance	2.727470
Standard Error	1.651505	of Sample Mean	0.031373
t-Statistic (Mean=0)	0.299573	Signif Level	0.764525
Skewness	0.795047	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.562394	Signif Level (Ku=0)	0.000000
Jarque-Bera	2695.240057	Signif Level (JB=0)	0.000000

Minimum	-6.211499	Maximum	11.907779
01-%ile	-3.666504	99-%ile	4.767870
05-%ile	-2.535768	95-%ile	2.598472
10-%ile	-1.929285	90-%ile	1.872203
25-%ile	-0.957426	75-%ile	0.945133
Median	-0.043587		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.65 -2.54 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.007666	Variance	2.727500
Standard Error	1.651514	of Sample Mean	0.031374

t-Statistic (Mean=0)	-0.244348	Signif Level	0.806980
Skewness	0.461697	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.589004	Signif Level (Ku=0)	0.000000
Jarque-Bera	2529.877944	Signif Level (JB=0)	0.000000

Minimum	-11.119383	Maximum	11.907779
01-%ile	-3.709815	99-%ile	4.473672
05-%ile	-2.556967	95-%ile	2.567480
10-%ile	-1.886307	90-%ile	1.906753
25-%ile	-0.980291	75-%ile	0.911140
Median	-0.024693		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.01 1.65 -2.56 0.46 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	0.995490	Variance	0.017931
Standard Error	0.133907	of Sample Mean	0.002693
t-Statistic (Mean=0)	369.697792	Signif Level	0.000000
Skewness	0.266843	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.322571	Signif Level (Ku=0)	0.001076
Jarque-Bera	40.070170	Signif Level (JB=0)	0.000000

Minimum	0.654526	Maximum	1.446197
01-%ile	0.719828	99-%ile	1.316336
05-%ile	0.796611	95-%ile	1.225832
10-%ile	0.830099	90-%ile	1.159300
25-%ile	0.895798	75-%ile	1.093892
Median	0.991270		

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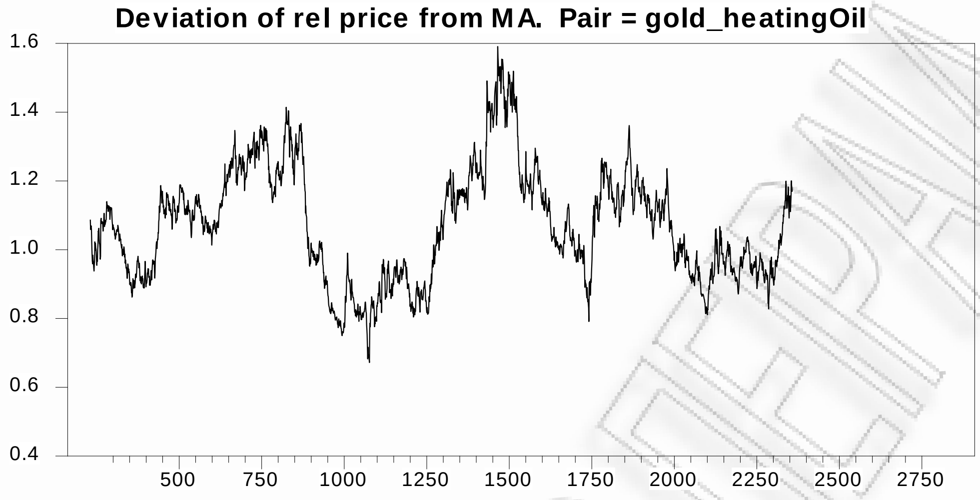
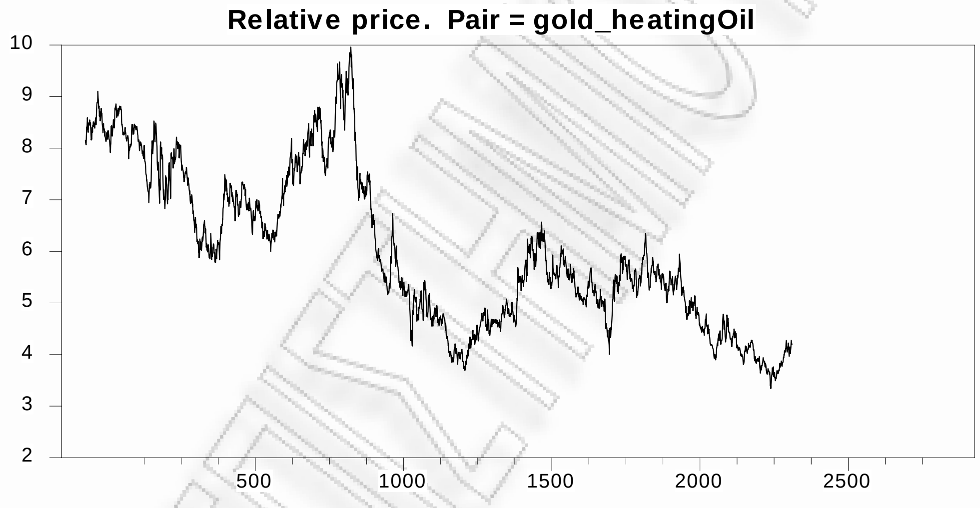
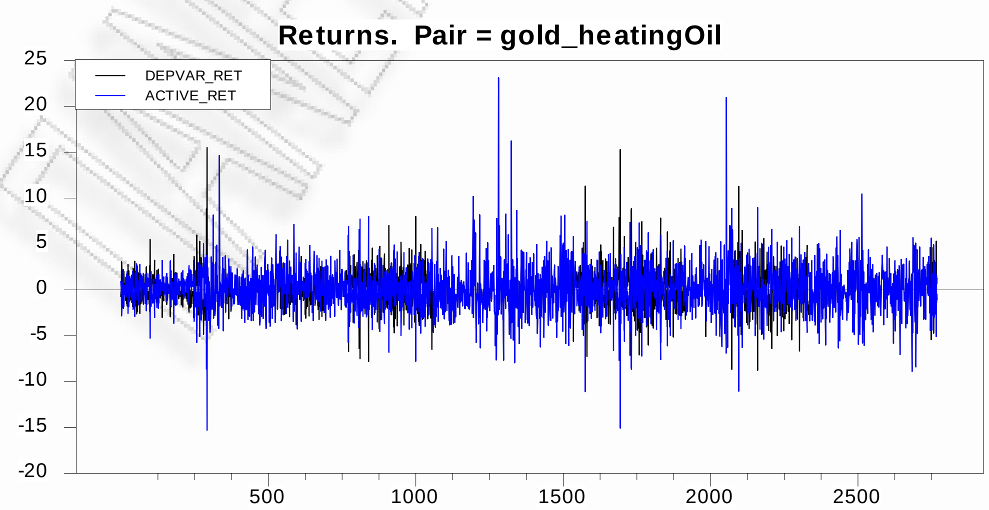

Deviation of rel price from MA. Pair = gold_heatingOil
1.6
1.4
1.2
1.0
0.8
0.6
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = gold_heatingOil
10
9
8
7
6
5
4
3
2
500
1000
1500
2000
2500


Returns. Pair = gold_heatingOil
DEPVAR_RET
ACTIVE_RET
25
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = gold_heatingOil

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.002381	Variance	6.335453
Standard Error	2.517033	of Sample Mean	0.047816
t-Statistic (Mean=0)	-0.049799	Signif Level	0.960286
Skewness	0.938446	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.761241	Signif Level (Ku=0)	0.000000
Jarque-Bera	5684.833674	Signif Level (JB=0)	0.000000

Minimum	-8.996379	Maximum	23.027192
01-%ile	-6.144760	99-%ile	6.886765
05-%ile	-3.696523	95-%ile	4.011560
10-%ile	-2.866694	90-%ile	2.910929
25-%ile	-1.471758	75-%ile	1.321581
Median	-0.072420		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 2.52 -3.70 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.031899	Variance	6.334441
Standard Error	2.516832	of Sample Mean	0.047812
t-Statistic (Mean=0)	0.667168	Signif Level	0.504720

Skewness	0.460045	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.736487	Signif Level (Ku=0)	0.000000
Jarque-Bera	5337.272536	Signif Level (JB=0)	0.000000

Minimum	-15.417329	Maximum	23.027192
01-%ile	-6.208127	99-%ile	6.713442
05-%ile	-3.733768	95-%ile	3.886680
10-%ile	-2.853429	90-%ile	2.914603
25-%ile	-1.365852	75-%ile	1.412292
	Median	-0.000000	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 2.52 -3.73 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	0.948734	Variance	0.035936
Standard Error	0.189569	of Sample Mean	0.003812
t-Statistic (Mean=0)	248.880160	Signif Level	0.000000
Skewness	0.365641	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.266050	Signif Level (Ku=0)	0.007000
Jarque-Bera	62.397562	Signif Level (JB=0)	0.000000

Minimum	0.484985	Maximum	1.553934
01-%ile	0.607484	99-%ile	1.438033
05-%ile	0.659691	95-%ile	1.281551
10-%ile	0.711223	90-%ile	1.194175
25-%ile	0.800754	75-%ile	1.074168
	Median	0.942513	

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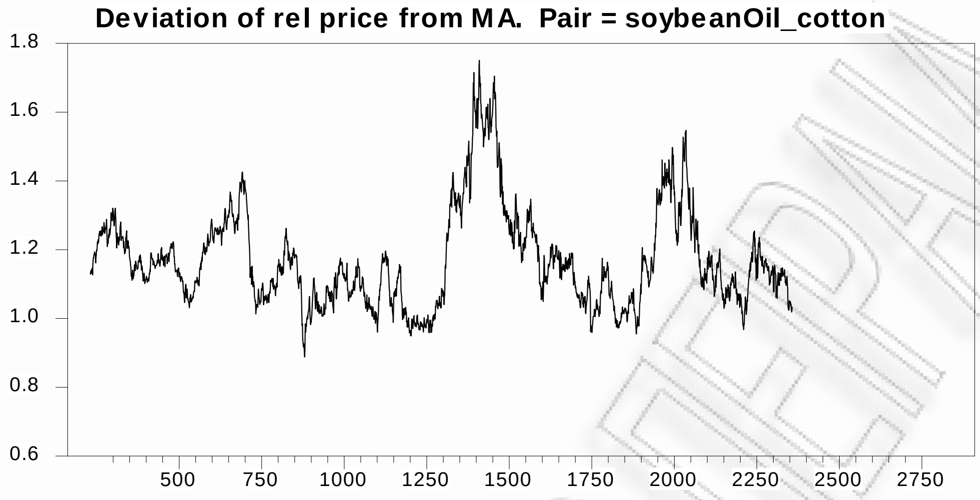
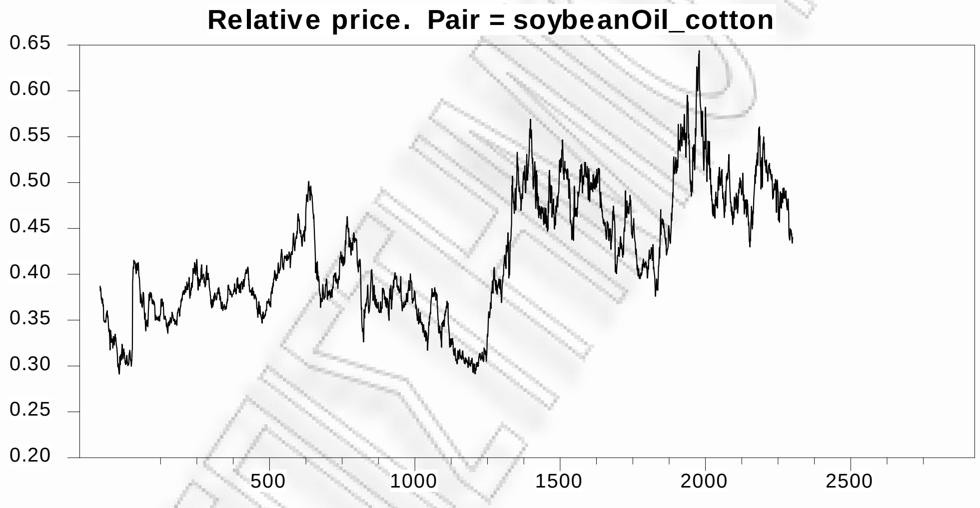
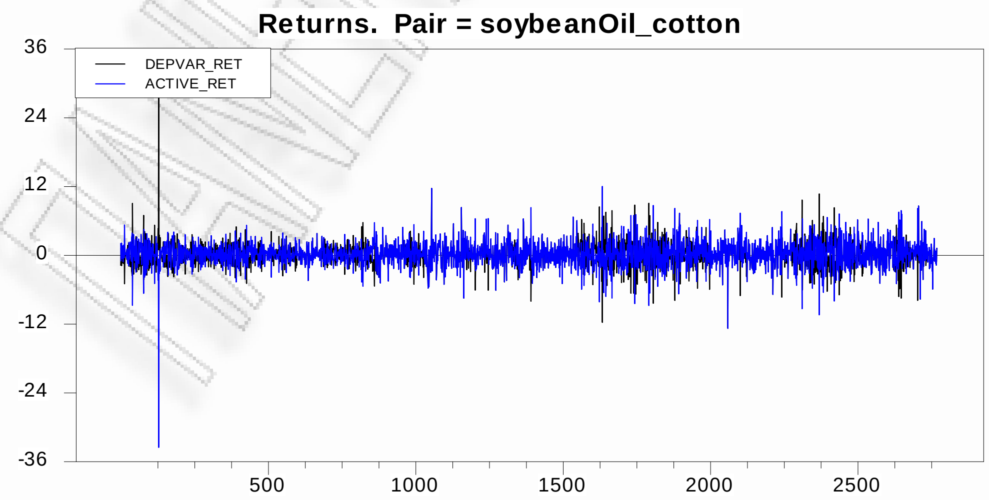

Deviation of rel price from MA. Pair = soybeanOil_cotton
1.8
1.6
1.4
1.2
1.0
0.8
0.6
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanOil_cotton
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
500
1000
1500
2000
2500


Returns. Pair = soybeanOil_cotton
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

********************* Pair = soybeanOil_cotton

********************* SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030510	Variance	4.940965
Standard Error	2.222828	of Sample Mean	0.042227
t-Statistic (Mean=0)	0.722520	Signif Level	0.470036
Skewness	1.241976	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.840276	Signif Level (Ku=0)	0.000000
Jarque-Bera	50857.908473	Signif Level (JB=0)	0.000000

Minimum	-12.906913	Maximum	33.687823
01-%ile	-5.723046	99-%ile	5.641720
05-%ile	-3.179187	95-%ile	3.414347
10-%ile	-2.394339	90-%ile	2.484422
25-%ile	-1.168966	75-%ile	1.209437
Median	-0.011833		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.22 -3.18 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.076686	Variance	4.936013
Standard Error	2.221714	of Sample Mean	0.042206
t-Statistic (Mean=0)	1.816966	Signif Level	0.069330
Skewness	-1.235172	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	21.121314	Signif Level (Ku=0)	0.000000
Jarque-Bera	52211.701698	Signif Level (JB=0)	0.000000

Minimum	-33.687823	Maximum	11.863640
01-%ile	-5.455434	99-%ile	6.022092
05-%ile	-3.164862	95-%ile	3.465670
10-%ile	-2.378918	90-%ile	2.516026
25-%ile	-1.101622	75-%ile	1.281947
Median	0.059783		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.08 2.22 -3.16 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.030944	Variance	0.027291
Standard Error	0.165200	of Sample Mean	0.003322
t-Statistic (Mean=0)	310.339726	Signif Level	0.000000
Skewness	1.184787	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.585674	Signif Level (Ku=0)	0.000000
Jarque-Bera	837.650805	Signif Level (JB=0)	0.000000

Minimum	0.703863	Maximum	1.707370
01-%ile	0.788831	99-%ile	1.564879
05-%ile	0.822098	95-%ile	1.365523
10-%ile	0.852330	90-%ile	1.251929
25-%ile	0.913191	75-%ile	1.110279
Median	1.001700		

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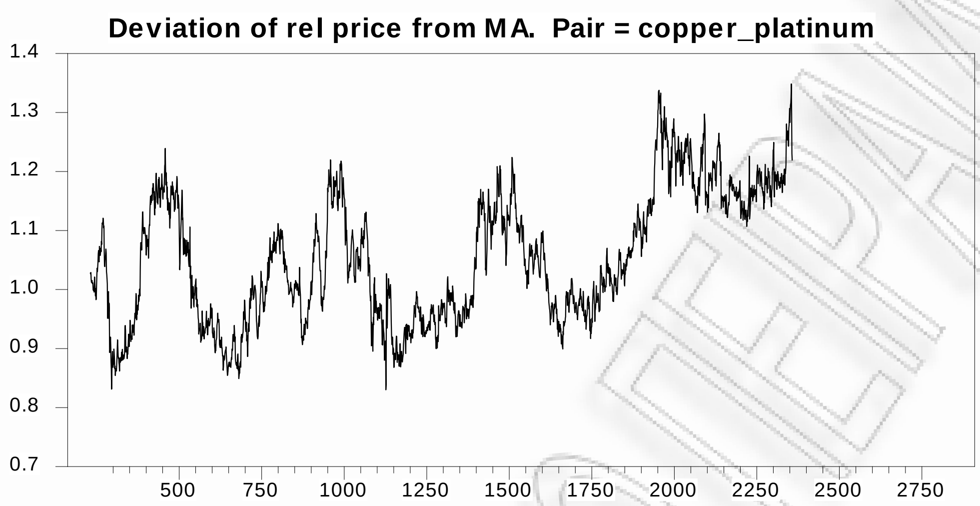
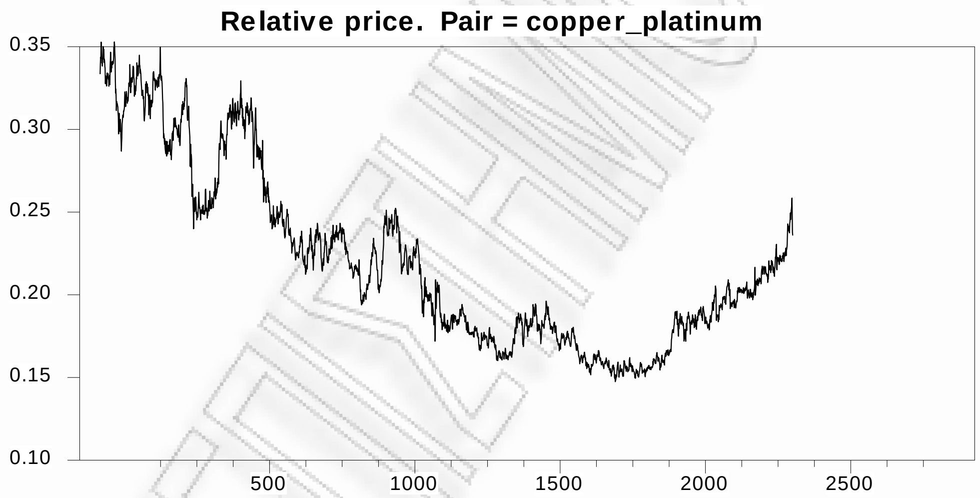
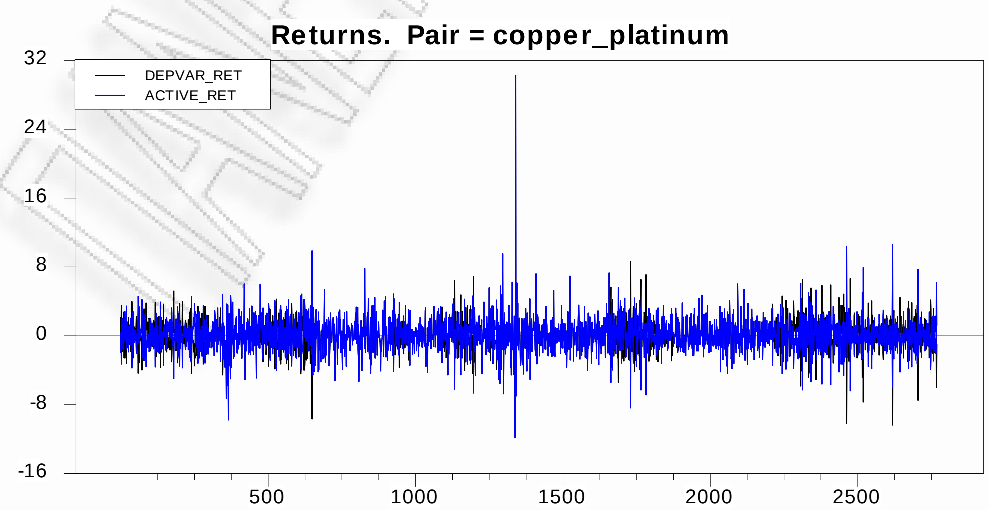

Deviation of rel price from MA. Pair = copper_platinum
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = copper_platinum
0.35
0.30
0.25
0.20
0.15
0.10
500
1000
1500
2000
2500


Returns. Pair = copper_platinum
DEPVAR_RET
ACTIVE_RET
32
24
16
8
0
-8
-16
500
1000
1500
2000
2500

****

******************** Pair = copper_platinum

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.003913	Variance	3.946900
Standard Error	1.986681	of Sample Mean	0.037741
t-Statistic (Mean=0)	0.103671	Signif Level	0.917438
Skewness	1.129054	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.101568	Signif Level (Ku=0)	0.000000
Jarque-Bera	51999.573891	Signif Level (JB=0)	0.000000

Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.686501	99-%ile	5.193363
05-%ile	-2.915807	95-%ile	3.048069
10-%ile	-2.167735	90-%ile	2.208645
25-%ile	-1.080073	75-%ile	1.108897
Median	-0.006923		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.00 1.99 -2.92 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.026019	Variance	3.946238
Standard Error	1.986514	of Sample Mean	0.037738
t-Statistic (Mean=0)	0.689474	Signif Level	0.490583
Skewness	1.275758	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	21.050622	Signif Level (Ku=0)	0.000000
Jarque-Bera	51914.560721	Signif Level (JB=0)	0.000000

Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.817364	99-%ile	4.930833
05-%ile	-2.909880	95-%ile	3.008651
10-%ile	-2.188255	90-%ile	2.224411
25-%ile	-1.071982	75-%ile	1.119632
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 1.99 -2.91 0.44 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	0.975249	Variance	0.015918
Standard Error	0.126167	of Sample Mean	0.002537
t-Statistic (Mean=0)	384.397749	Signif Level	0.000000
Skewness	0.239271	Signif Level (Sk=0)	0.000001
Kurtosis (excess)	-0.933127	Signif Level (Ku=0)	0.000000
Jarque-Bera	113.317804	Signif Level (JB=0)	0.000000

Minimum	0.716386	Maximum	1.319444
01-%ile	0.760680	99-%ile	1.249275
05-%ile	0.788240	95-%ile	1.185666
10-%ile	0.820553	90-%ile	1.141855
25-%ile	0.871703	75-%ile	1.085611
Median	0.961002		

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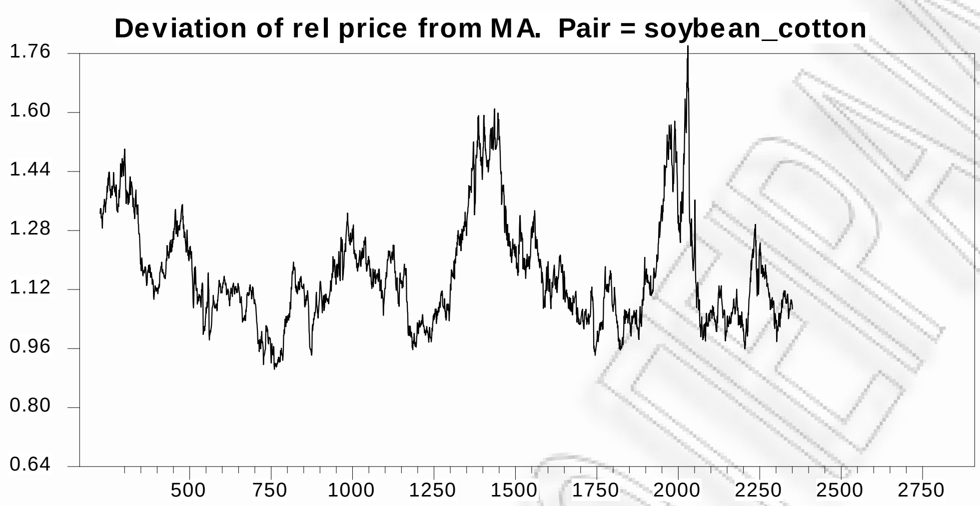
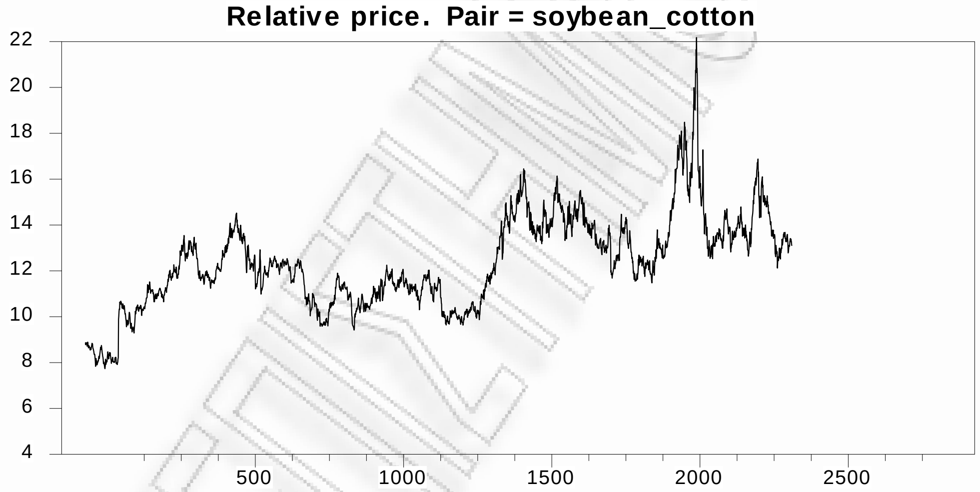
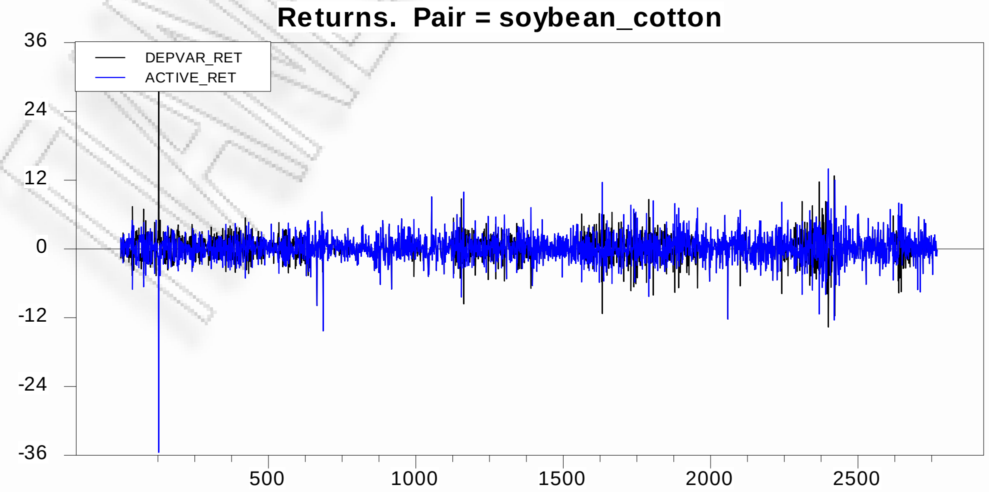

Deviation of rel price from MA. Pair = soybean_cotton
1.76
1.60
1.44
1.28
1.12
0.96
0.80
0.64
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_cotton
22
20
18
16
14
12
10
8
6
4
500
1000
1500
2000
2500


Returns. Pair = soybean_cotton
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = soybean_cotton

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.047598	Variance	5.364722
Standard Error	2.316187	of Sample Mean	0.044000
t-Statistic (Mean=0)	1.081777	Signif Level	0.279446
Skewness	0.979271	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	22.892304	Signif Level (Ku=0)	0.000000
Jarque-Bera	60949.698417	Signif Level (JB=0)	0.000000

Minimum	-14.465433	Maximum	35.687245
01-%ile	-6.359115	99-%ile	5.642728
05-%ile	-3.508506	95-%ile	3.427508
10-%ile	-2.444753	90-%ile	2.638881
25-%ile	-1.161338	75-%ile	1.277983
Median	0.093618		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.05 2.32 -3.51 0.42 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.042205	Variance	5.365207
Standard Error	2.316292	of Sample Mean	0.044002
t-Statistic (Mean=0)	0.959147	Signif Level	0.337568
Skewness	-1.318744	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	23.065021	Signif Level (Ku=0)	0.000000
Jarque-Bera	62226.447719	Signif Level (JB=0)	0.000000

Minimum	-35.687245	Maximum	13.811521
01-%ile	-5.854537	99-%ile	5.865923
05-%ile	-3.300243	95-%ile	3.601587
10-%ile	-2.478297	90-%ile	2.591310
25-%ile	-1.201978	75-%ile	1.232138
Median	0.056994		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.04 2.32 -3.30 0.43 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.033035	Variance	0.028584
Standard Error	0.169067	of Sample Mean	0.003400
t-Statistic (Mean=0)	303.856216	Signif Level	0.000000
Skewness	0.996876	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.699491	Signif Level (Ku=0)	0.000000
Jarque-Bera	460.012892	Signif Level (JB=0)	0.000000

Minimum	0.730667	Maximum	1.751703
01-%ile	0.765566	99-%ile	1.501361
05-%ile	0.818875	95-%ile	1.391345
10-%ile	0.853298	90-%ile	1.290116
25-%ile	0.911714	75-%ile	1.115397
Median	0.993748		

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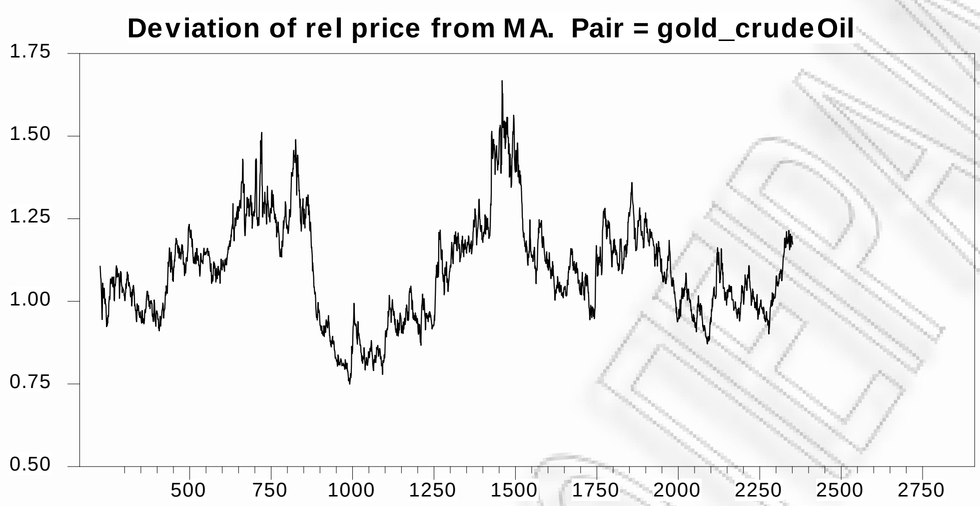
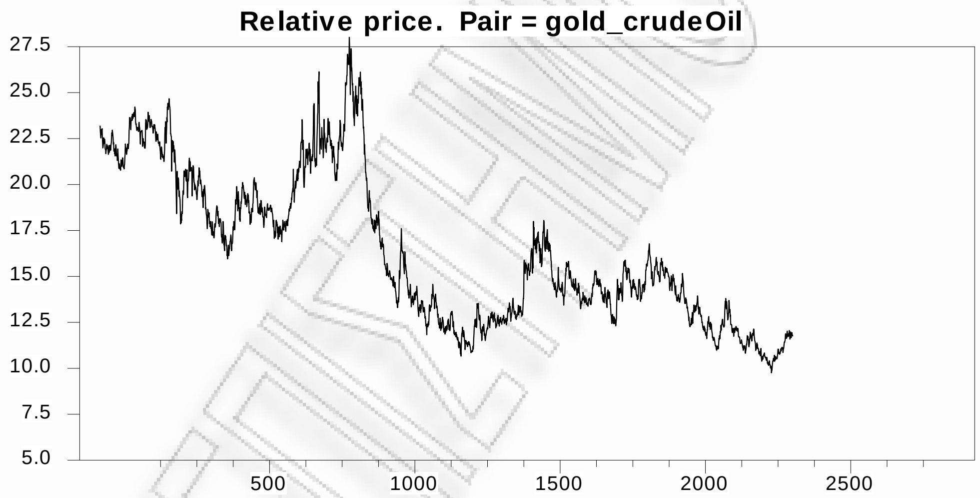
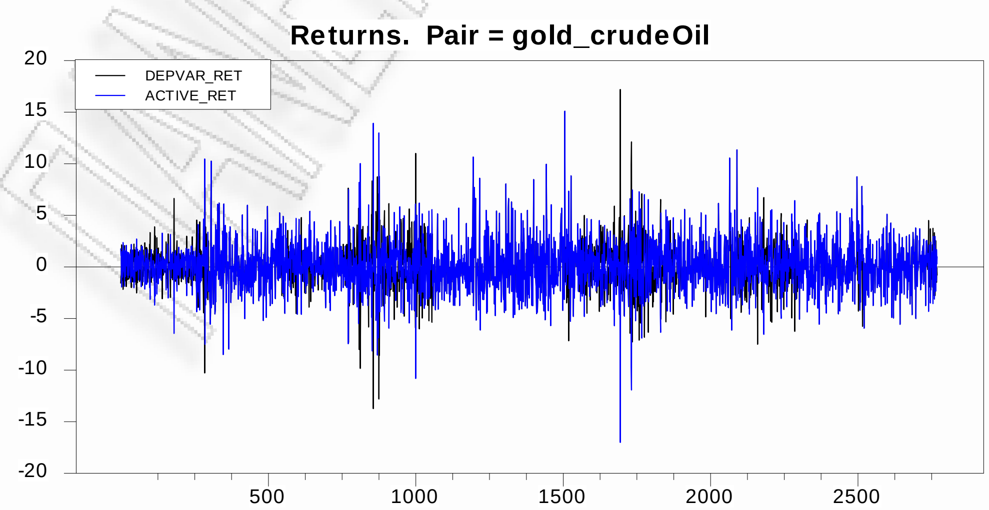

Deviation of rel price from MA. Pair = gold_crudeOil


Relative price. Pair = gold_crudeOil


Returns. Pair = gold_crudeOil
DEPVAR_RET
ACTIVE_RET

```
****************************************************************************************
                    ********************  Pair = gold_crudeOil
                ********************  SMA --->  1   LMA --->  300
****************************************************************************************
```

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.004970	Variance	5.845049
Standard Error	2.417654	of Sample Mean	0.045928
t-Statistic (Mean=0)	-0.108224	Signif Level	0.913826
Skewness	0.402744	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.451779	Signif Level (Ku=0)	0.000000
Jarque-Bera	1450.571046	Signif Level (JB=0)	0.000000

Minimum	-13.833198	Maximum	17.102538
01-%ile	-5.574459	99-%ile	6.277606
05-%ile	-3.729054	95-%ile	3.931820
10-%ile	-2.737744	90-%ile	2.933108
25-%ile	-1.420837	75-%ile	1.294938
Median	-0.118586		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 2.42 -3.73 0.46 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.050926	Variance	5.842479
Standard Error	2.417122	of Sample Mean	0.045918
t-Statistic (Mean=0)	1.109066	Signif Level	0.267498
Skewness	0.283468	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	3.427571	Signif Level (Ku=0)	0.000000
Jarque-Bera	1393.542695	Signif Level (JB=0)	0.000000

Minimum	-17.102538	Maximum	14.996125
01-%ile	-5.331010	99-%ile	6.457526
05-%ile	-3.717327	95-%ile	3.993376
10-%ile	-2.786062	90-%ile	2.869677
25-%ile	-1.329548	75-%ile	1.354793
Median	-0.000000		

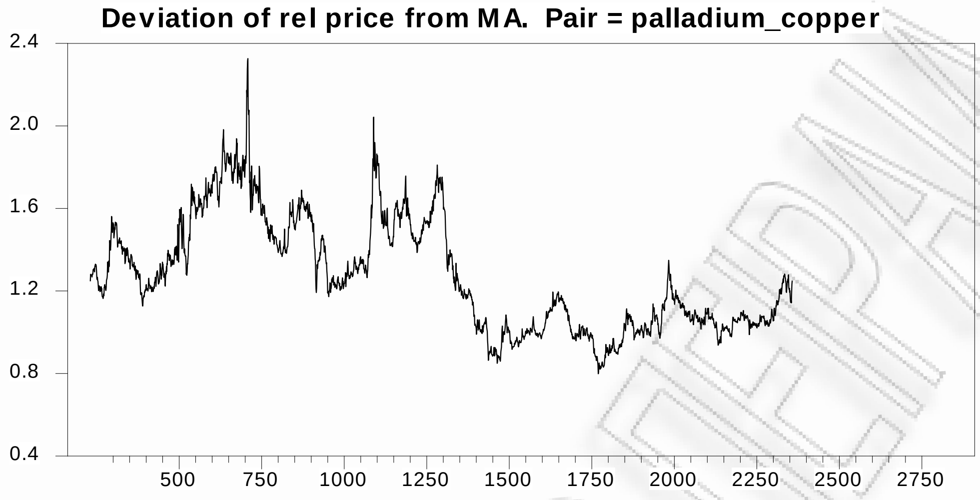
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.05 2.42 -3.72 0.44 %

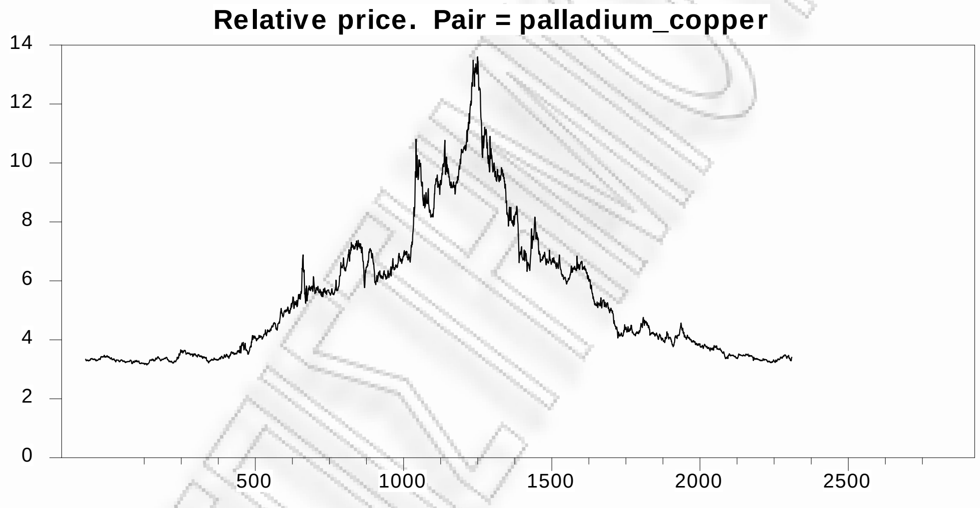
Statistics on Series MA_REL

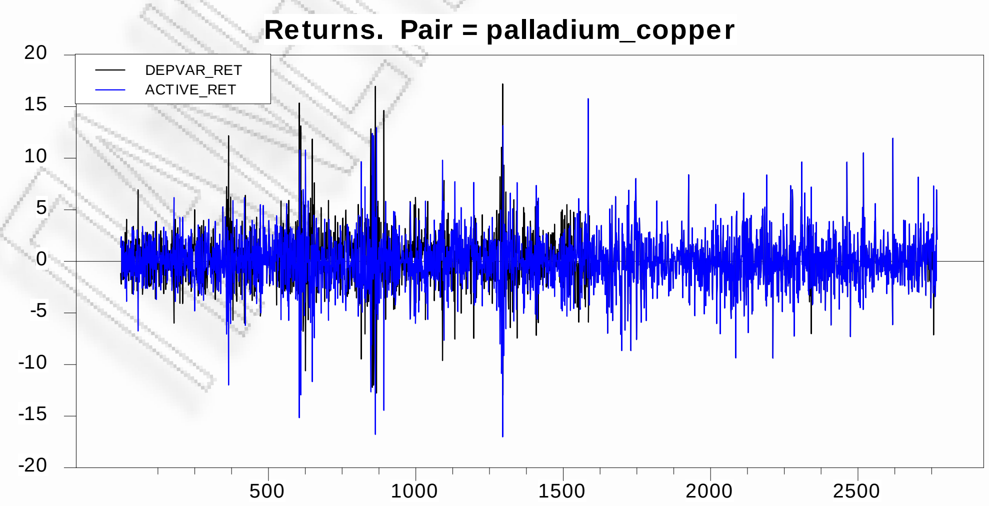
Observations	2473	Skipped/Missing	299
Sample Mean	0.949510	Variance	0.032303
Standard Error	0.179729	of Sample Mean	0.003614
t-Statistic (Mean=0)	262.719954	Signif Level	0.000000
Skewness	0.454170	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.164949	Signif Level (Ku=0)	0.094520
Jarque-Bera	87.821178	Signif Level (JB=0)	0.000000

Minimum	0.549101	Maximum	1.617695
01-%ile	0.610526	99-%ile	1.436492
05-%ile	0.657649	95-%ile	1.287114
10-%ile	0.740684	90-%ile	1.171928
25-%ile	0.814997	75-%ile	1.058810
Median	0.941491		

-30-


Deviation of rel price from MA. Pair = palladium_copper
2.4
2.0
1.6
1.2
0.8
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = palladium_copper
14
12
10
8
6
4
2
0
500
1000
1500
2000
2500


Returns. Pair = palladium_copper
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

********************* Pair = palladium_copper

********************* SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.035091	Variance	6.600882
Standard Error	2.569218	of Sample Mean	0.048807
t-Statistic (Mean=0)	0.718982	Signif Level	0.472213
Skewness	0.452895	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.976839	Signif Level (Ku=0)	0.000000
Jarque-Bera	2954.507552	Signif Level (JB=0)	0.000000

Minimum	-13.059365	Maximum	17.111132
01-%ile	-6.799694	99-%ile	7.038010
05-%ile	-3.724911	95-%ile	3.963386
10-%ile	-2.732144	90-%ile	2.918848
25-%ile	-1.364029	75-%ile	1.317172
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.04 2.57 -3.72 0.45 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.081052	Variance	6.595542
Standard Error	2.568179	of Sample Mean	0.048787
t-Statistic (Mean=0)	-1.661325	Signif Level	0.096761
Skewness	-0.147786	Signif Level (Sk=0)	0.001502

Kurtosis (excess)	4.991035	Signif Level (Ku=0)	0.000000
Jarque-Bera	2886.203927	Signif Level (JB=0)	0.000000

Minimum	-17.111132	Maximum	15.661764
01-%ile	-7.019573	99-%ile	6.859117
05-%ile	-4.059170	95-%ile	3.775476
10-%ile	-2.881400	90-%ile	2.754054
25-%ile	-1.404404	75-%ile	1.291573
	Median	-0.090371	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.08 2.57 -4.06 0.46 %

Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.030944	Variance	0.098544
Standard Error	0.313918	of Sample Mean	0.006313
t-Statistic (Mean=0)	163.317045	Signif Level	0.000000
Skewness	0.558492	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.528011	Signif Level (Ku=0)	0.000000
Jarque-Bera	157.287704	Signif Level (JB=0)	0.000000

Minimum	0.478273	Maximum	2.255311
01-%ile	0.545061	99-%ile	1.722920
05-%ile	0.625350	95-%ile	1.593080
10-%ile	0.686081	90-%ile	1.478924
25-%ile	0.763108	75-%ile	1.271307
	Median	0.970476	

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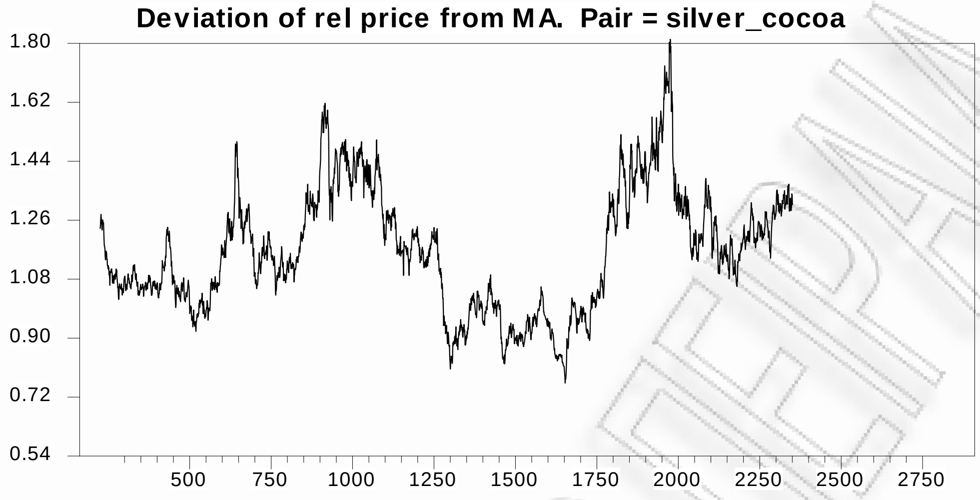
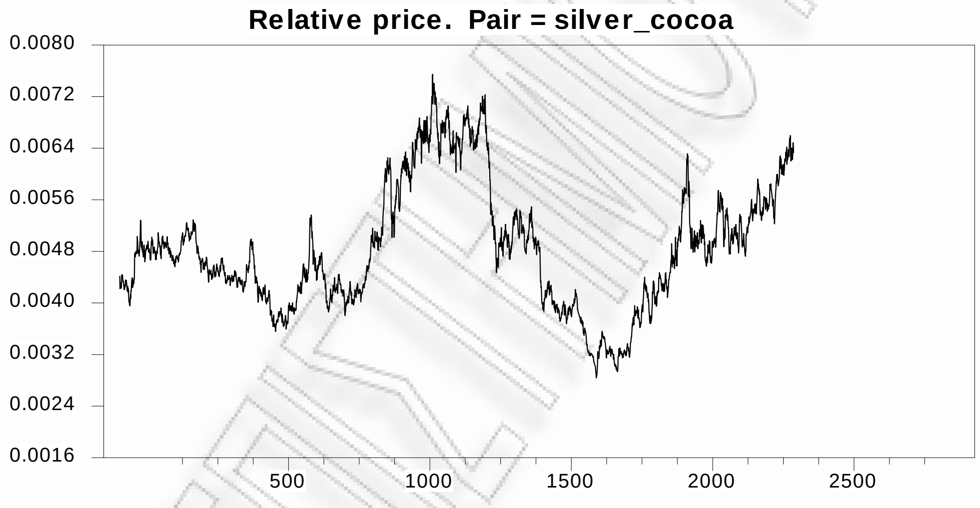
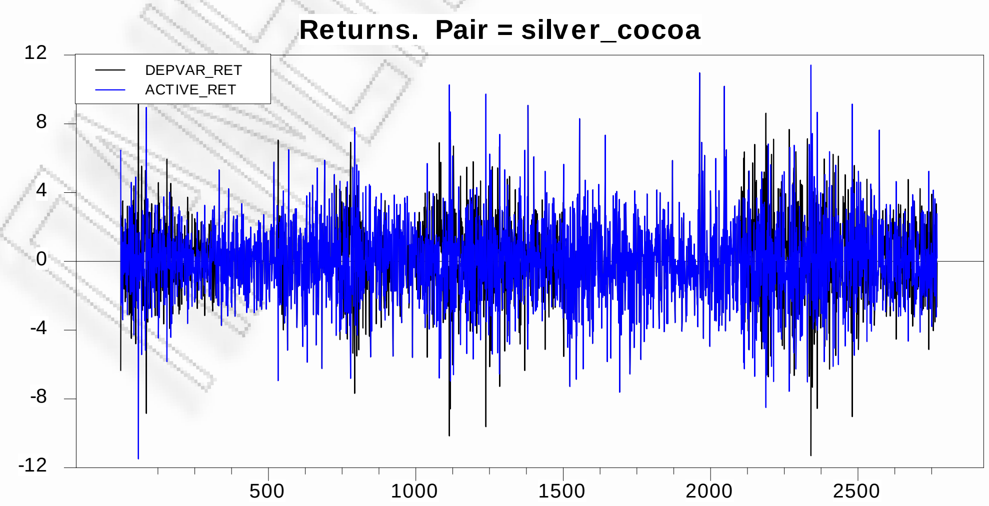

Deviation of rel price from MA. Pair = silver_cocoa
1.80
1.62
1.44
1.26
1.08
0.90
0.72
0.54
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = silver_cocoa
0.0080
0.0072
0.0064
0.0056
0.0048
0.0040
0.0032
0.0024
0.0016
500
1000
1500
2000
2500


Returns. Pair = silver_cocoa
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = silver_cocoa

******************** SMA ---> 1 LMA ---> 300

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.043966	Variance	5.366252
Standard Error	2.316517	of Sample Mean	0.044007
t-Statistic (Mean=0)	0.999090	Signif Level	0.317839
Skewness	0.003227	Signif Level (Sk=0)	0.944743
Kurtosis (excess)	1.494435	Signif Level (Ku=0)	0.000000
Jarque-Bera	257.862042	Signif Level (JB=0)	0.000000
Minimum	-11.358750	Maximum	11.546872
01-%ile	-5.801129	99-%ile	6.035727
05-%ile	-3.641816	95-%ile	3.732680
10-%ile	-2.738549	90-%ile	2.826347
25-%ile	-1.351866	75-%ile	1.445741
	Median	0.004736	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.04 2.32 -3.64 0.44 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.034960	Variance	5.366963
Standard Error	2.316671	of Sample Mean	0.044009
t-Statistic (Mean=0)	-0.794379	Signif Level	0.427043

Skewness	0.138575	Signif Level (Sk=0)	0.002916
Kurtosis (excess)	1.502662	Signif Level (Ku=0)	0.000000
Jarque-Bera	269.572596	Signif Level (JB=0)	0.000000

Minimum	-11.546872	Maximum	11.358750
01-%ile	-5.886481	99-%ile	6.129877
05-%ile	-3.762773	95-%ile	3.592703
10-%ile	-2.842212	90-%ile	2.700724
25-%ile	-1.452767	75-%ile	1.333462
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.03 2.32 -3.76 0.44 %

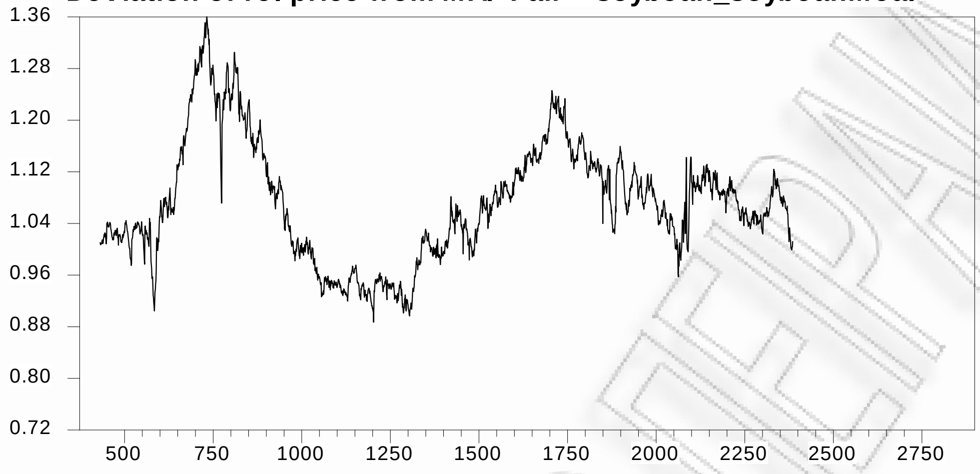
Statistics on Series MA_REL

Observations	2473	Skipped/Missing	299
Sample Mean	1.024851	Variance	0.046002
Standard Error	0.214480	of Sample Mean	0.004313
t-Statistic (Mean=0)	237.621794	Signif Level	0.000000
Skewness	0.390303	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.220387	Signif Level (Ku=0)	0.025485
Jarque-Bera	67.792828	Signif Level (JB=0)	0.000000

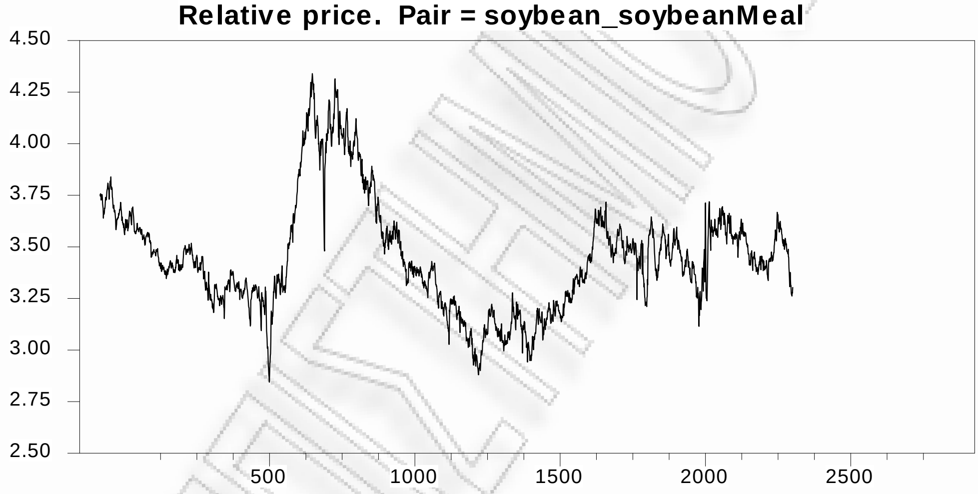
Minimum	0.556220	Maximum	1.777242
01-%ile	0.639836	99-%ile	1.585454
05-%ile	0.708817	95-%ile	1.388955
10-%ile	0.749541	90-%ile	1.323781
25-%ile	0.865858	75-%ile	1.170773
Median	1.012882		

-1-

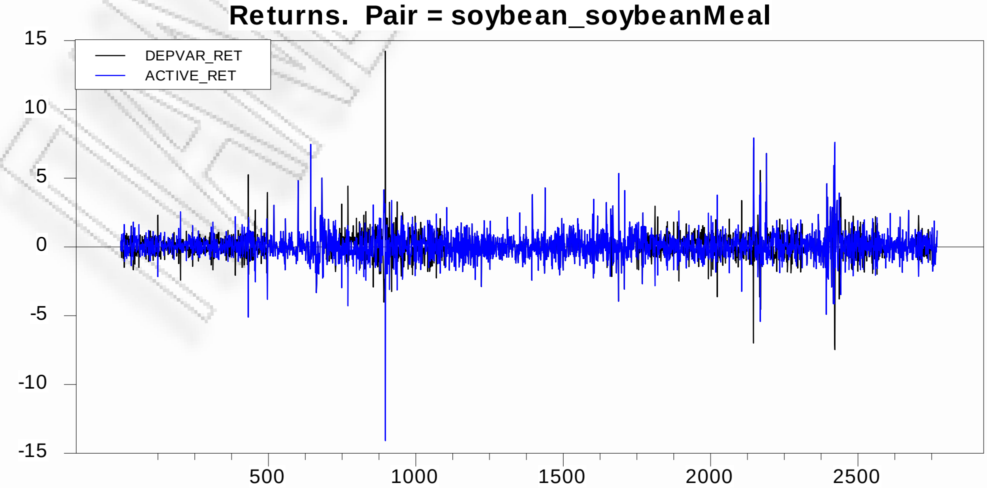
Deviation of rel price from MA. Pair = soybean_soybeanMeal



Relative price. Pair = soybean_soybeanMeal



Returns. Pair = soybean_soybeanMeal



****

******************** Pair = soybean_soybeanMeal

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000421	Variance	1.069017
Standard Error	1.033933	of Sample Mean	0.019641
t-Statistic (Mean=0)	-0.021434	Signif Level	0.982901
Skewness	1.329044	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.139716	Signif Level (Ku=0)	0.000000
Jarque-Bera	47646.605195	Signif Level (JB=0)	0.000000

Minimum	-7.541035	Maximum	14.159056
01-%ile	-2.395240	99-%ile	3.164576
05-%ile	-1.419159	95-%ile	1.425752
10-%ile	-1.031134	90-%ile	1.007217
25-%ile	-0.514368	75-%ile	0.474729
Median	-0.037627		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 1.03 -1.42 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.027246	Variance	1.068274
Standard Error	1.033574	of Sample Mean	0.019635
t-Statistic (Mean=0)	1.387632	Signif Level	0.165361
Skewness	-0.024544	Signif Level (Sk=0)	0.598066

Kurtosis (excess)	20.168137	Signif Level (Ku=0)	0.000000
Jarque-Bera	46963.390573	Signif Level (JB=0)	0.000000

Minimum	-14.159056	Maximum	7.849835
01-%ile	-2.331217	99-%ile	3.101353
05-%ile	-1.371772	95-%ile	1.483761
10-%ile	-0.996333	90-%ile	1.054315
25-%ile	-0.494962	75-%ile	0.494049
Median	0.008673		

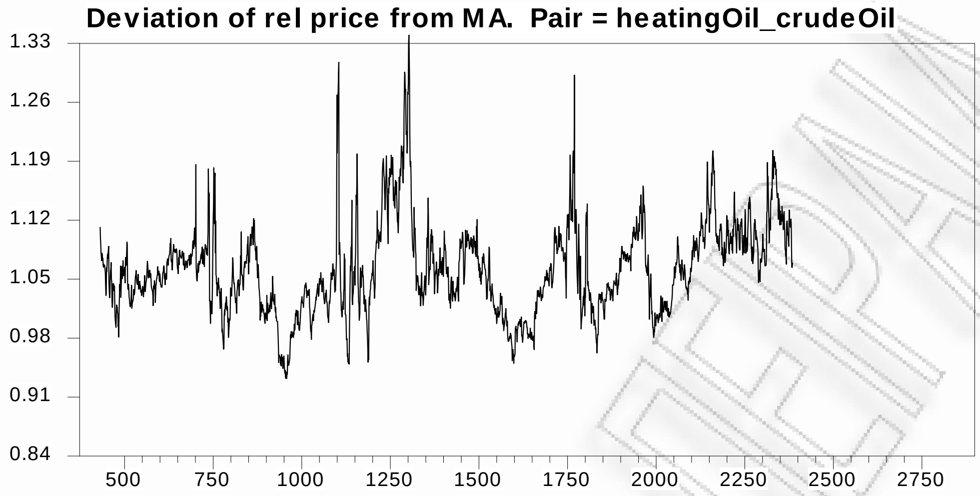
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.03 1.03 -1.37 0.41 %

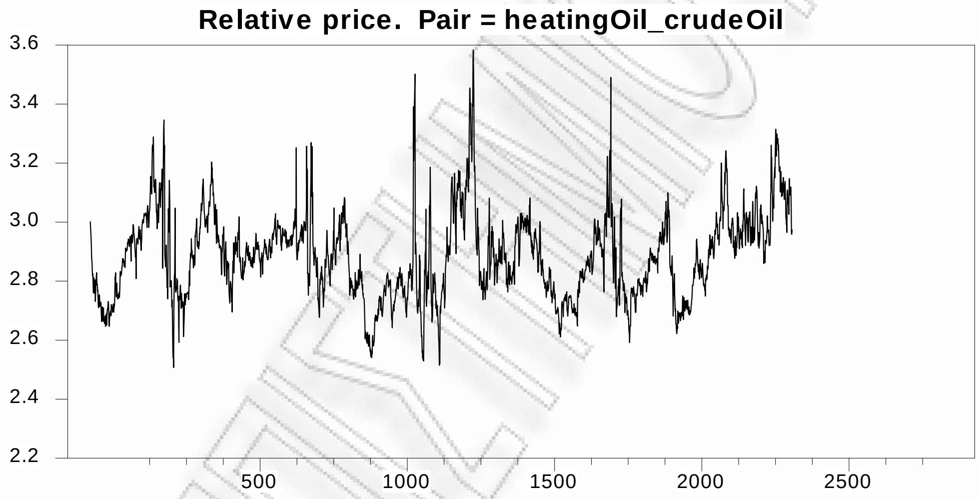
Statistics on Series MA_REL

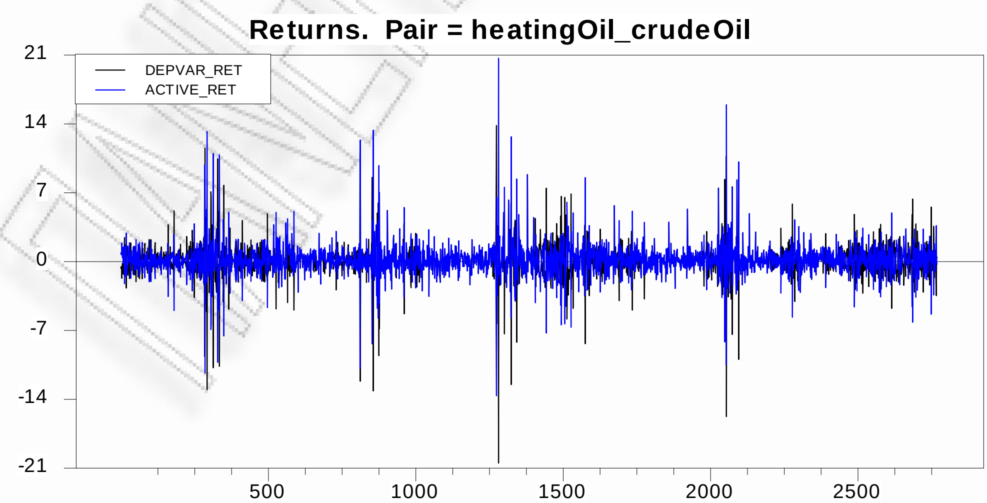
Observations	2273	Skipped/Missing	499
Sample Mean	1.005759	Variance	0.011275
Standard Error	0.106184	of Sample Mean	0.002227
t-Statistic (Mean=0)	451.579204	Signif Level	0.000000
Skewness	0.481865	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.004390	Signif Level (Ku=0)	0.965975
Jarque-Bera	87.964511	Signif Level (JB=0)	0.000000

Minimum	0.791051	Maximum	1.341450
01-%ile	0.818281	99-%ile	1.283959
05-%ile	0.844771	95-%ile	1.202336
10-%ile	0.861643	90-%ile	1.157099
25-%ile	0.934025	75-%ile	1.066650
Median	0.998921		

-2-


Deviation of rel price from MA. Pair = heatingOil_crudeOil
1.33
1.26
1.19
1.12
1.05
0.98
0.91
0.84
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = heatingOil_crudeOil
3.6
3.4
3.2
3.0
2.8
2.6
2.4
2.2
500
1000
1500
2000
2500


Returns. Pair = heatingOil_crudeOil
DEPVAR_RET
ACTIVE_RET
21
14
7
0
-7
-14
-21
500
1000
1500
2000
2500

****

******************** Pair = heatingOil_crudeOil

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.014758	Variance	2.990445
Standard Error	1.729290	of Sample Mean	0.032851
t-Statistic (Mean=0)	0.449253	Signif Level	0.653284
Skewness	-0.979650	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.556673	Signif Level (Ku=0)	0.000000
Jarque-Bera	54095.579900	Signif Level (JB=0)	0.000000
Minimum	-20.584528	Maximum	13.741360
01-%ile	-4.169521	99-%ile	5.036791
05-%ile	-2.135145	95-%ile	2.275982
10-%ile	-1.481046	90-%ile	1.480858
25-%ile	-0.707339	75-%ile	0.689096
Median	0.017143		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.73 -2.14 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.084712	Variance	2.983484
Standard Error	1.727276	of Sample Mean	0.032813
t-Statistic (Mean=0)	2.581665	Signif Level	0.009883
Skewness	1.248260	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	21.378502	Signif Level (Ku=0)	0.000000
Jarque-Bera	53488.724909	Signif Level (JB=0)	0.000000

Minimum	-13.741360	Maximum	20.584528
01-%ile	-4.545960	99-%ile	5.029883
05-%ile	-2.111186	95-%ile	2.257419
10-%ile	-1.424086	90-%ile	1.562229
25-%ile	-0.633473	75-%ile	0.762909
	Median	0.047701	

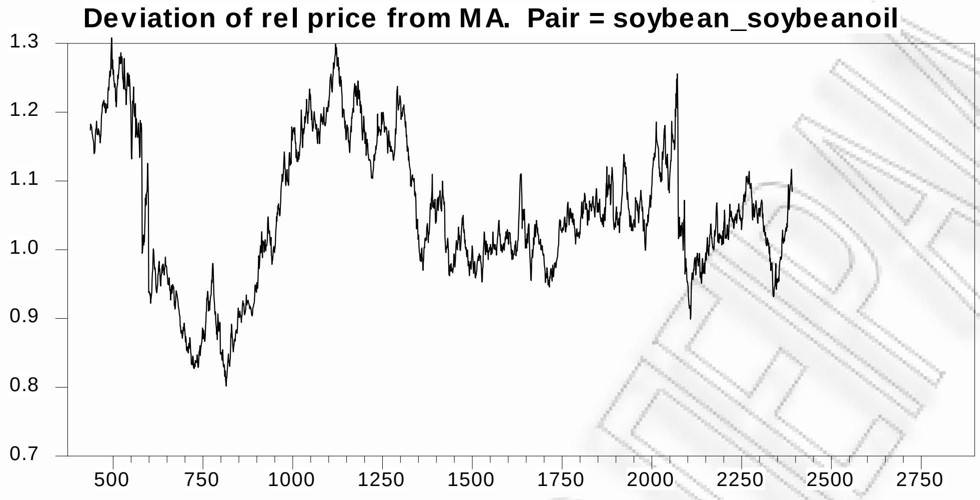
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.08 1.73 -2.11 0.38 %

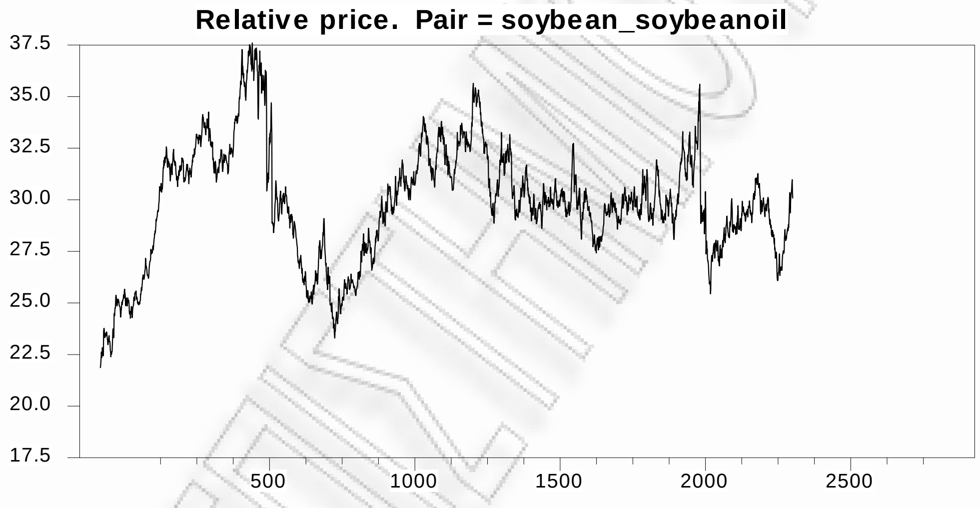
Statistics on Series MA_REL

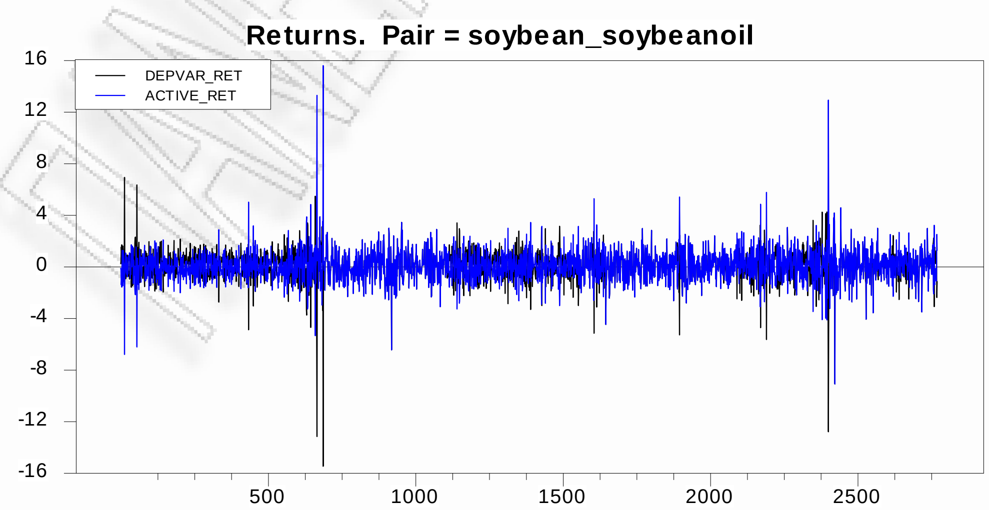
Observations	2273	Skipped/Missing	499
Sample Mean	1.003699	Variance	0.004050
Standard Error	0.063639	of Sample Mean	0.001335
t-Statistic (Mean=0)	751.935189	Signif Level	0.000000
Skewness	0.848704	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	1.967926	Signif Level (Ku=0)	0.000000
Jarque-Bera	639.652875	Signif Level (JB=0)	0.000000

Minimum	0.852607	Maximum	1.326809
01-%ile	0.874786	99-%ile	1.191572
05-%ile	0.911628	95-%ile	1.122512
10-%ile	0.931597	90-%ile	1.079315
25-%ile	0.961512	75-%ile	1.037205
	Median	0.997936	

-3-


Deviation of rel price from MA. Pair = soybean_soybeanoil
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_soybeanoil
37.5
35.0
32.5
30.0
27.5
25.0
22.5
20.0
17.5
500
1000
1500
2000
2500


Returns. Pair = soybean_soybeanoil
DEPVAR_RET
ACTIVE_RET
16
12
8
4
0
-4
-8
-12
-16
500
1000
1500
2000
2500

****

******************** Pair = soybean_soybeanoil

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022759	Variance	1.548062
Standard Error	1.244211	of Sample Mean	0.023636
t-Statistic (Mean=0)	0.962875	Signif Level	0.335694
Skewness	-1.805608	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.845722	Signif Level (Ku=0)	0.000000
Jarque-Bera	46979.254862	Signif Level (JB=0)	0.000000

Minimum	-15.532950	Maximum	6.866004
01-%ile	-3.121745	99-%ile	2.864887
05-%ile	-1.743204	95-%ile	1.801140
10-%ile	-1.343896	90-%ile	1.363836
25-%ile	-0.658107	75-%ile	0.745133
Median	0.056297		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.24 -1.74 0.39 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.025770	Variance	1.547916
Standard Error	1.244153	of Sample Mean	0.023635

t-Statistic (Mean=0)	1.090343	Signif Level	0.275657
Skewness	1.397622	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.601182	Signif Level (Ku=0)	0.000000
Jarque-Bera	45261.943135	Signif Level (JB=0)	0.000000

Minimum	-9.150648	Maximum	15.532950
01-%ile	-2.773483	99-%ile	3.073543
05-%ile	-1.744447	95-%ile	1.819599
10-%ile	-1.344876	90-%ile	1.367236
25-%ile	-0.696643	75-%ile	0.727294
Median	-0.001217		

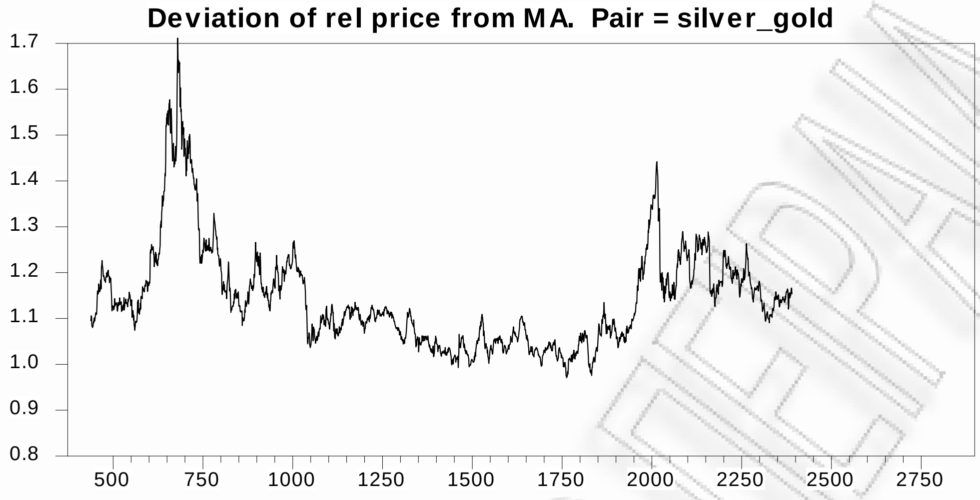
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 1.24 -1.74 0.40 %

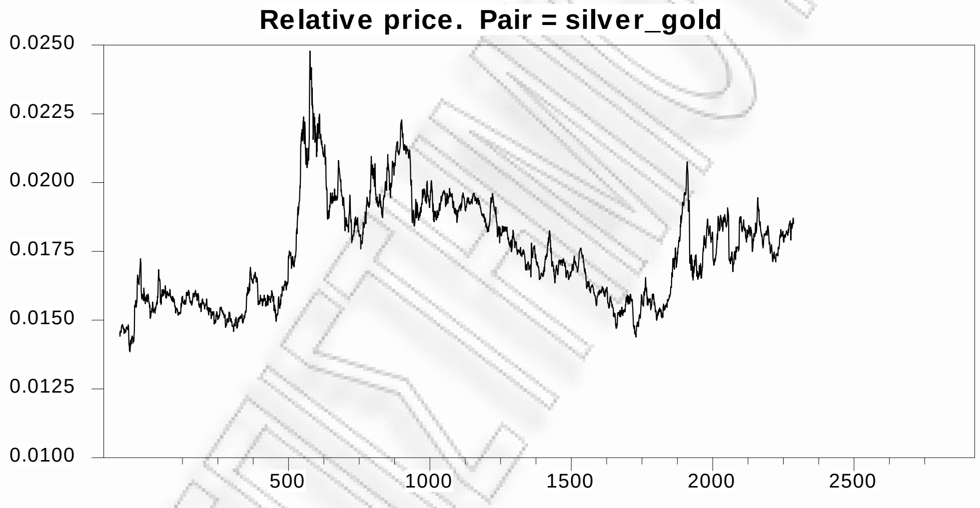
Statistics on Series MA_REL

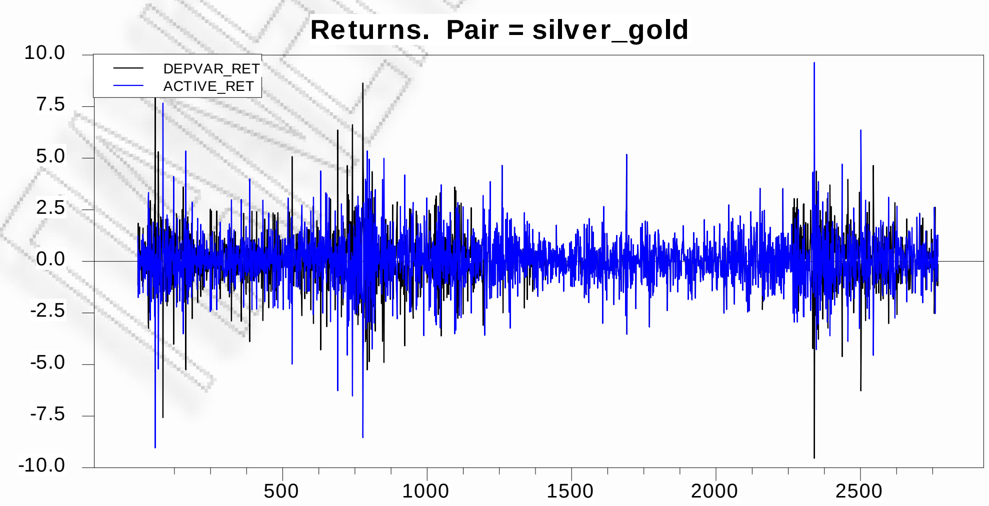
Observations	2273	Skipped/Missing	499
Sample Mean	0.995280	Variance	0.014530
Standard Error	0.120539	of Sample Mean	0.002528
t-Statistic (Mean=0)	393.656240	Signif Level	0.000000
Skewness	0.120804	Signif Level (Sk=0)	0.018787
Kurtosis (excess)	-0.506829	Signif Level (Ku=0)	0.000001
Jarque-Bera	29.856742	Signif Level (JB=0)	0.000000

Minimum	0.702660	Maximum	1.291662
01-%ile	0.739353	99-%ile	1.249977
05-%ile	0.791310	95-%ile	1.203380
10-%ile	0.842558	90-%ile	1.165403
25-%ile	0.918399	75-%ile	1.090861
Median	0.980389		

-4-


Deviation of rel price from MA. Pair = silver_gold
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
500 750 1000 1250 1500 1750 2000 2250 2500 2750


Relative price. Pair = silver_gold
0.0250
0.0225
0.0200
0.0175
0.0150
0.0125
0.0100
500 1000 1500 2000 2500


Returns. Pair = silver_gold
DEPVAR_RET
ACTIVE_RET
10.0
7.5
5.0
2.5
0.0
-2.5
-5.0
-7.5
-10.0
500 1000 1500 2000 2500

****

******************** Pair = silver_gold

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018778	Variance	1.475875
Standard Error	1.214856	of Sample Mean	0.023078
t-Statistic (Mean=0)	0.813642	Signif Level	0.415920
Skewness	0.010534	Signif Level (Sk=0)	0.820998
Kurtosis (excess)	6.051425	Signif Level (Ku=0)	0.000000
Jarque-Bera	4228.105978	Signif Level (JB=0)	0.000000

Minimum	-9.590524	Maximum	9.087904
01-%ile	-3.282010	99-%ile	3.105876
05-%ile	-1.838538	95-%ile	1.873336
10-%ile	-1.325501	90-%ile	1.347578
25-%ile	-0.591186	75-%ile	0.628350
Median	0.006533		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.21 -1.84 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.003930	Variance	1.476212
Standard Error	1.214995	of Sample Mean	0.023081
t-Statistic (Mean=0)	0.170264	Signif Level	0.864815
Skewness	0.027405	Signif Level (Sk=0)	0.556112

Kurtosis (excess)	6.048958	Signif Level (Ku=0)	0.000000
Jarque-Bera	4224.954786	Signif Level (JB=0)	0.000000

Minimum	-9.087904	Maximum	9.590524
01-%ile	-3.105876	99-%ile	3.306279
05-%ile	-1.870319	95-%ile	1.849390
10-%ile	-1.335086	90-%ile	1.339286
25-%ile	-0.603959	75-%ile	0.620301
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.00 1.21 -1.87 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.025636	Variance	0.016999
Standard Error	0.130378	of Sample Mean	0.002735
t-Statistic (Mean=0)	375.048458	Signif Level	0.000000
Skewness	1.554693	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.290036	Signif Level (Ku=0)	0.000000
Jarque-Bera	1940.821219	Signif Level (JB=0)	0.000000

Minimum	0.825258	Maximum	1.686943
01-%ile	0.853688	99-%ile	1.484959
05-%ile	0.877150	95-%ile	1.298216
10-%ile	0.891981	90-%ile	1.163303
25-%ile	0.929043	75-%ile	1.083509
Median	1.000136		

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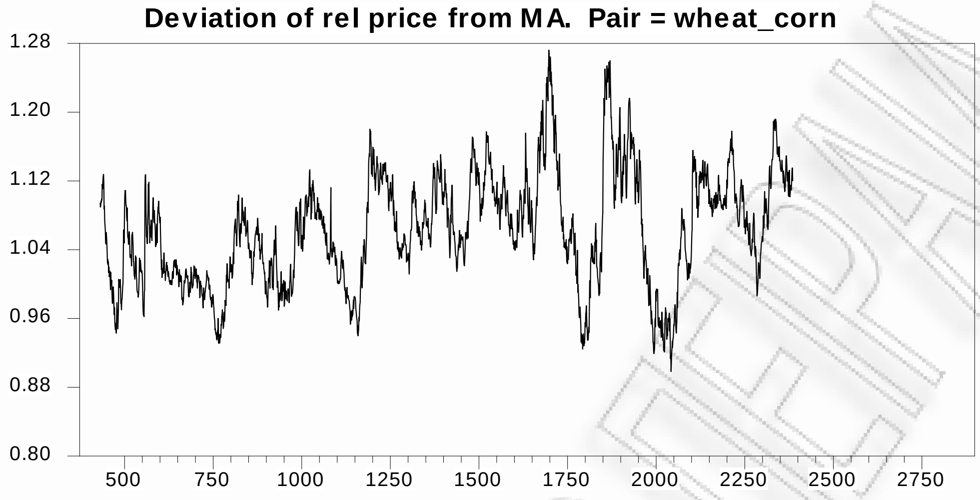
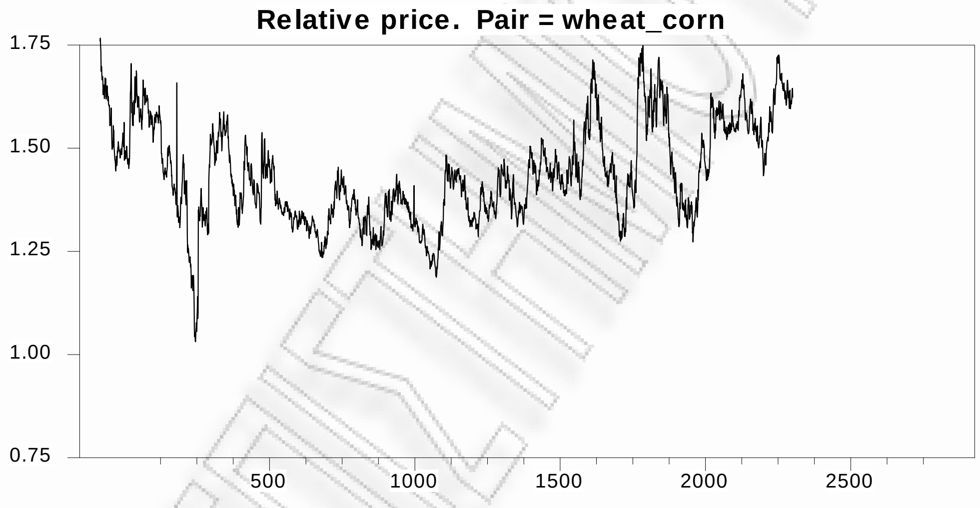
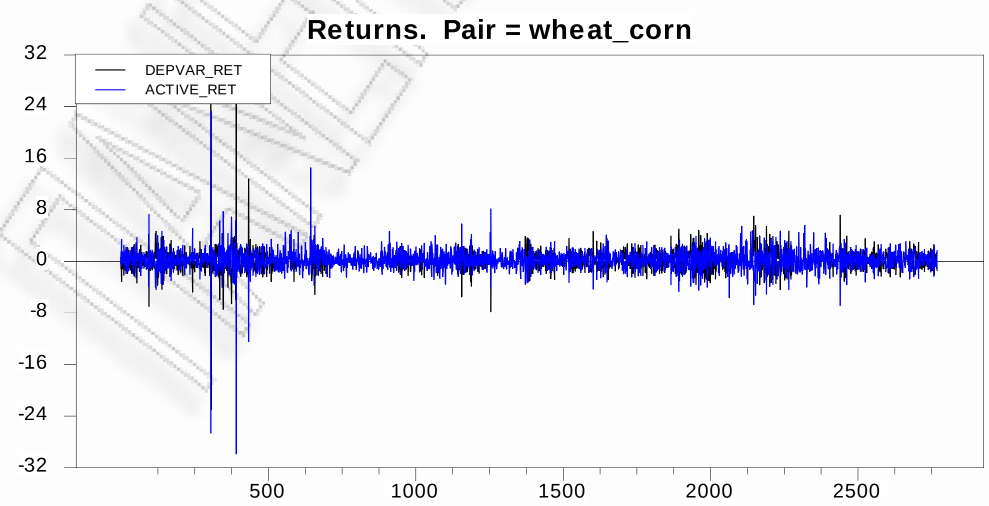

Deviation of rel price from MA. Pair = wheat_corn
1.28
1.20
1.12
1.04
0.96
0.88
0.80
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = wheat_corn
1.75
1.50
1.25
1.00
0.75
500
1000
1500
2000
2500


Returns. Pair = wheat_corn
DEPVAR_RET
ACTIVE_RET
32
24
16
8
0
-8
-16
-24
-32
500
1000
1500
2000
2500

****

******************** Pair = wheat_corn

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.011072	Variance	2.974005
Standard Error	1.724530	of Sample Mean	0.032761
t-Statistic (Mean=0)	0.337962	Signif Level	0.735418
Skewness	2.730782	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	68.283882	Signif Level (Ku=0)	0.000000
Jarque-Bera	541790.217454	Signif Level (JB=0)	0.000000

Minimum	-23.187712	Maximum	30.020972
01-%ile	-3.476776	99-%ile	4.173708
05-%ile	-2.166937	95-%ile	2.260124
10-%ile	-1.689766	90-%ile	1.697152
25-%ile	-0.893765	75-%ile	0.853195
Median	-0.039146		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.72 -2.17 0.42 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.055816	Variance	2.971011
Standard Error	1.723662	of Sample Mean	0.032744
t-Statistic (Mean=0)	1.704606	Signif Level	0.088380
Skewness	-2.229140	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	68.781096	Signif Level (Ku=0)	0.000000
Jarque-Bera	548509.682952	Signif Level (JB=0)	0.000000

Minimum	-30.020972	Maximum	23.187712
01-%ile	-3.728580	99-%ile	4.051360
05-%ile	-2.112787	95-%ile	2.306842
10-%ile	-1.616416	90-%ile	1.763483
25-%ile	-0.810080	75-%ile	0.938464
Median	0.043010		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.06 1.72 -2.11 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.012414	Variance	0.005781
Standard Error	0.076032	of Sample Mean	0.001595
t-Statistic (Mean=0)	634.837983	Signif Level	0.000000
Skewness	0.233963	Signif Level (Sk=0)	0.000005
Kurtosis (excess)	-0.147367	Signif Level (Ku=0)	0.152160
Jarque-Bera	22.793706	Signif Level (JB=0)	0.000011

Minimum	0.821881	Maximum	1.256711
01-%ile	0.861350	99-%ile	1.212337
05-%ile	0.889805	95-%ile	1.134400
10-%ile	0.915189	90-%ile	1.107488
25-%ile	0.955774	75-%ile	1.064747
Median	1.011065		

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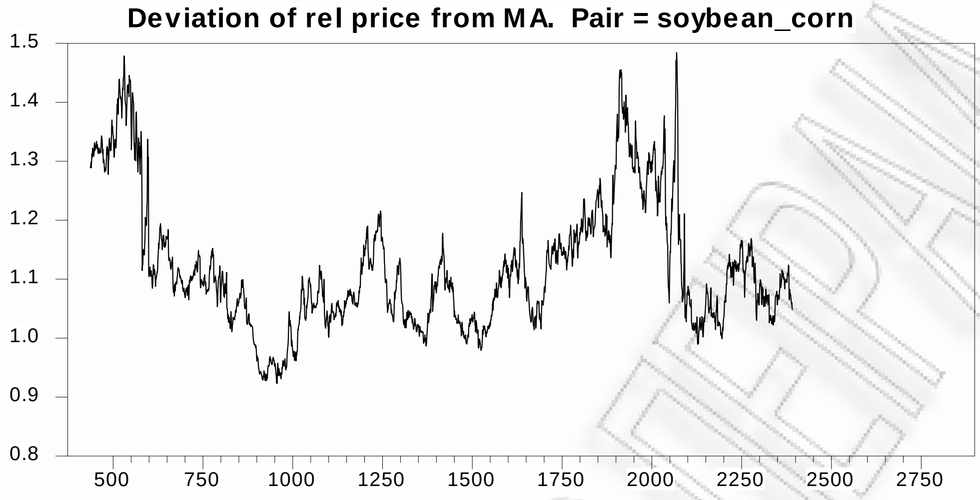
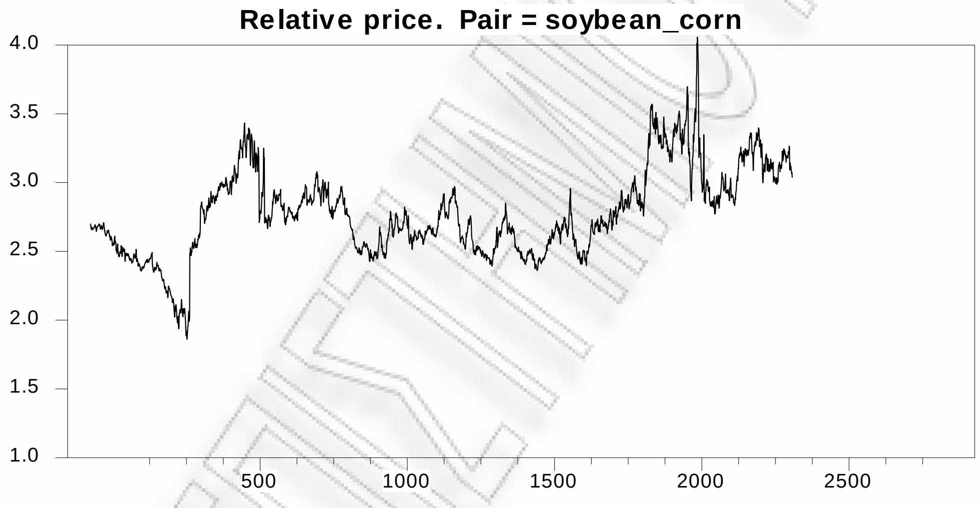
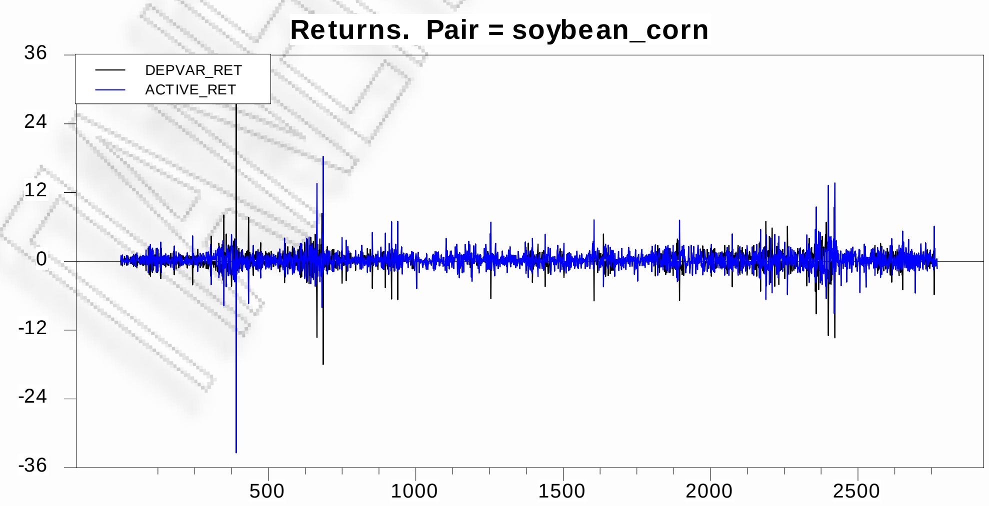

Deviation of rel price from MA. Pair = soybean_corn
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_corn
4.0
3.5
3.0
2.5
2.0
1.5
1.0
500
1000
1500
2000
2500


Returns. Pair = soybean_corn
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = soybean_corn

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.018639	Variance	2.666566
Standard Error	1.632962	of Sample Mean	0.031021
t-Statistic (Mean=0)	0.600843	Signif Level	0.547994
Skewness	1.968128	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	76.216099	Signif Level (Ku=0)	0.000000
Jarque-Bera	672474.116889	Signif Level (JB=0)	0.000000
Minimum	-18.156908	Maximum	33.572249
01-%ile	-4.518416	99-%ile	3.746851
05-%ile	-2.138780	95-%ile	2.141820
10-%ile	-1.496651	90-%ile	1.566307
25-%ile	-0.654477	75-%ile	0.760979
Median	0.016422		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.63 -2.14 0.39 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.047498	Variance	2.664657
Standard Error	1.632378	of Sample Mean	0.031010
t-Statistic (Mean=0)	1.531689	Signif Level	0.125714
Skewness	-2.062104	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	76.655829	Signif Level (Ku=0)	0.000000
Jarque-Bera	680410.420271	Signif Level (JB=0)	0.000000

Minimum	-33.572249	Maximum	18.156908
01-%ile	-3.772542	99-%ile	4.466170
05-%ile	-2.038798	95-%ile	2.211158
10-%ile	-1.476560	90-%ile	1.565765
25-%ile	-0.676046	75-%ile	0.732576
Median	0.022499		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.05 1.63 -2.04 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.037977	Variance	0.016715
Standard Error	0.129287	of Sample Mean	0.002712
t-Statistic (Mean=0)	382.765721	Signif Level	0.000000
Skewness	0.980243	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.510368	Signif Level (Ku=0)	0.000001
Jarque-Bera	388.681160	Signif Level (JB=0)	0.000000

Minimum	0.808476	Maximum	1.461406
01-%ile	0.824955	99-%ile	1.404629
05-%ile	0.872236	95-%ile	1.298934
10-%ile	0.911628	90-%ile	1.254452
25-%ile	0.944905	75-%ile	1.091126
Median	1.008840		

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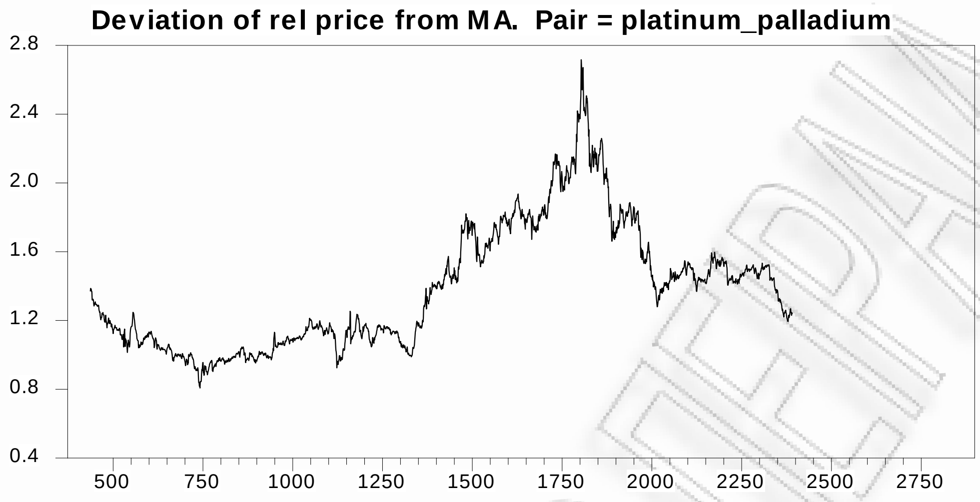
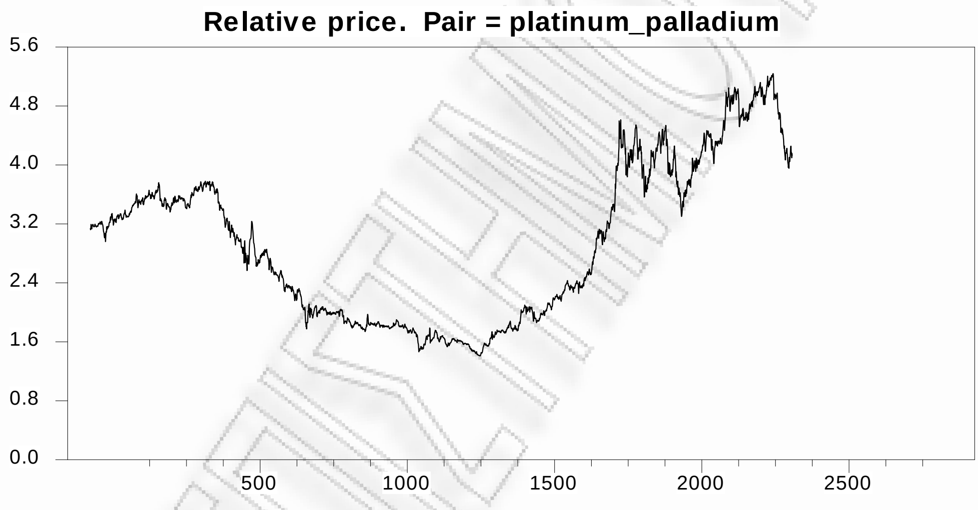
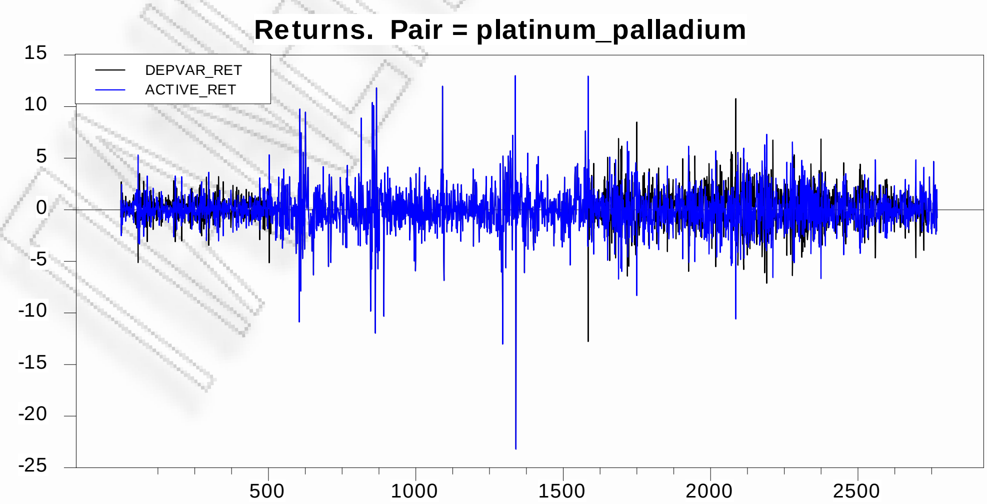

Deviation of rel price from MA. Pair = platinum_palladium
2.8
2.4
2.0
1.6
1.2
0.8
0.4
500 750 1000 1250 1500 1750 2000 2250 2500 2750


Relative price. Pair = platinum_palladium
5.6
4.8
4.0
3.2
2.4
1.6
0.8
0.0
500 1000 1500 2000 2500


Returns. Pair = platinum_palladium
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
-20
-25
500 1000 1500 2000 2500

****

******************** Pair = platinum_palladium

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.033564	Variance	4.011642
Standard Error	2.002908	of Sample Mean	0.038049
t-Statistic (Mean=0)	0.882115	Signif Level	0.377791
Skewness	-0.535602	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	12.067461	Signif Level (Ku=0)	0.000000
Jarque-Bera	16945.945198	Signif Level (JB=0)	0.000000

Minimum	-23.298456	Maximum	12.896863
01-%ile	-5.453415	99-%ile	5.149221
05-%ile	-2.875062	95-%ile	3.038467
10-%ile	-2.047033	90-%ile	2.165283
25-%ile	-0.927409	75-%ile	0.984723
Median	0.026603		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.00 -2.88 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.089977	Variance	4.004670
Standard Error	2.001167	of Sample Mean	0.038016
t-Statistic (Mean=0)	-2.366836	Signif Level	0.018009
Skewness	-0.360264	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	12.008550	Signif Level (Ku=0)	0.000000
Jarque-Bera	16709.642049	Signif Level (JB=0)	0.000000

Minimum	-23.298456	Maximum	12.896863
01-%ile	-5.265789	99-%ile	5.277325
05-%ile	-2.966210	95-%ile	3.000432
10-%ile	-2.104461	90-%ile	2.069113
25-%ile	-1.046585	75-%ile	0.823495
	Median	-0.106496	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.09 2.00 -2.97 0.44 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.081752	Variance	0.177932
Standard Error	0.421820	of Sample Mean	0.008848
t-Statistic (Mean=0)	122.264582	Signif Level	0.000000
Skewness	0.817292	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.058051	Signif Level (Ku=0)	0.572705
Jarque-Bera	253.367100	Signif Level (JB=0)	0.000000

Minimum	0.411269	Maximum	2.632021
01-%ile	0.526611	99-%ile	2.270029
05-%ile	0.594704	95-%ile	1.911706
10-%ile	0.622030	90-%ile	1.628430
25-%ile	0.736204	75-%ile	1.332185
	Median	1.011488	

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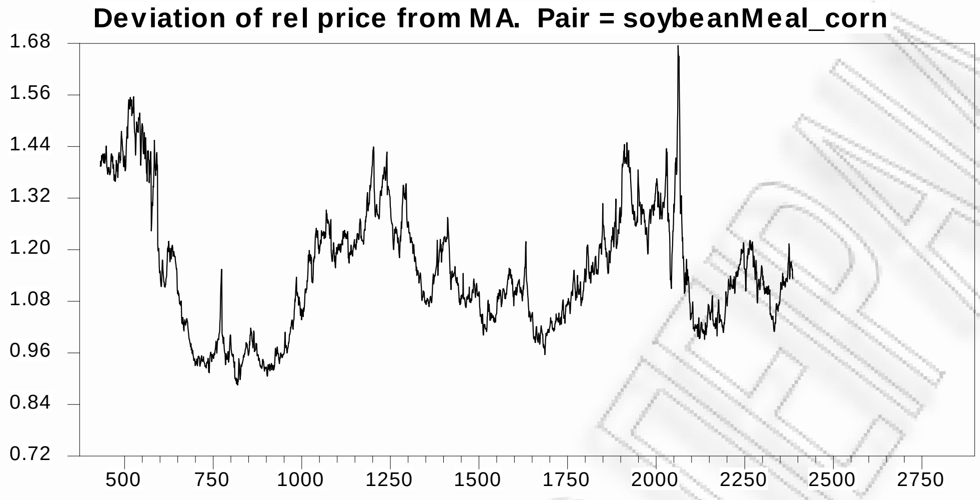
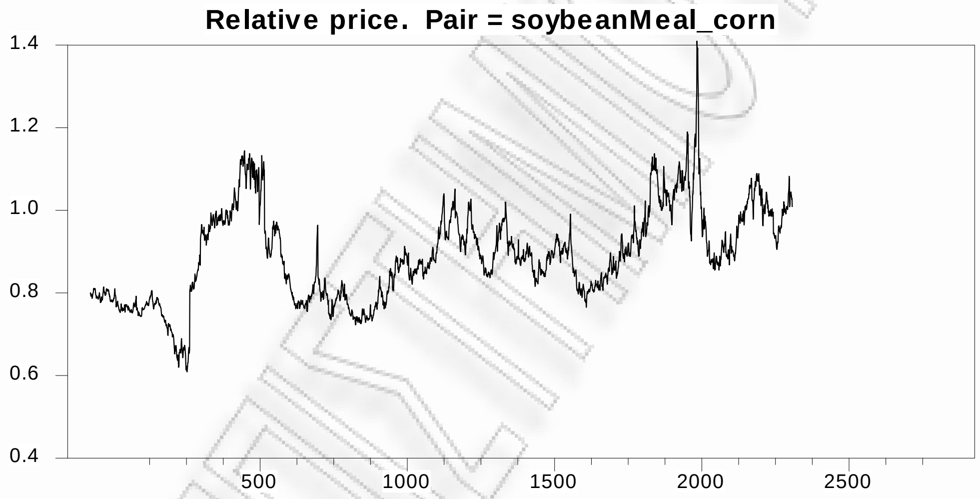
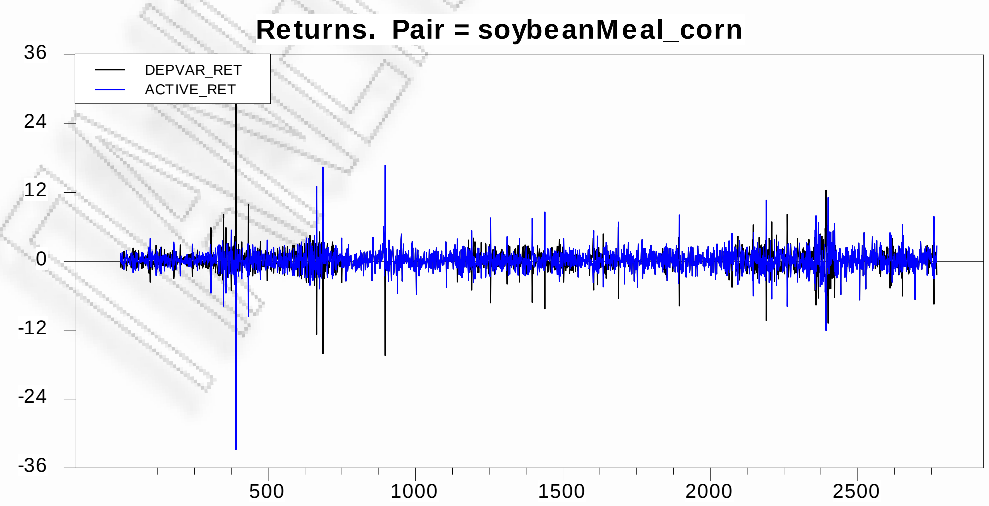

Deviation of rel price from MA. Pair = soybeanMeal_corn
1.68
1.56
1.44
1.32
1.20
1.08
0.96
0.84
0.72
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanMeal_corn
1.4
1.2
1.0
0.8
0.6
0.4
500
1000
1500
2000
2500


Returns. Pair = soybeanMeal_corn
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = soybeanMeal_corn

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.027405	Variance	3.271722
Standard Error	1.808790	of Sample Mean	0.034361
t-Statistic (Mean=0)	0.797547	Signif Level	0.425202
Skewness	1.327603	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	48.245724	Signif Level (Ku=0)	0.000000
Jarque-Bera	269560.575111	Signif Level (JB=0)	0.000000

Minimum	-16.583341	Maximum	32.997932
01-%ile	-4.941308	99-%ile	4.050668
05-%ile	-2.455365	95-%ile	2.457314
10-%ile	-1.728488	90-%ile	1.860235
25-%ile	-0.824091	75-%ile	0.906750
Median	0.052865		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.81 -2.46 0.39 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.036220	Variance	3.271161
Standard Error	1.808635	of Sample Mean	0.034358
t-Statistic (Mean=0)	1.054181	Signif Level	0.291892
Skewness	-1.452229	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	48.459375	Signif Level (Ku=0)	0.000000
Jarque-Bera	272106.067726	Signif Level (JB=0)	0.000000

Minimum	-32.997932	Maximum	16.583341
01-%ile	-4.053703	99-%ile	4.844995
05-%ile	-2.422041	95-%ile	2.494239
10-%ile	-1.732628	90-%ile	1.850042
25-%ile	-0.834347	75-%ile	0.883217
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.04 1.81 -2.42 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.037015	Variance	0.028714
Standard Error	0.169453	of Sample Mean	0.003554
t-Statistic (Mean=0)	291.765803	Signif Level	0.000000
Skewness	0.538138	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.224891	Signif Level (Ku=0)	0.028872
Jarque-Bera	114.497353	Signif Level (JB=0)	0.000000

Minimum	0.727128	Maximum	1.645733
01-%ile	0.764294	99-%ile	1.465658
05-%ile	0.792114	95-%ile	1.347982
10-%ile	0.817700	90-%ile	1.299285
25-%ile	0.907420	75-%ile	1.136589
Median	1.014101		

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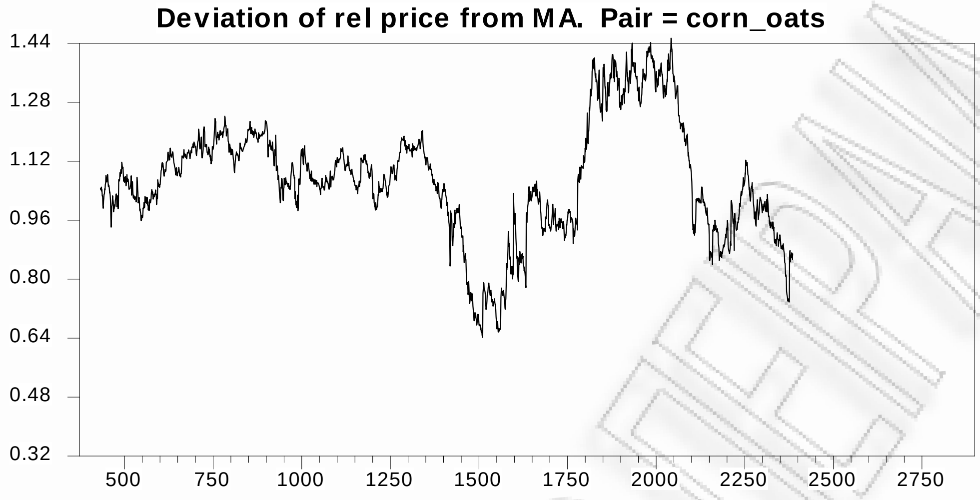
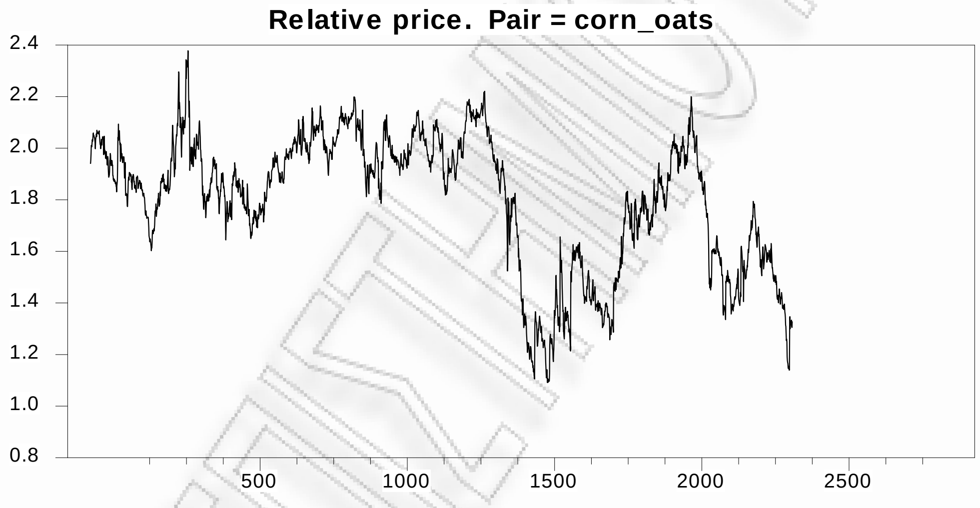
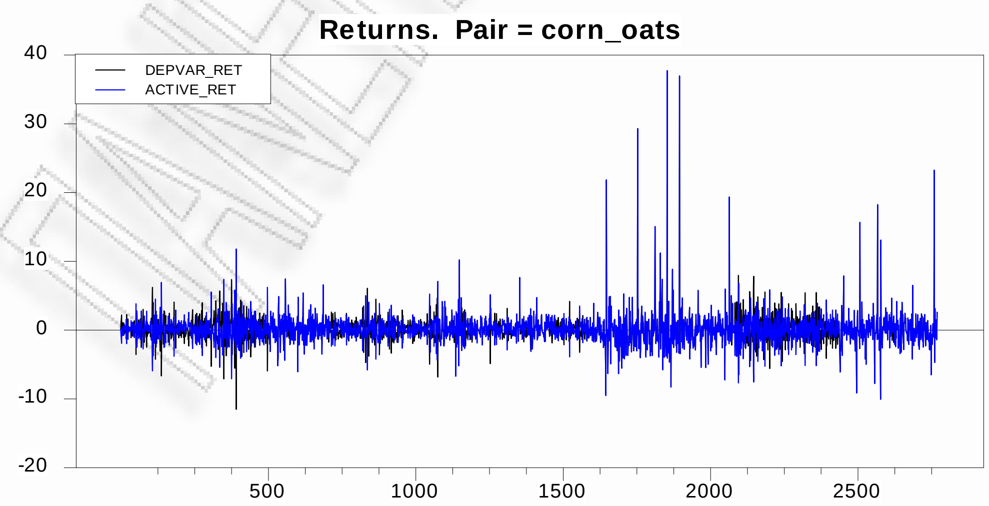

Deviation of rel price from MA. Pair = corn_oats
1.44
1.28
1.12
0.96
0.80
0.64
0.48
0.32
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = corn_oats
2.4
2.2
2.0
1.8
1.6
1.4
1.2
1.0
0.8
500
1000
1500
2000
2500


Returns. Pair = corn_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
500
1000
1500
2000
2500

****

******************** Pair = corn_oats

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.007345	Variance	5.392940
Standard Error	2.322270	of Sample Mean	0.044116
t-Statistic (Mean=0)	0.166487	Signif Level	0.867786
Skewness	4.890516	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	67.317399	Signif Level (Ku=0)	0.000000
Jarque-Bera	534260.441385	Signif Level (JB=0)	0.000000
Minimum	-11.661956	Maximum	37.584567
01-%ile	-5.104269	99-%ile	5.655687
05-%ile	-2.839969	95-%ile	2.742127
10-%ile	-1.999840	90-%ile	1.900938
25-%ile	-0.981165	75-%ile	0.864683
Median	-0.068176		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.01 2.32 -2.84 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.011464	Variance	5.392862
Standard Error	2.322254	of Sample Mean	0.044116
t-Statistic (Mean=0)	0.259865	Signif Level	0.794987
Skewness	4.925141	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	67.283900	Signif Level (Ku=0)	0.000000
Jarque-Bera	533896.796732	Signif Level (JB=0)	0.000000

Minimum	-10.197236	Maximum	37.584567
01-%ile	-5.316676	99-%ile	5.701292
05-%ile	-2.914175	95-%ile	2.660090
10-%ile	-2.058227	90-%ile	1.892632
25-%ile	-0.957558	75-%ile	0.859080
Median	-0.041966		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 2.32 -2.91 0.42 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	0.976644	Variance	0.033945
Standard Error	0.184241	of Sample Mean	0.003864
t-Statistic (Mean=0)	252.726388	Signif Level	0.000000
Skewness	-0.092252	Signif Level (Sk=0)	0.072754
Kurtosis (excess)	0.139774	Signif Level (Ku=0)	0.174411
Jarque-Bera	5.074319	Signif Level (JB=0)	0.079091

Minimum	0.478438	Maximum	1.423366
01-%ile	0.517909	99-%ile	1.371687
05-%ile	0.623802	95-%ile	1.309759
10-%ile	0.743587	90-%ile	1.248924
25-%ile	0.874244	75-%ile	1.077559
Median	0.974218		

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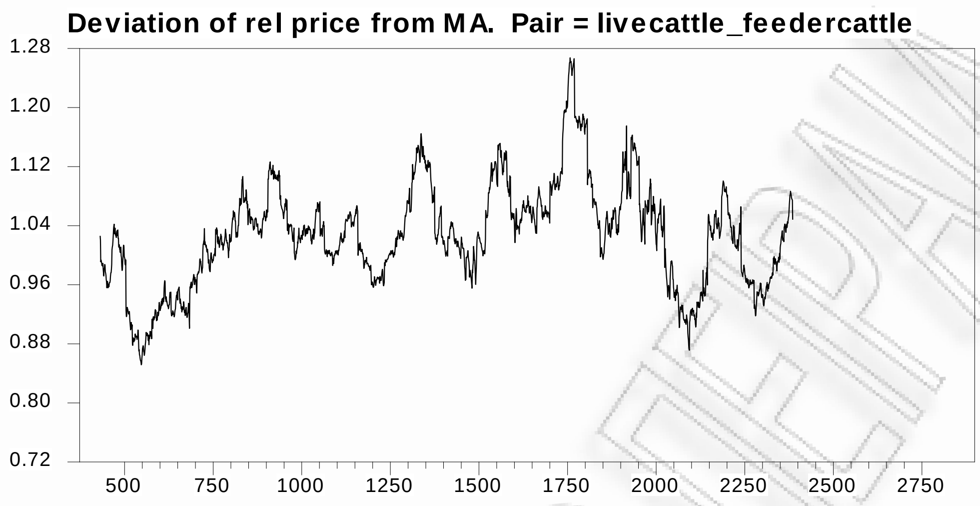
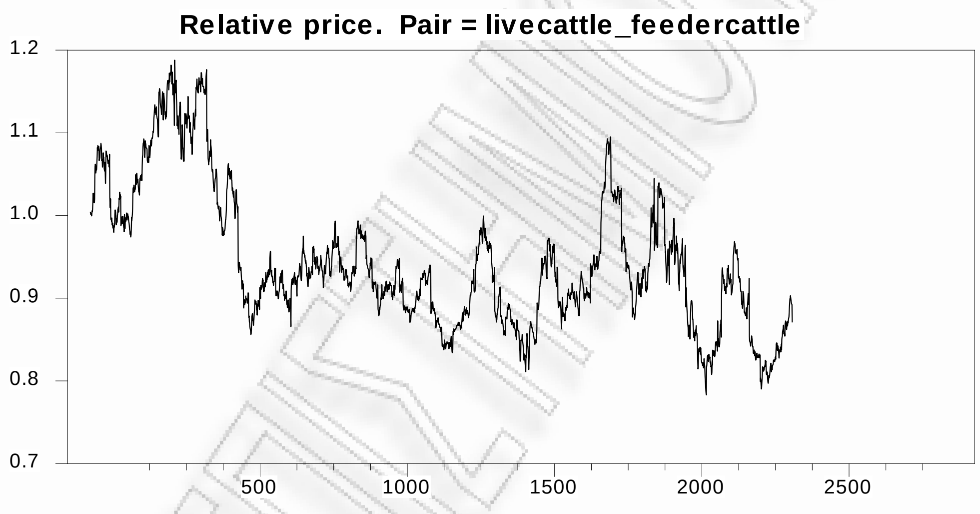
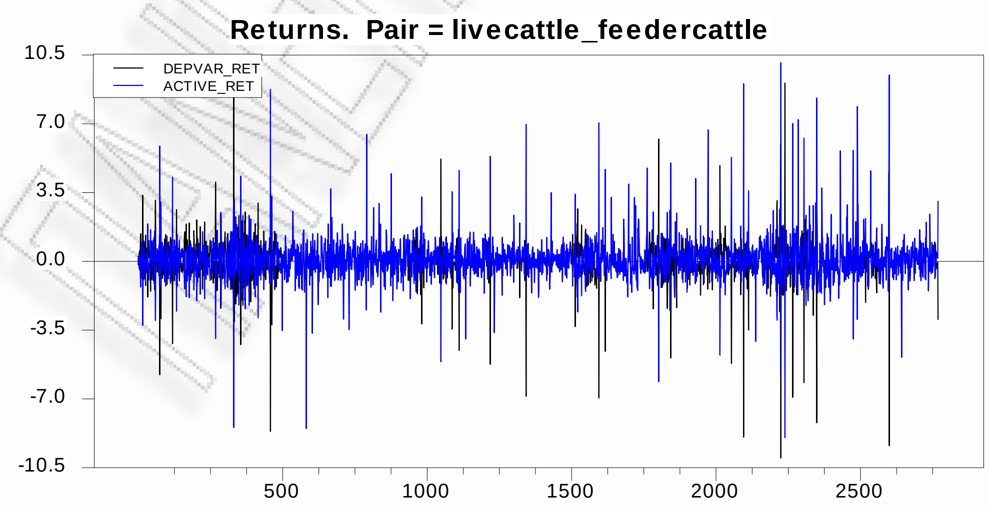

Deviation of rel price from MA. Pair = livecattle_feedercattle
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = livecattle_feedercattle
1.2
1.1
1.0
0.9
0.8
0.7
500
1000
1500
2000
2500


Returns. Pair = livecattle_feedercattle
DEPVAR_RET
ACTIVE_RET
10.5
7.0
3.5
0.0
-3.5
-7.0
-10.5
500
1000
1500
2000
2500

****

********************* Pair = livecattle_feedercattle

********************* SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.000245	Variance	1.223698
Standard Error	1.106209	of Sample Mean	0.021014
t-Statistic (Mean=0)	-0.011655	Signif Level	0.990702
Skewness	-0.699388	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	19.182778	Signif Level (Ku=0)	0.000000
Jarque-Bera	42712.139854	Signif Level (JB=0)	0.000000

Minimum	-10.059802	Maximum	9.021523
01-%ile	-3.406924	99-%ile	2.927325
05-%ile	-1.363140	95-%ile	1.311686
10-%ile	-0.933457	90-%ile	0.970670
25-%ile	-0.444826	75-%ile	0.471812
Median	0.003105		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 1.11 -1.36 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.050466	Variance	1.221151
Standard Error	1.105057	of Sample Mean	0.020993
t-Statistic (Mean=0)	2.404012	Signif Level	0.016282
Skewness	1.341882	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	19.018045	Signif Level (Ku=0)	0.000000
Jarque-Bera	42591.264978	Signif Level (JB=0)	0.000000

Minimum	-9.021523	Maximum	10.059802
01-%ile	-2.482377	99-%ile	3.964722
05-%ile	-1.296131	95-%ile	1.367079
10-%ile	-0.937650	90-%ile	0.965071
25-%ile	-0.445932	75-%ile	0.469917
Median	0.020564		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.05 1.11 -1.30 0.39 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	0.968389	Variance	0.006586
Standard Error	0.081157	of Sample Mean	0.001702
t-Statistic (Mean=0)	568.884259	Signif Level	0.000000
Skewness	0.302395	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.472430	Signif Level (Ku=0)	0.000004
Jarque-Bera	55.779474	Signif Level (JB=0)	0.000000

Minimum	0.765136	Maximum	1.248822
01-%ile	0.794897	99-%ile	1.180791
05-%ile	0.839889	95-%ile	1.105585
10-%ile	0.858706	90-%ile	1.070575
25-%ile	0.916508	75-%ile	1.011787
Median	0.969628		

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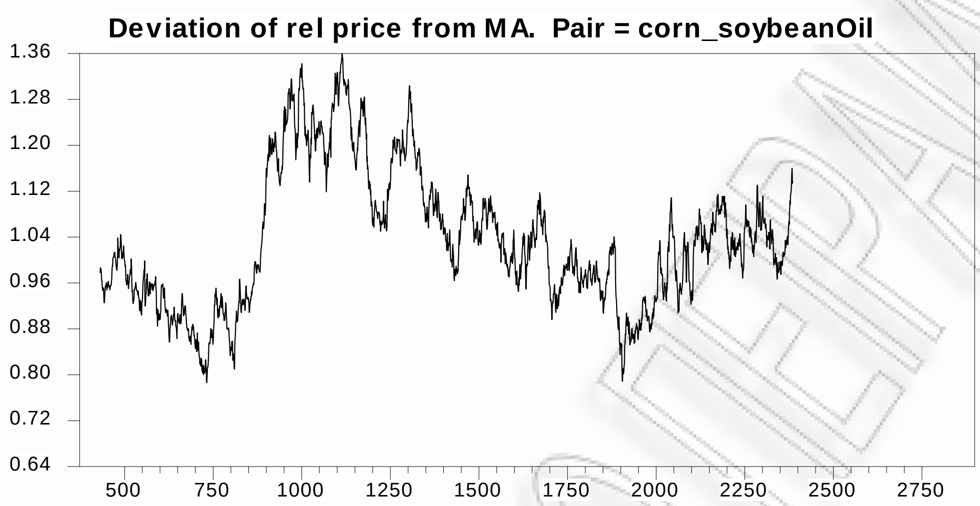
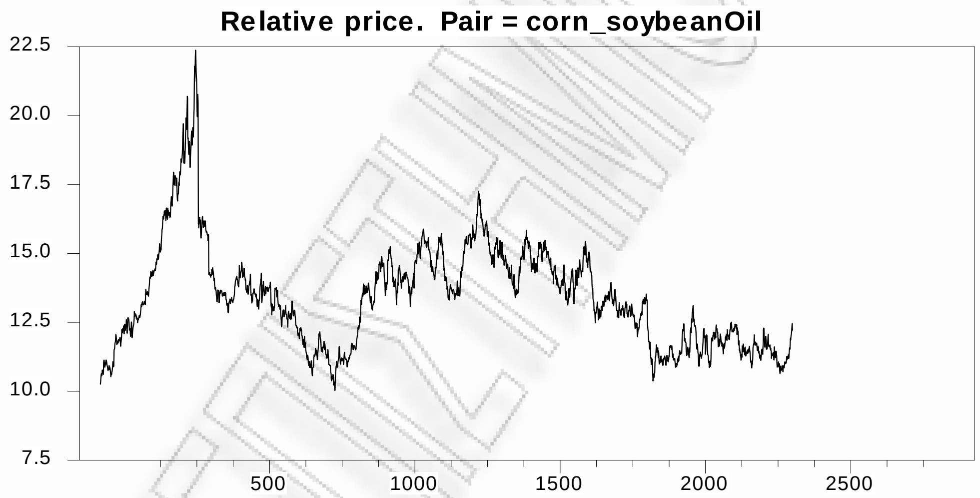
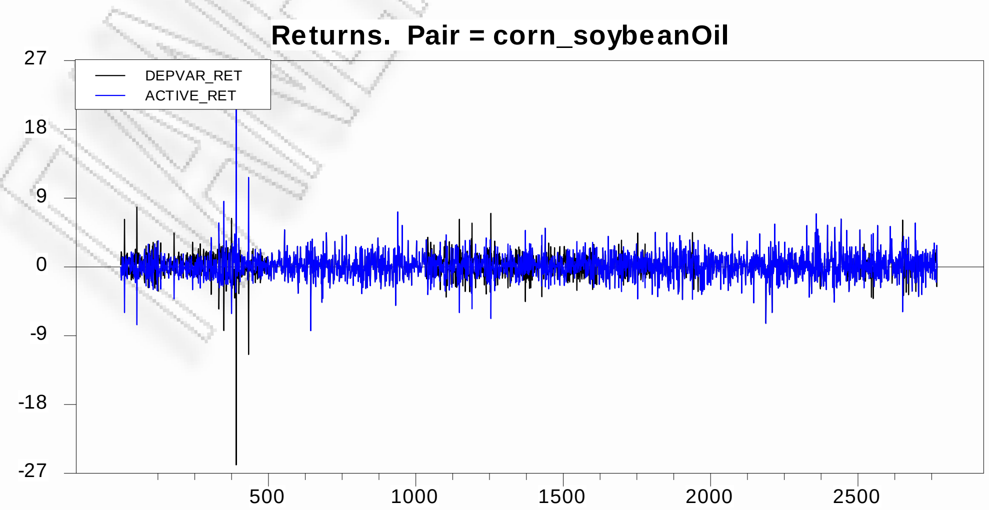

Deviation of rel price from MA. Pair = corn_soybeanOil
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
0.64
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = corn_soybeanOil
22.5
20.0
17.5
15.0
12.5
10.0
7.5
500
1000
1500
2000
2500


Returns. Pair = corn_soybeanOil
DEPVAR_RET
ACTIVE_RET
27
18
9
0
-9
-18
-27
500
1000
1500
2000
2500

****

********************* Pair = corn_soybeanOil

********************* SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022716	Variance	2.607125
Standard Error	1.614659	of Sample Mean	0.030673
t-Statistic (Mean=0)	0.740579	Signif Level	0.459012
Skewness	-1.541697	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	26.658832	Signif Level (Ku=0)	0.000000
Jarque-Bera	83153.165661	Signif Level (JB=0)	0.000000
Minimum	-26.029427	Maximum	7.705406
01-%ile	-3.723503	99-%ile	4.328790
05-%ile	-2.408582	95-%ile	2.408979
10-%ile	-1.733030	90-%ile	1.805792
25-%ile	-0.894354	75-%ile	0.925156
Median	0.043607		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 1.61 -2.41 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.005904	Variance	2.607606
Standard Error	1.614808	of Sample Mean	0.030676
t-Statistic (Mean=0)	0.192473	Signif Level	0.847386
Skewness	1.649634	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	26.537978	Signif Level (Ku=0)	0.000000
Jarque-Bera	82569.965211	Signif Level (JB=0)	0.000000

Minimum	-8.468302	Maximum	26.029427
01-%ile	-3.638130	99-%ile	4.186589
05-%ile	-2.412363	95-%ile	2.398693
10-%ile	-1.771147	90-%ile	1.771237
25-%ile	-0.924537	75-%ile	0.895271
	Median	-0.026051	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.01 1.61 -2.41 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	0.959450	Variance	0.019161
Standard Error	0.138423	of Sample Mean	0.002903
t-Statistic (Mean=0)	330.457305	Signif Level	0.000000
Skewness	0.538883	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.295508	Signif Level (Ku=0)	0.004087
Jarque-Bera	118.281596	Signif Level (JB=0)	0.000000

Minimum	0.671247	Maximum	1.338704
01-%ile	0.702869	99-%ile	1.290359
05-%ile	0.763395	95-%ile	1.228532
10-%ile	0.795700	90-%ile	1.169607
25-%ile	0.860166	75-%ile	1.031408
	Median	0.942516	

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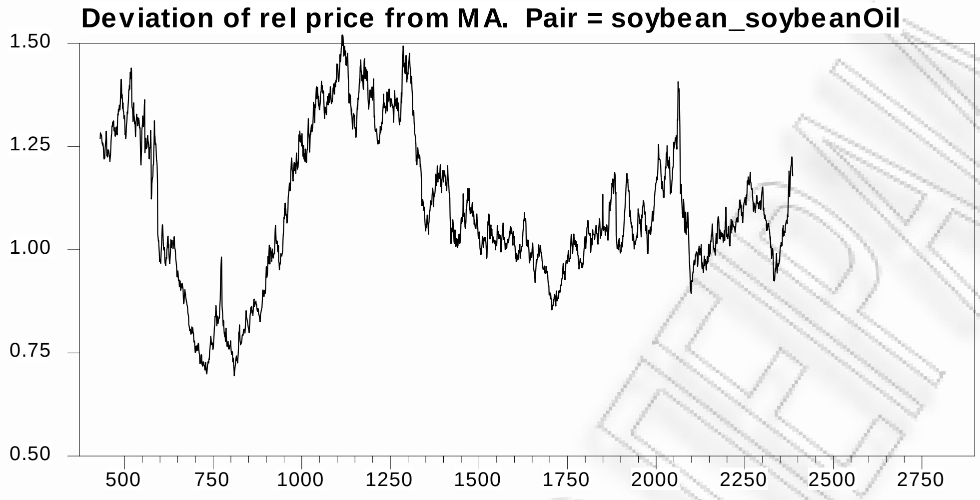
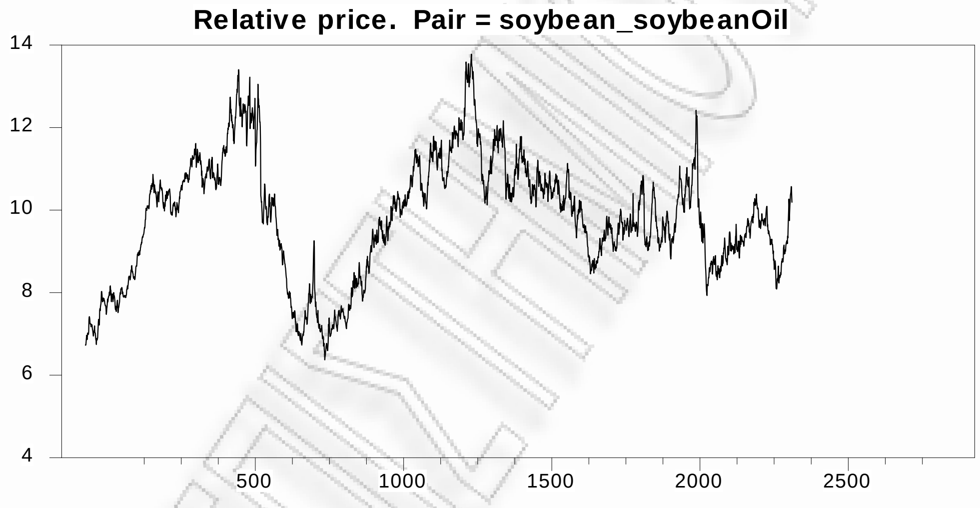
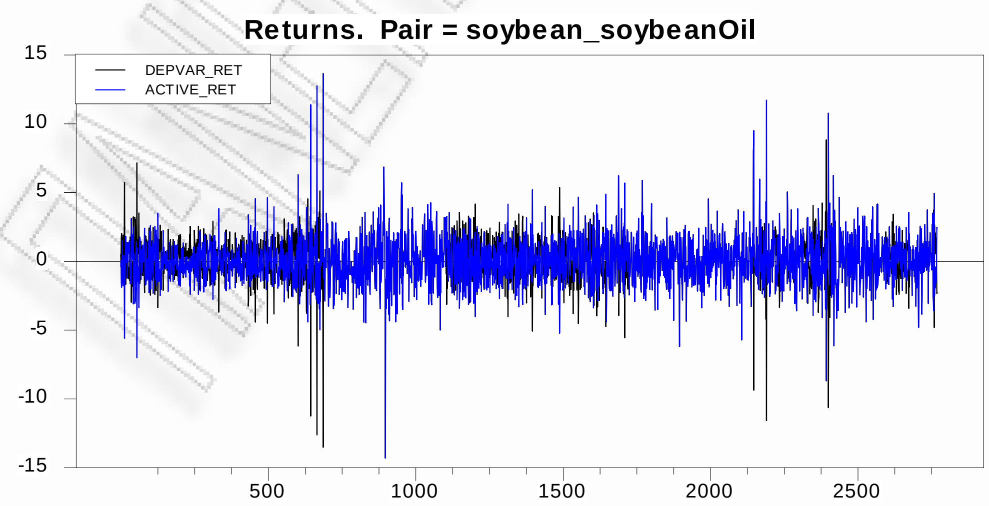

Deviation of rel price from MA. Pair = soybean_soybeanOil
1.50
1.25
1.00
0.75
0.50
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_soybeanOil
14
12
10
8
6
4
500
1000
1500
2000
2500


Returns. Pair = soybean_soybeanOil
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = soybean_soybeanOil

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.036021	Variance	3.051191
Standard Error	1.746766	of Sample Mean	0.033183
t-Statistic (Mean=0)	1.085531	Signif Level	0.277781
Skewness	-0.785063	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.398734	Signif Level (Ku=0)	0.000000
Jarque-Bera	5011.941007	Signif Level (JB=0)	0.000000

Minimum	-14.377052	Maximum	8.763069
01-%ile	-4.373552	99-%ile	3.957606
05-%ile	-2.568975	95-%ile	2.622996
10-%ile	-1.985613	90-%ile	2.051847
25-%ile	-0.976966	75-%ile	1.107380
Median	0.071895		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.04 1.75 -2.57 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.002725	Variance	3.052481
Standard Error	1.747135	of Sample Mean	0.033190
t-Statistic (Mean=0)	-0.082108	Signif Level	0.934567
Skewness	0.498681	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	6.331645	Signif Level (Ku=0)	0.000000
Jarque-Bera	4743.543662	Signif Level (JB=0)	0.000000

Minimum	-14.377052	Maximum	13.588306
01-%ile	-3.892506	99-%ile	4.214606
05-%ile	-2.600392	95-%ile	2.613541
10-%ile	-2.018133	90-%ile	2.006493
25-%ile	-1.073103	75-%ile	1.021433
	Median	-0.055018	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

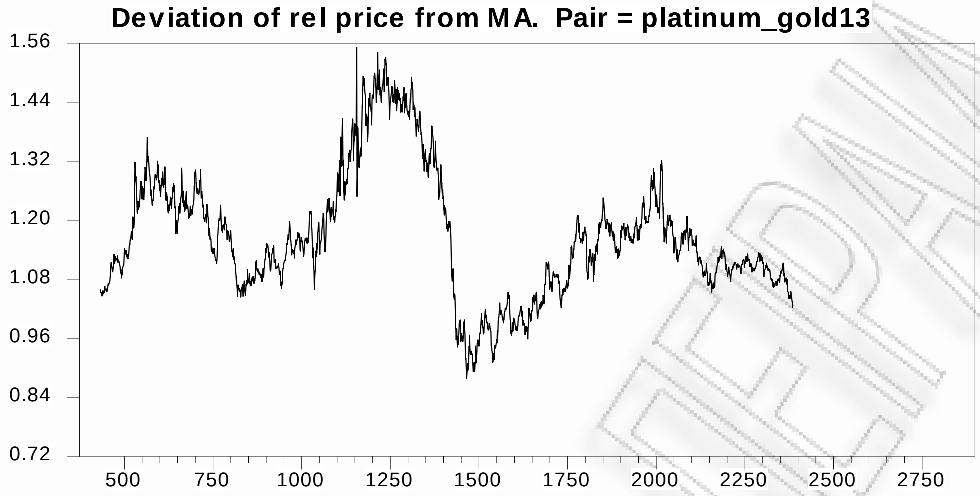
Active_Performance = -0.00 1.75 -2.60 0.42 %

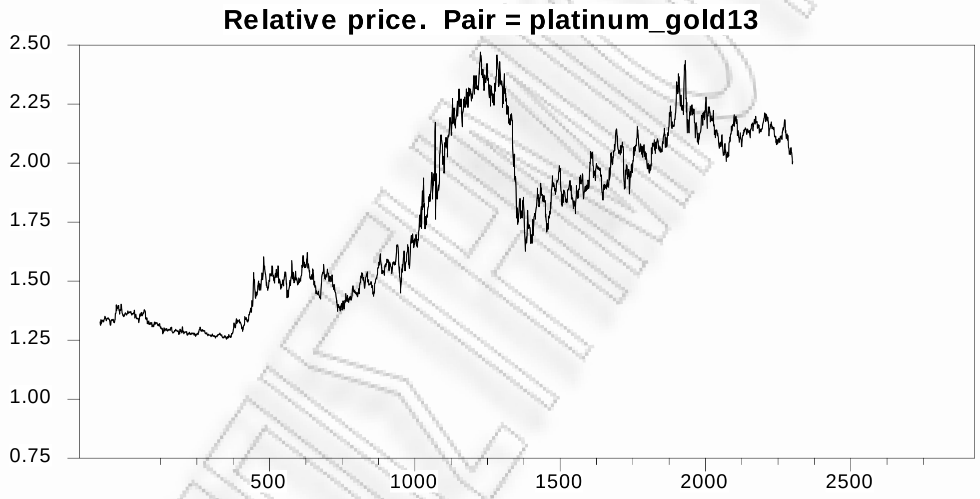
Statistics on Series MA_REL

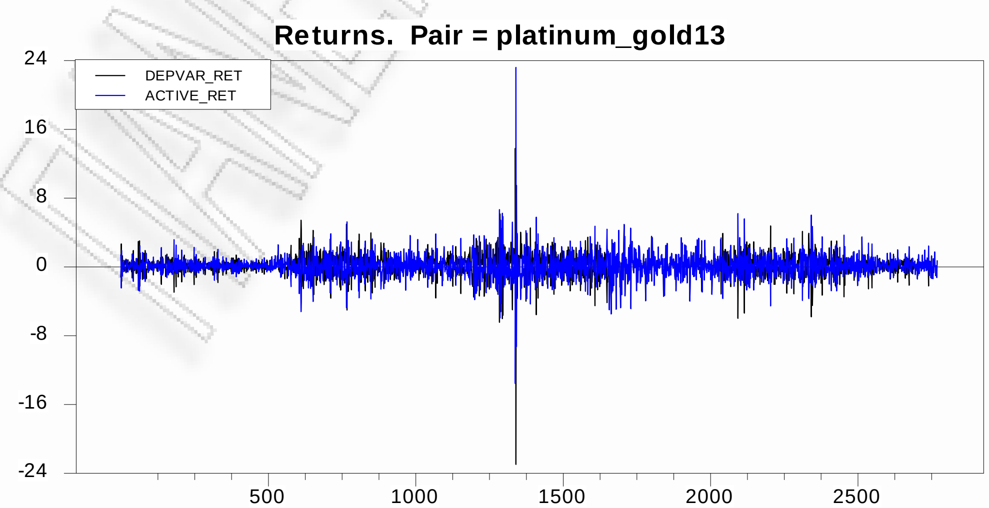
Observations	2273	Skipped/Missing	499
Sample Mean	0.999236	Variance	0.043700
Standard Error	0.209045	of Sample Mean	0.004385
t-Statistic (Mean=0)	227.891451	Signif Level	0.000000
Skewness	0.152272	Signif Level (Sk=0)	0.003058
Kurtosis (excess)	-0.549814	Signif Level (Ku=0)	0.000000
Jarque-Bera	37.413843	Signif Level (JB=0)	0.000000

Minimum	0.533506	Maximum	1.494154
01-%ile	0.567875	99-%ile	1.434577
05-%ile	0.639740	95-%ile	1.355530
10-%ile	0.728496	90-%ile	1.303751
25-%ile	0.876600	75-%ile	1.156974
	Median	0.957964	

-13-


Deviation of rel price from MA. Pair = platinum_gold13
1.56
1.44
1.32
1.20
1.08
0.96
0.84
0.72
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = platinum_gold13
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
500
1000
1500
2000
2500


Returns. Pair = platinum_gold13
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

******************** Pair = platinum_gold

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.029221	Variance	1.866778
Standard Error	1.366301	of Sample Mean	0.025955
t-Statistic (Mean=0)	1.125805	Signif Level	0.260346
Skewness	-1.514723	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	35.323129	Signif Level (Ku=0)	0.000000
Jarque-Bera	145119.694952	Signif Level (JB=0)	0.000000
Minimum	-23.089649	Maximum	13.681595
01-%ile	-3.604782	99-%ile	3.355483
05-%ile	-1.984238	95-%ile	2.061826
10-%ile	-1.404106	90-%ile	1.421705
25-%ile	-0.579246	75-%ile	0.686800
Median	0.031917		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.37 -1.98 0.39 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.000516	Variance	1.867632
Standard Error	1.366613	of Sample Mean	0.025961

t-Statistic (Mean=0)	0.019882	Signif Level	0.984139
Skewness	1.364202	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	35.159126	Signif Level (Ku=0)	0.000000
Jarque-Bera	143584.942627	Signif Level (JB=0)	0.000000

Minimum	-13.681595	Maximum	23.089649
01-%ile	-3.499052	99-%ile	3.435753
05-%ile	-1.963020	95-%ile	2.057709
10-%ile	-1.390841	90-%ile	1.417989
25-%ile	-0.645984	75-%ile	0.635414
Median	-0.010002		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.00 1.37 -1.96 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.078372	Variance	0.022208
Standard Error	0.149023	of Sample Mean	0.003126
t-Statistic (Mean=0)	344.996012	Signif Level	0.000000
Skewness	0.631612	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.226018	Signif Level (Ku=0)	0.028079
Jarque-Bera	155.967714	Signif Level (JB=0)	0.000000

Minimum	0.741881	Maximum	1.525314
01-%ile	0.787837	99-%ile	1.453755
05-%ile	0.858013	95-%ile	1.396072
10-%ile	0.901439	90-%ile	1.299664
25-%ile	0.985116	75-%ile	1.151342
Median	1.058063		

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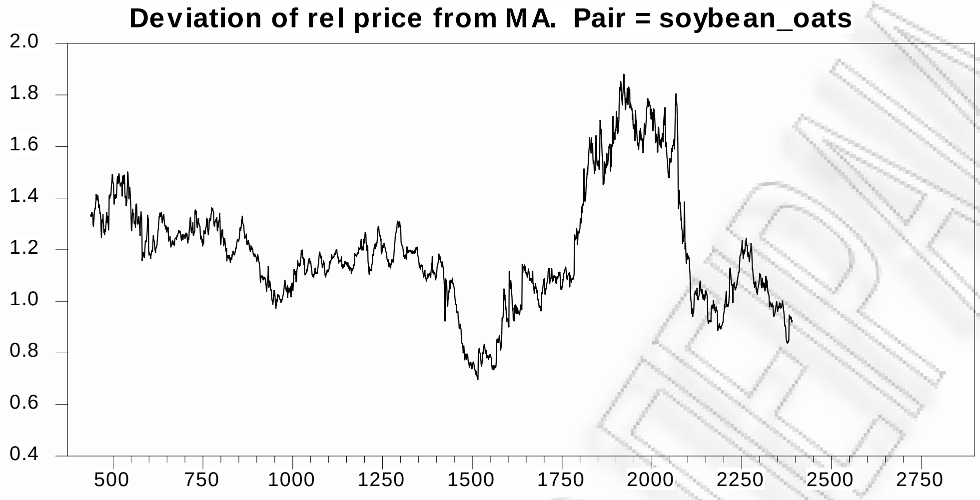
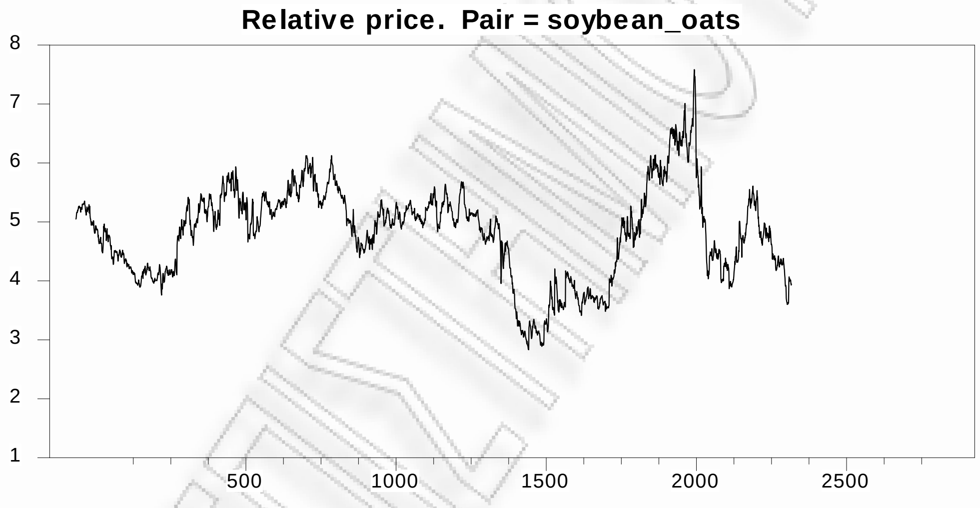
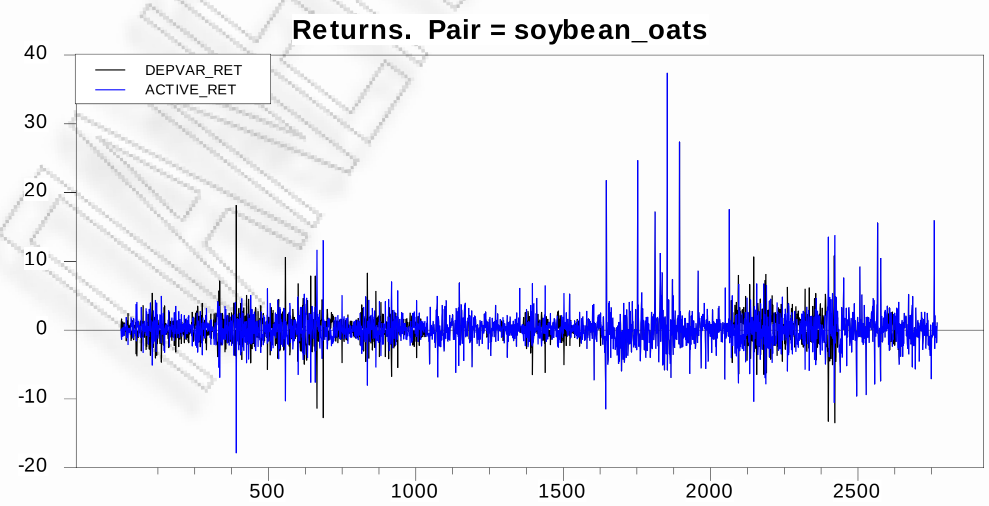

Deviation of rel price from MA. Pair = soybean_oats
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_oats
8
7
6
5
4
3
2
1
500
1000
1500
2000
2500


Returns. Pair = soybean_oats
DEPVAR_RET
ACTIVE_RET
40
30
20
10
0
-10
-20
500
1000
1500
2000
2500

****

******************** Pair = soybean_oats

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.016252	Variance	5.964254
Standard Error	2.442182	of Sample Mean	0.046394
t-Statistic (Mean=0)	0.350311	Signif Level	0.726132
Skewness	2.767555	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	36.111552	Signif Level (Ku=0)	0.000000
Jarque-Bera	154100.116052	Signif Level (JB=0)	0.000000

Minimum	-13.618441	Maximum	37.210784
01-%ile	-5.903439	99-%ile	6.642461
05-%ile	-3.293106	95-%ile	3.106230
10-%ile	-2.314150	90-%ile	2.209474
25-%ile	-1.084896	75-%ile	1.037507
Median	-0.027660		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.44 -3.29 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.002731	Variance	5.964511
Standard Error	2.442235	of Sample Mean	0.046395
t-Statistic (Mean=0)	-0.058863	Signif Level	0.953065
Skewness	2.698702	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	36.194302	Signif Level (Ku=0)	0.000000
Jarque-Bera	154617.117380	Signif Level (JB=0)	0.000000

Minimum	-17.995112	Maximum	37.210784
01-%ile	-6.085803	99-%ile	6.084492
05-%ile	-3.149092	95-%ile	3.186925
10-%ile	-2.253540	90-%ile	2.265057
25-%ile	-1.121612	75-%ile	0.994258
	Median	-0.030260	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.00 2.44 -3.15 0.42 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.019497	Variance	0.071473
Standard Error	0.267344	of Sample Mean	0.005608
t-Statistic (Mean=0)	181.808979	Signif Level	0.000000
Skewness	0.638621	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.361153	Signif Level (Ku=0)	0.000449
Jarque-Bera	166.855154	Signif Level (JB=0)	0.000000

Minimum	0.435957	Maximum	1.814414
01-%ile	0.491768	99-%ile	1.704759
05-%ile	0.598483	95-%ile	1.569379
10-%ile	0.732841	90-%ile	1.455782
25-%ile	0.857391	75-%ile	1.136395
	Median	0.986697	

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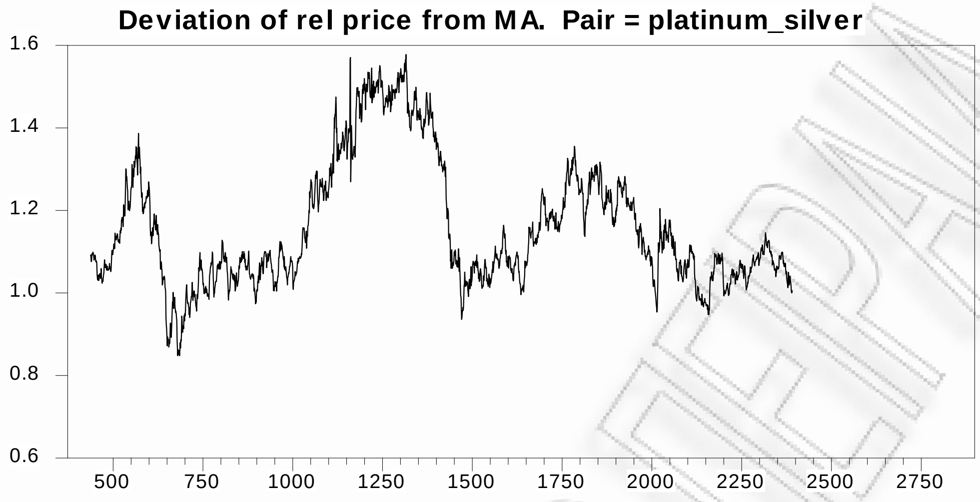
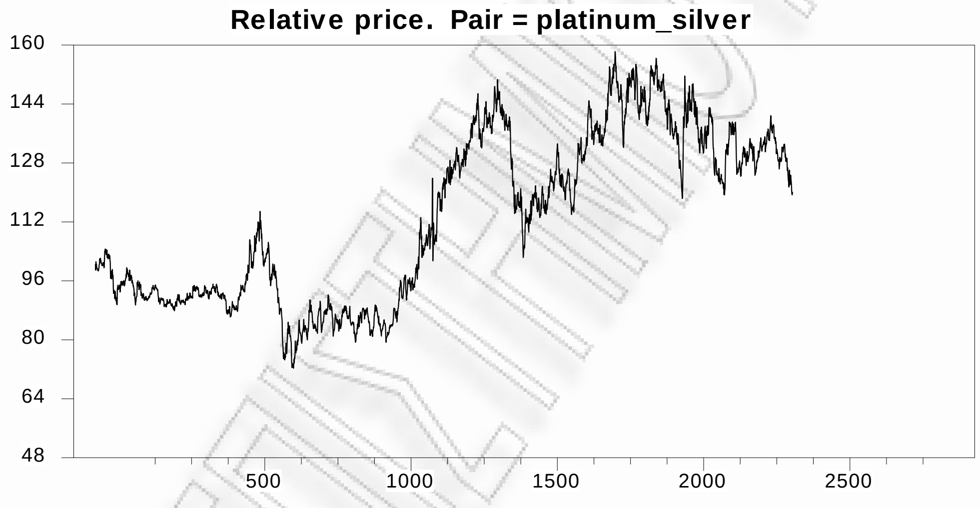
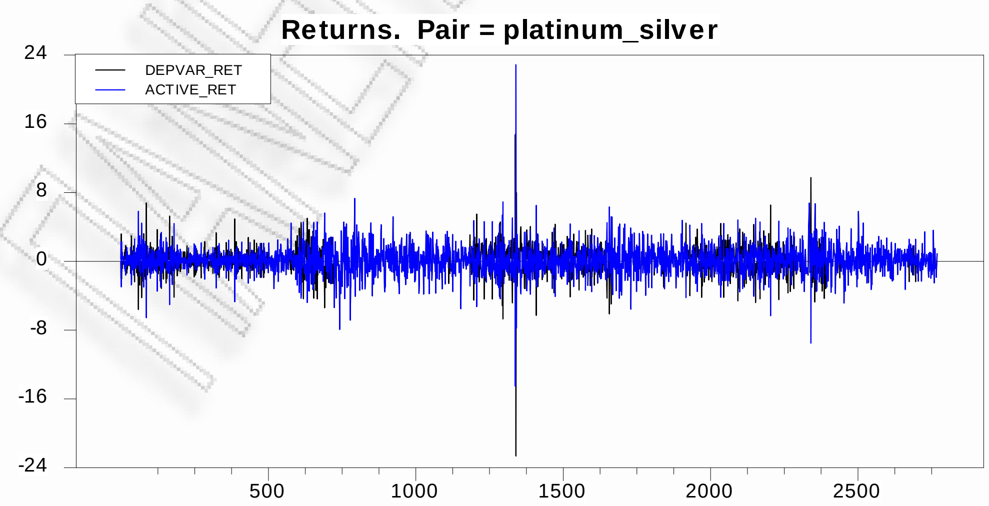

Deviation of rel price from MA. Pair = platinum_silver
1.6
1.4
1.2
1.0
0.8
0.6
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = platinum_silver
160
144
128
112
96
80
64
48
500
1000
1500
2000
2500


Returns. Pair = platinum_silver
DEPVAR_RET
ACTIVE_RET
24
16
8
0
-8
-16
-24
500
1000
1500
2000
2500

****

********************* Pair = platinum_silver

********************* SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022861	Variance	2.880563
Standard Error	1.697222	of Sample Mean	0.032242
t-Statistic (Mean=0)	0.709052	Signif Level	0.478352
Skewness	-0.607325	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	15.038889	Signif Level (Ku=0)	0.000000
Jarque-Bera	26283.346343	Signif Level (JB=0)	0.000000
Minimum	-22.761392	Maximum	14.637253
01-%ile	-4.405745	99-%ile	4.262631
05-%ile	-2.595632	95-%ile	2.679068
10-%ile	-1.844801	90-%ile	1.922779
25-%ile	-0.871783	75-%ile	0.924093
Median	0.006132		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.02 1.70 -2.60 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.013029	Variance	2.880916
Standard Error	1.697326	of Sample Mean	0.032244
t-Statistic (Mean=0)	0.404088	Signif Level	0.686179
Skewness	0.622974	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	14.983287	Signif Level (Ku=0)	0.000000
Jarque-Bera	26099.502166	Signif Level (JB=0)	0.000000

Minimum	-14.637253	Maximum	22.761392
01-%ile	-4.088014	99-%ile	4.454875
05-%ile	-2.604036	95-%ile	2.655814
10-%ile	-1.849910	90-%ile	1.909680
25-%ile	-0.915269	75-%ile	0.883463
	Median	-0.000000	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.01 1.70 -2.60 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.056964	Variance	0.031652
Standard Error	0.177910	of Sample Mean	0.003732
t-Statistic (Mean=0)	283.242821	Signif Level	0.000000
Skewness	0.855363	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.090765	Signif Level (Ku=0)	0.377804
Jarque-Bera	277.951892	Signif Level (JB=0)	0.000000

Minimum	0.695575	Maximum	1.544506
01-%ile	0.748407	99-%ile	1.489366
05-%ile	0.848026	95-%ile	1.437188
10-%ile	0.882562	90-%ile	1.364229
25-%ile	0.930729	75-%ile	1.162160
	Median	0.989402	

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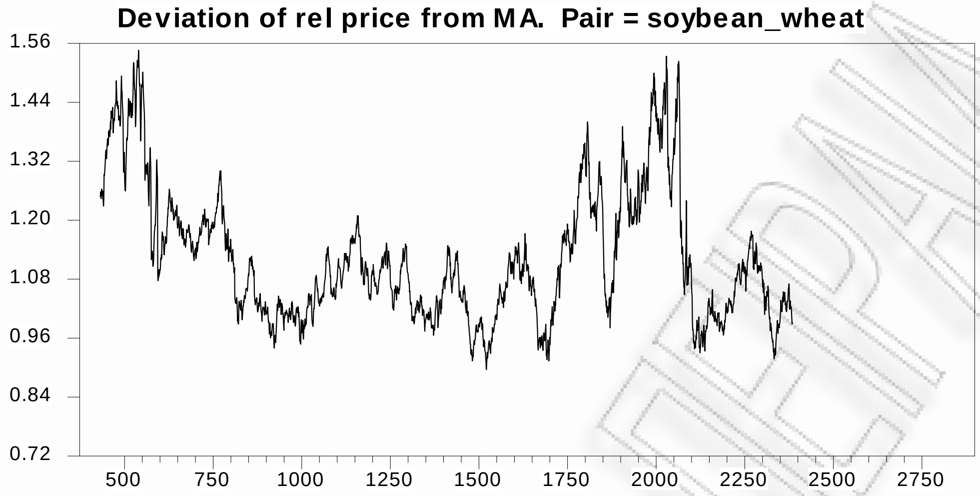
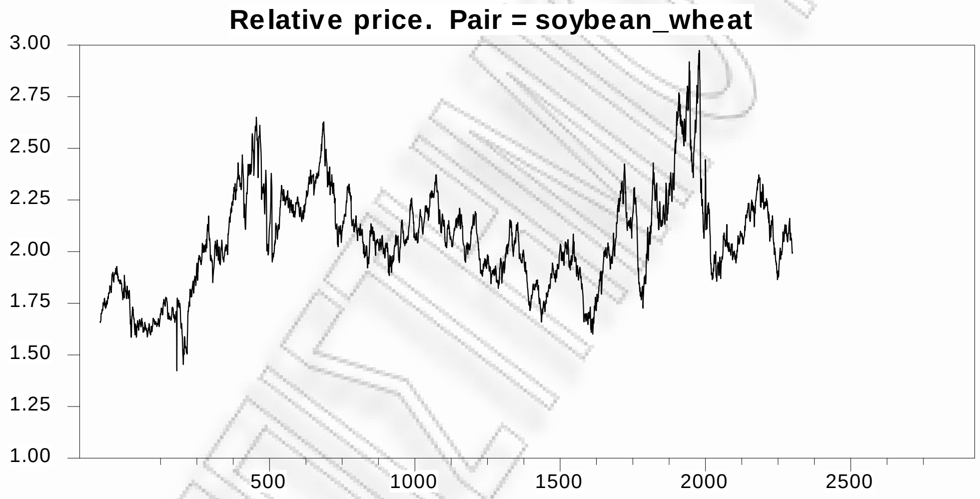
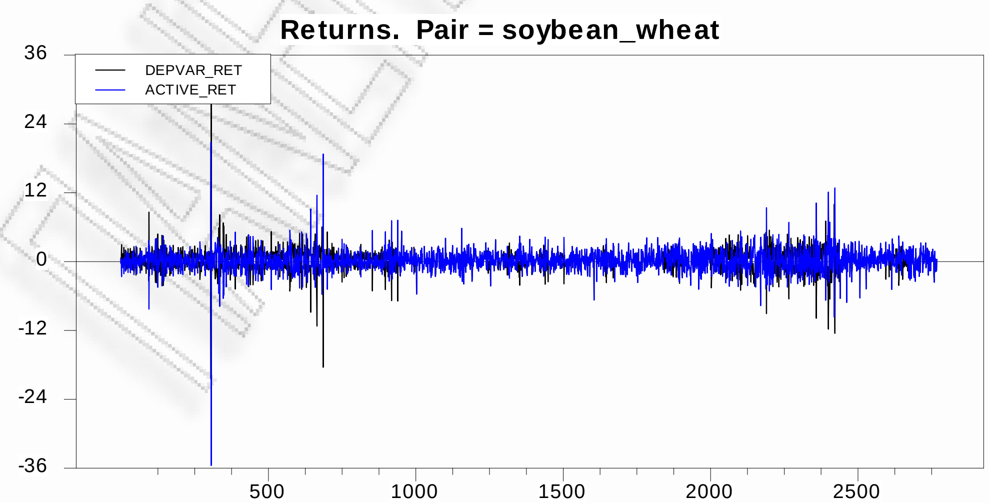

Deviation of rel price from MA. Pair = soybean_wheat
1.56
1.44
1.32
1.20
1.08
0.96
0.84
0.72
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_wheat
3.00
2.75
2.50
2.25
2.00
1.75
1.50
1.25
1.00
500
1000
1500
2000
2500


Returns. Pair = soybean_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = soybean_wheat

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.028673	Variance	3.966073
Standard Error	1.991500	of Sample Mean	0.037832
t-Statistic (Mean=0)	0.757906	Signif Level	0.448572
Skewness	0.962669	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	45.991872	Signif Level (Ku=0)	0.000000
Jarque-Bera	244651.496642	Signif Level (JB=0)	0.000000

Minimum	-20.641139	Maximum	35.710739
01-%ile	-4.993450	99-%ile	4.316930
05-%ile	-2.784960	95-%ile	2.681696
10-%ile	-2.030549	90-%ile	2.107653
25-%ile	-0.987005	75-%ile	1.119243
Median	0.067765		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 1.99 -2.78 0.39 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.028328	Variance	3.966092
Standard Error	1.991505	of Sample Mean	0.037832
t-Statistic (Mean=0)	0.748765	Signif Level	0.454062
Skewness	-1.185500	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	46.114484	Signif Level (Ku=0)	0.000000
Jarque-Bera	246176.480438	Signif Level (JB=0)	0.000000

Minimum	-35.710739	Maximum	20.641139
01-%ile	-4.581912	99-%ile	4.549827
05-%ile	-2.714252	95-%ile	2.768112
10-%ile	-2.057828	90-%ile	2.070902
25-%ile	-1.010535	75-%ile	1.093018
Median	0.016894		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 1.99 -2.71 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.027266	Variance	0.024392
Standard Error	0.156179	of Sample Mean	0.003276
t-Statistic (Mean=0)	313.587671	Signif Level	0.000000
Skewness	0.968826	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.336536	Signif Level (Ku=0)	0.001075
Jarque-Bera	366.308243	Signif Level (JB=0)	0.000000

Minimum	0.762738	Maximum	1.518772
01-%ile	0.802023	99-%ile	1.454245
05-%ile	0.834409	95-%ile	1.366860
10-%ile	0.864794	90-%ile	1.264308
25-%ile	0.911293	75-%ile	1.105821
Median	0.994816		

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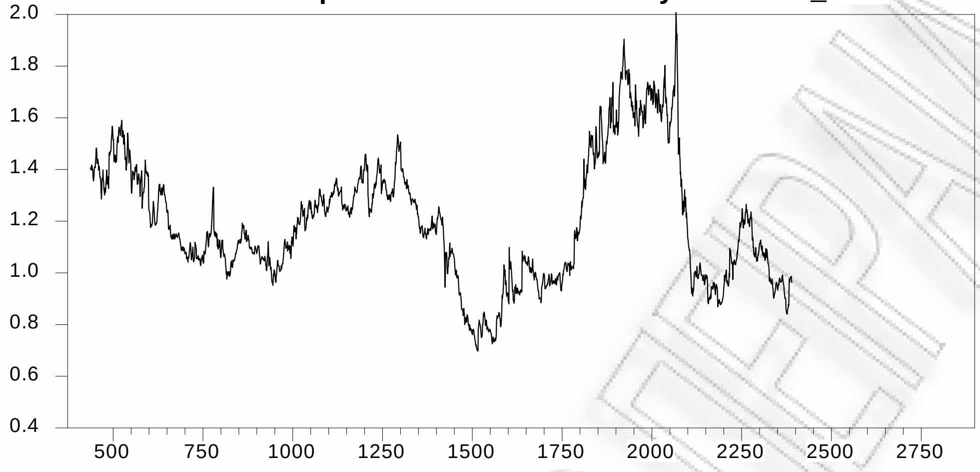
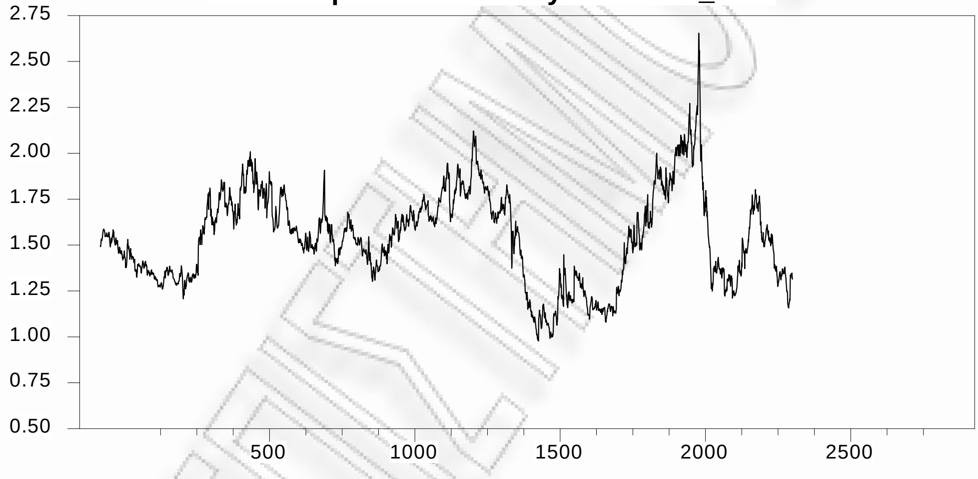
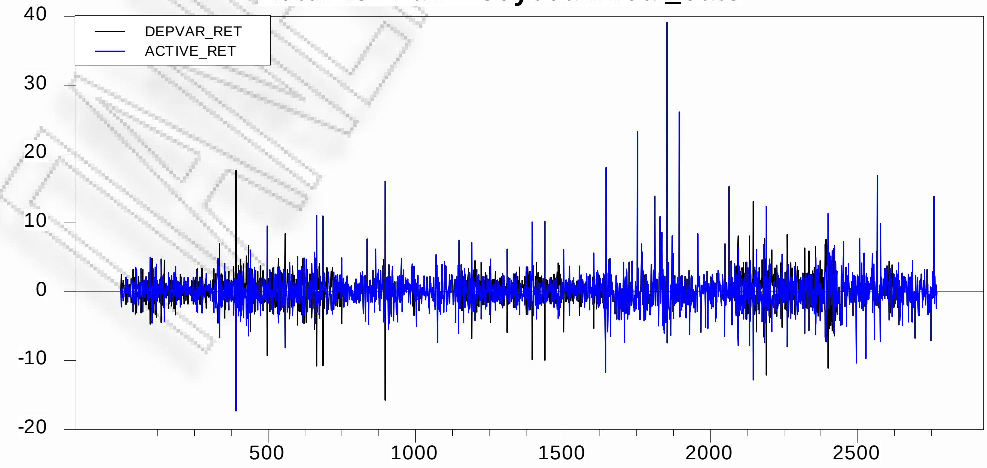
Deviation of rel price from MA. Pair = soybeanMeal_oats



Relative price. Pair = soybeanMeal_oats



Returns. Pair = soybeanMeal_oats



****

******************** Pair = soybeanMeal_oats

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.024126	Variance	6.367407
Standard Error	2.523372	of Sample Mean	0.047936
t-Statistic (Mean=0)	0.503303	Signif Level	0.614791
Skewness	2.251131	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	31.992886	Signif Level (Ku=0)	0.000000
Jarque-Bera	120517.156797	Signif Level (JB=0)	0.000000

Minimum	-15.914524	Maximum	39.009537
01-%ile	-6.214759	99-%ile	6.812070
05-%ile	-3.479263	95-%ile	3.280542
10-%ile	-2.455063	90-%ile	2.408699
25-%ile	-1.209037	75-%ile	1.229352
Median	-0.003729		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.52 -3.48 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.016440	Variance	6.367719
Standard Error	2.523434	of Sample Mean	0.047937
t-Statistic (Mean=0)	-0.342953	Signif Level	0.731660
Skewness	2.417847	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	32.139063	Signif Level (Ku=0)	0.000000
Jarque-Bera	121959.017460	Signif Level (JB=0)	0.000000

Minimum	-17.487772	Maximum	39.009537
01-%ile	-6.261065	99-%ile	6.804761
05-%ile	-3.447992	95-%ile	3.325291
10-%ile	-2.500543	90-%ile	2.367256
25-%ile	-1.302824	75-%ile	1.139048
Median	-0.047514		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.02 2.52 -3.45 0.42 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.017957	Variance	0.079374
Standard Error	0.281734	of Sample Mean	0.005909
t-Statistic (Mean=0)	172.262285	Signif Level	0.000000
Skewness	0.499963	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.251666	Signif Level (Ku=0)	0.014469
Jarque-Bera	100.692653	Signif Level (JB=0)	0.000000

Minimum	0.437962	Maximum	1.961159
01-%ile	0.494981	99-%ile	1.691346
05-%ile	0.599940	95-%ile	1.559333
10-%ile	0.701896	90-%ile	1.438301
25-%ile	0.808486	75-%ile	1.196110
Median	0.975331		

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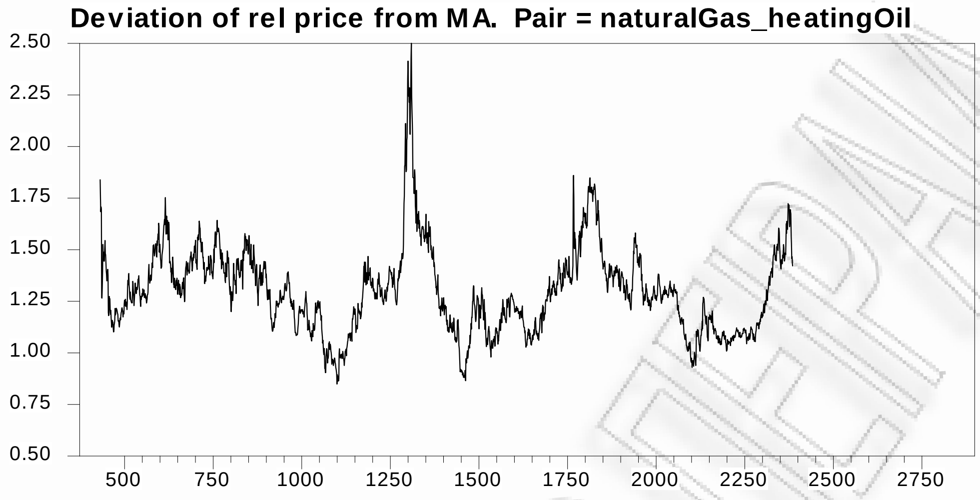
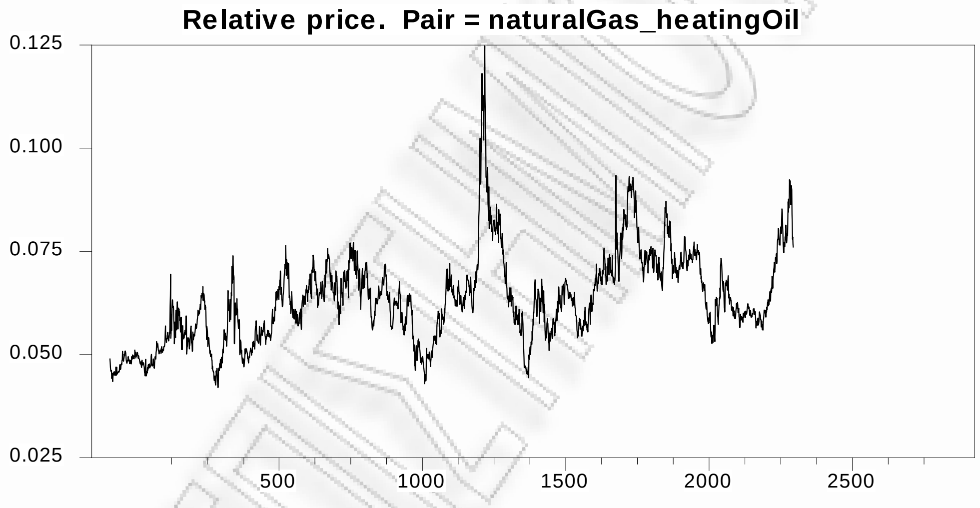
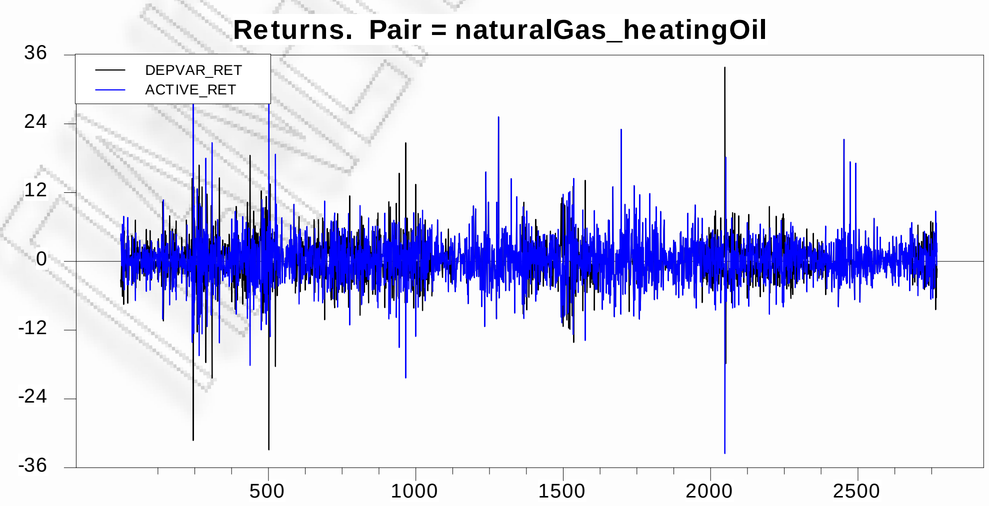

Deviation of rel price from MA. Pair = naturalGas_heatingOil
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = naturalGas_heatingOil
0.125
0.100
0.075
0.050
0.025
500
1000
1500
2000
2500


Returns. Pair = naturalGas_heatingOil
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

```
*****************************************************************************************
******************** Pair = naturalGas_heatingOil
******************** SMA ---> 1 LMA ---> 500
*****************************************************************************************
```

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.101100	Variance	15.483541
Standard Error	3.934913	of Sample Mean	0.074751
t-Statistic (Mean=0)	1.352489	Signif Level	0.176329
Skewness	0.274805	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	8.000125	Signif Level (Ku=0)	0.000000
Jarque-Bera	7424.440841	Signif Level (JB=0)	0.000000

Minimum	-33.060497	Maximum	33.706014
01-%ile	-9.182690	99-%ile	11.200996
05-%ile	-5.472645	95-%ile	6.195050
10-%ile	-4.120209	90-%ile	4.473757
25-%ile	-2.137703	75-%ile	2.063937
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.10 3.93 -5.47 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.071344	Variance	15.488674
Standard Error	3.935565	of Sample Mean	0.074763
t-Statistic (Mean=0)	0.954266	Signif Level	0.340032
Skewness	0.370184	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.996207	Signif Level (Ku=0)	0.000000
Jarque-Bera	7445.615519	Signif Level (JB=0)	0.000000

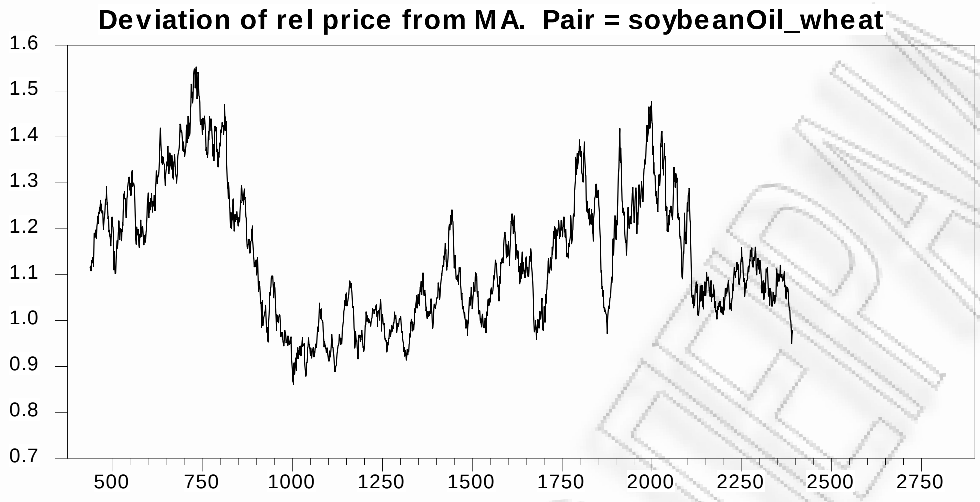
Minimum	-33.706014	Maximum	33.060497
01-%ile	-9.913805	99-%ile	10.157078
05-%ile	-5.719225	95-%ile	5.751479
10-%ile	-4.319366	90-%ile	4.338155
25-%ile	-2.011757	75-%ile	2.166760
Median	0.043627		

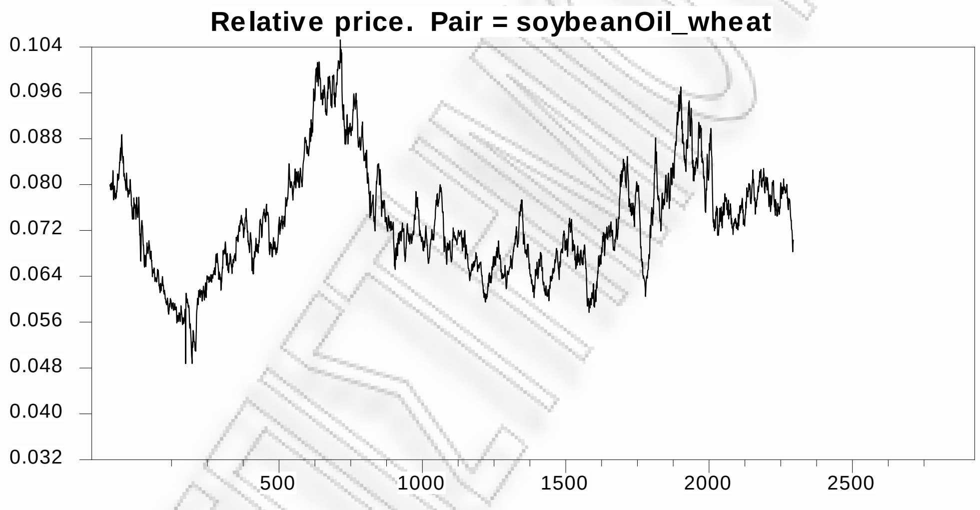
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.07 3.94 -5.72 0.40 %

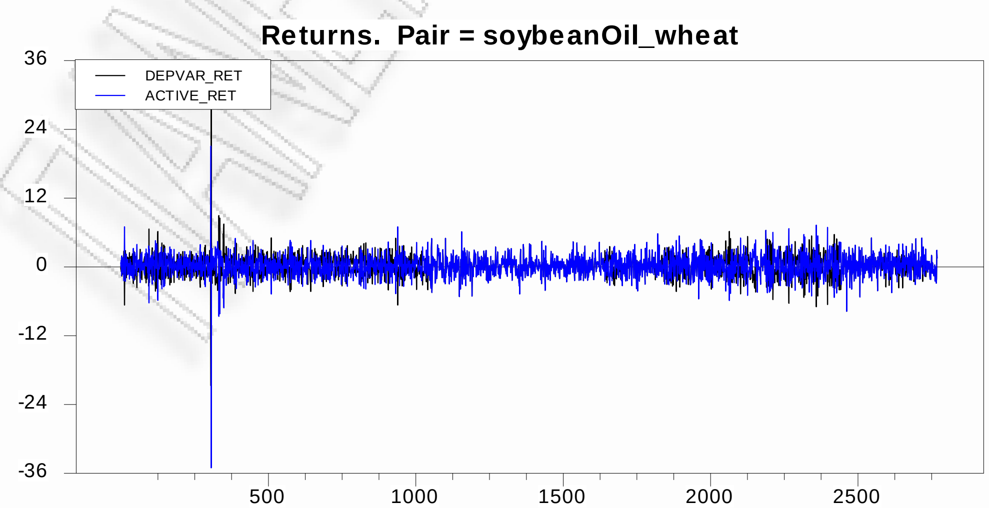
Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.043110	Variance	0.059570
Standard Error	0.244069	of Sample Mean	0.005119
t-Statistic (Mean=0)	203.759327	Signif Level	0.000000
Skewness	1.049745	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.901923	Signif Level (Ku=0)	0.000000
Jarque-Bera	1215.014237	Signif Level (JB=0)	0.000000

Minimum	0.520265	Maximum	2.441691
01-%ile	0.591191	99-%ile	1.757042
05-%ile	0.706768	95-%ile	1.442196
10-%ile	0.766717	90-%ile	1.340714
25-%ile	0.867530	75-%ile	1.175386
Median	1.023351		


Deviation of rel price from MA. Pair = soybeanOil_wheat
1.6
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanOil_wheat
0.104
0.096
0.088
0.080
0.072
0.064
0.056
0.048
0.040
0.032
500
1000
1500
2000
2500


Returns. Pair = soybeanOil_wheat
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

********************* Pair = soybeanOil_wheat

********************* SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.012711	Variance	3.790040
Standard Error	1.946803	of Sample Mean	0.036983
t-Statistic (Mean=0)	0.343705	Signif Level	0.731095
Skewness	1.712860	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	43.379645	Signif Level (Ku=0)	0.000000
Jarque-Bera	218623.719817	Signif Level (JB=0)	0.000000

Minimum	-20.912624	Maximum	35.226140
01-%ile	-4.337912	99-%ile	4.503759
05-%ile	-2.908811	95-%ile	2.899991
10-%ile	-2.192702	90-%ile	2.240235
25-%ile	-1.144355	75-%ile	1.123596
Median	0.018198		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.01 1.95 -2.91 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.016121	Variance	3.789942
Standard Error	1.946777	of Sample Mean	0.036983
t-Statistic (Mean=0)	0.435917	Signif Level	0.662931

Skewness	-1.723972	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	43.483886	Signif Level (Ku=0)	0.000000
Jarque-Bera	219686.805683	Signif Level (JB=0)	0.000000

Minimum	-35.226140	Maximum	20.912624
01-%ile	-4.421821	99-%ile	4.414917
05-%ile	-2.771572	95-%ile	2.936429
10-%ile	-2.168175	90-%ile	2.284635
25-%ile	-1.120417	75-%ile	1.144355
Median	0.010616		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.02 1.95 -2.77 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.036277	Variance	0.028083
Standard Error	0.167578	of Sample Mean	0.003515
t-Statistic (Mean=0)	294.820277	Signif Level	0.000000
Skewness	0.501698	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.531930	Signif Level (Ku=0)	0.000000
Jarque-Bera	122.150386	Signif Level (JB=0)	0.000000

Minimum	0.713703	Maximum	1.518420
01-%ile	0.764647	99-%ile	1.442430
05-%ile	0.806052	95-%ile	1.352048
10-%ile	0.833682	90-%ile	1.288513
25-%ile	0.902319	75-%ile	1.150471
Median	1.006352		

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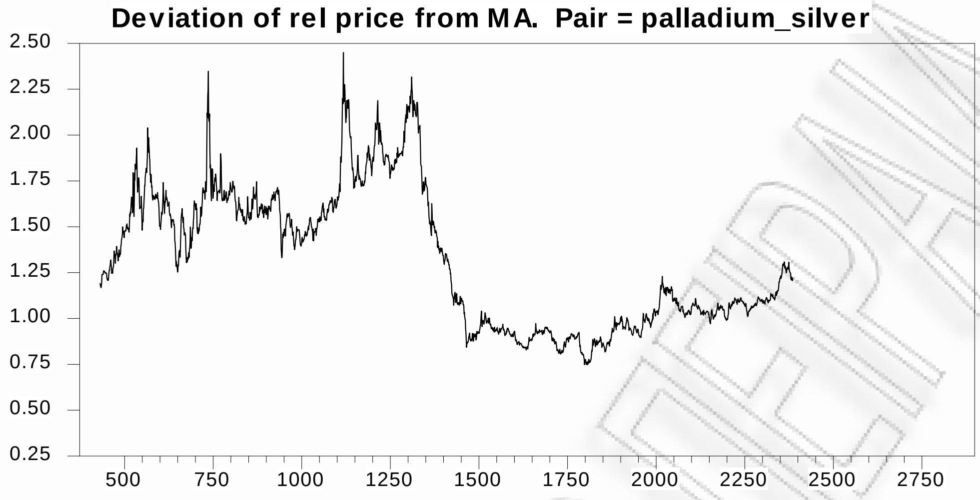
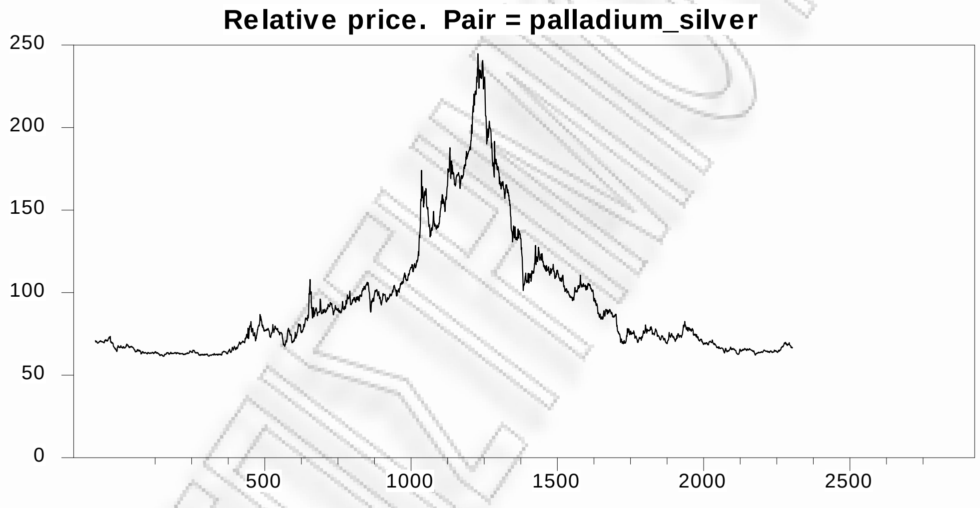
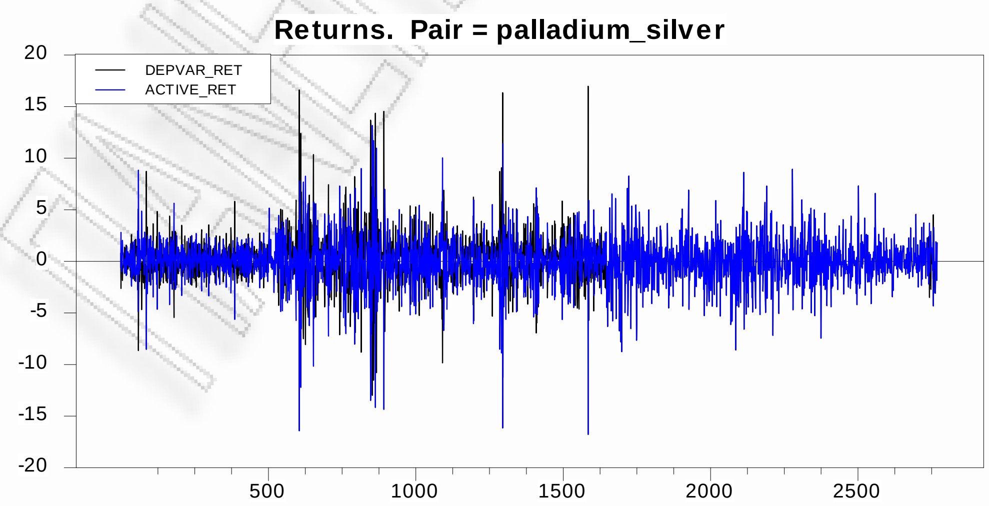

Deviation of rel price from MA. Pair = palladium_silver
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
500 750 1000 1250 1500 1750 2000 2250 2500 2750


Relative price. Pair = palladium_silver
250
200
150
100
50
0
500 1000 1500 2000 2500


Returns. Pair = palladium_silver
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500 1000 1500 2000 2500

****

********************* Pair = palladium_silver

********************* SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.022754	Variance	5.581679
Standard Error	2.362558	of Sample Mean	0.044881
t-Statistic (Mean=0)	0.506984	Signif Level	0.612207
Skewness	0.497065	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.120386	Signif Level (Ku=0)	0.000000
Jarque-Bera	4439.074638	Signif Level (JB=0)	0.000000
Minimum	-13.081972	Maximum	16.880296
01-%ile	-6.143306	99-%ile	6.456501
05-%ile	-3.590127	95-%ile	3.614580
10-%ile	-2.445802	90-%ile	2.544375
25-%ile	-1.141549	75-%ile	1.165808
Median	-0.023274		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.02 2.36 -3.59 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.091688	Variance	5.573787
Standard Error	2.360887	of Sample Mean	0.044849
t-Statistic (Mean=0)	-2.044356	Signif Level	0.041013
Skewness	-0.512207	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	6.077275	Signif Level (Ku=0)	0.000000
Jarque-Bera	4385.418656	Signif Level (JB=0)	0.000000

Minimum	-16.880296	Maximum	13.081972
01-%ile	-6.642870	99-%ile	6.033406
05-%ile	-3.744496	95-%ile	3.469679
10-%ile	-2.612060	90-%ile	2.425814
25-%ile	-1.197283	75-%ile	1.103612
Median	-0.053208		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.09 2.36 -3.74 0.43 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.064028	Variance	0.190148
Standard Error	0.436059	of Sample Mean	0.009146
t-Statistic (Mean=0)	116.334085	Signif Level	0.000000
Skewness	0.427964	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.915415	Signif Level (Ku=0)	0.000000
Jarque-Bera	148.748557	Signif Level (JB=0)	0.000000

Minimum	0.396102	Maximum	2.375834
01-%ile	0.438110	99-%ile	2.063879
05-%ile	0.521704	95-%ile	1.808039
10-%ile	0.560450	90-%ile	1.663763
25-%ile	0.672574	75-%ile	1.413717
Median	0.989708		

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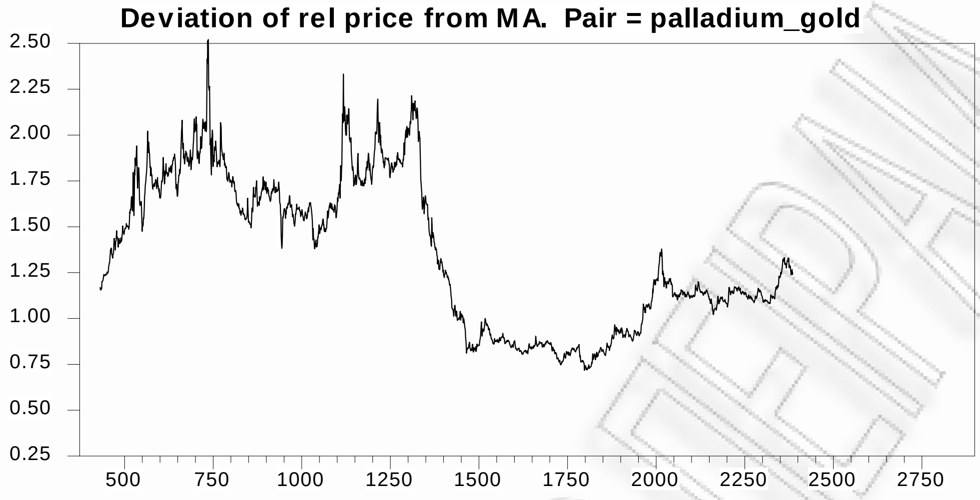
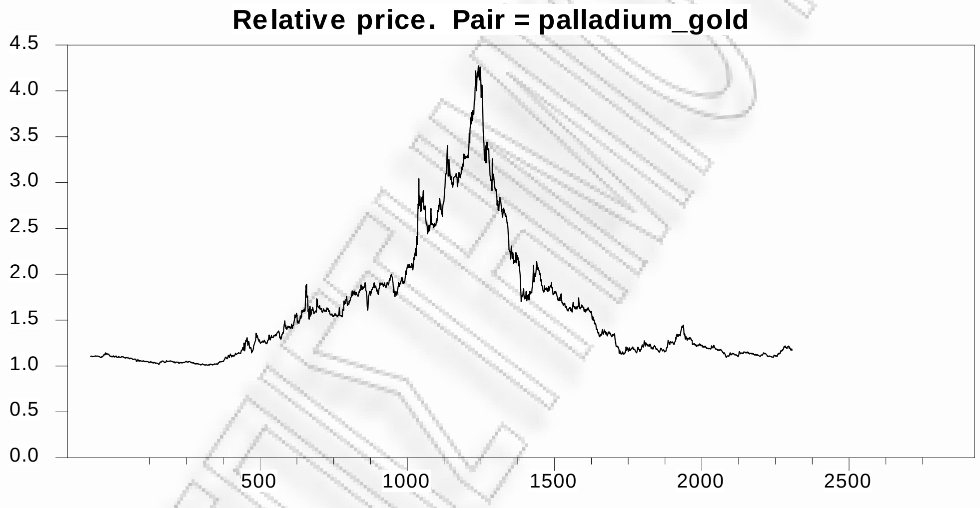
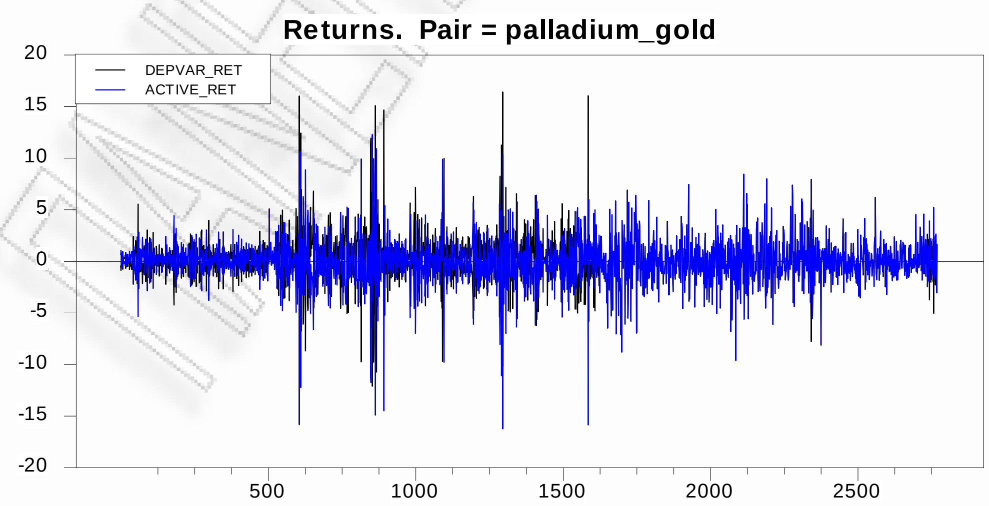

Deviation of rel price from MA. Pair = palladium_gold
2.50
2.25
2.00
1.75
1.50
1.25
1.00
0.75
0.50
0.25
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = palladium_gold
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
500
1000
1500
2000
2500


Returns. Pair = palladium_gold
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = palladium_gold

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030282	Variance	4.805463
Standard Error	2.192137	of Sample Mean	0.041644
t-Statistic (Mean=0)	0.727176	Signif Level	0.467180
Skewness	0.567981	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.728753	Signif Level (Ku=0)	0.000000
Jarque-Bera	7045.732800	Signif Level (JB=0)	0.000000
Minimum	-12.194106	Maximum	16.325261
01-%ile	-5.734283	99-%ile	6.200432
05-%ile	-3.221750	95-%ile	3.260593
10-%ile	-2.172185	90-%ile	2.310960
25-%ile	-1.006343	75-%ile	1.081906
Median	-0.001154		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.03 2.19 -3.22 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.101630	Variance	4.796048
Standard Error	2.189988	of Sample Mean	0.041603
t-Statistic (Mean=0)	-2.442859	Signif Level	0.014633
Skewness	-0.566713	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.685332	Signif Level (Ku=0)	0.000000
Jarque-Bera	6967.793119	Signif Level (JB=0)	0.000000

Minimum	-16.325261	Maximum	12.194106
01-%ile	-6.339853	99-%ile	5.689336
05-%ile	-3.247117	95-%ile	3.198595
10-%ile	-2.305774	90-%ile	2.200970
25-%ile	-1.149161	75-%ile	0.904263
Median	-0.068137		

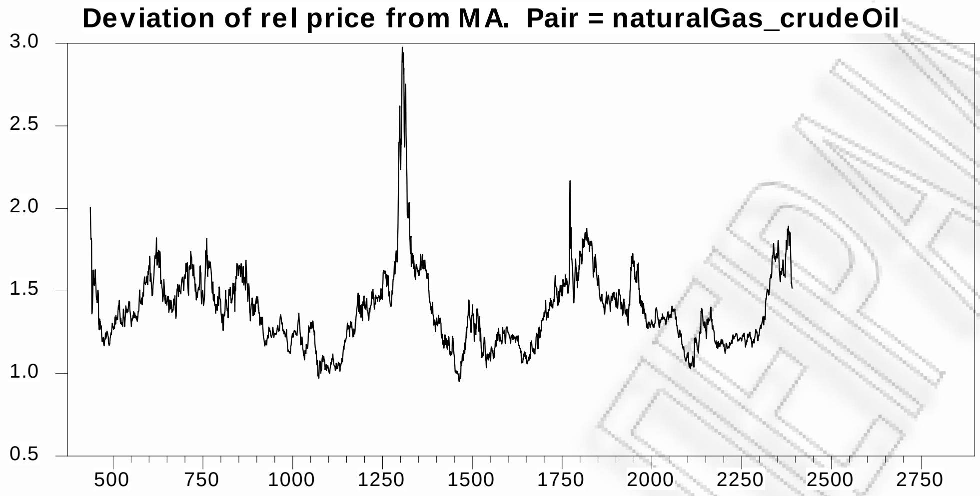
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.10 2.19 -3.25 0.43 %

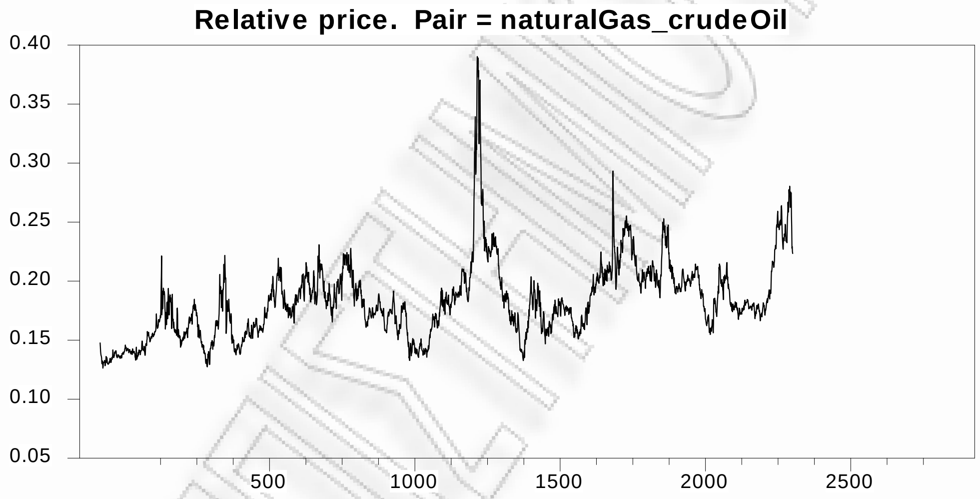
Statistics on Series MA_REL

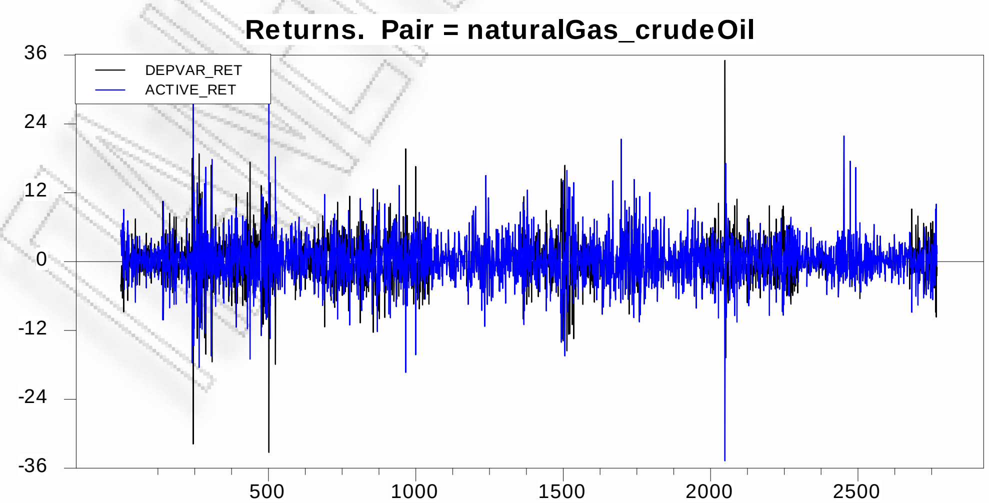
Observations	2273	Skipped/Missing	499
Sample Mean	1.098716	Variance	0.226298
Standard Error	0.475708	of Sample Mean	0.009978
t-Statistic (Mean=0)	110.114540	Signif Level	0.000000
Skewness	0.210255	Signif Level (Sk=0)	0.000043
Kurtosis (excess)	-1.210202	Signif Level (Ku=0)	0.000000
Jarque-Bera	155.455922	Signif Level (JB=0)	0.000000

Minimum	0.360066	Maximum	2.458069
01-%ile	0.394338	99-%ile	2.021032
05-%ile	0.468071	95-%ile	1.867719
10-%ile	0.498053	90-%ile	1.718761
25-%ile	0.644753	75-%ile	1.527937
Median	0.999630		

-22-


Deviation of rel price from MA. Pair = naturalGas_crudeOil
3.0
2.5
2.0
1.5
1.0
0.5
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = naturalGas_crudeOil
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
500
1000
1500
2000
2500


Returns. Pair = naturalGas_crudeOil
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = naturalGas_crudeOil

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.105483	Variance	16.414342
Standard Error	4.051462	of Sample Mean	0.076965
t-Statistic (Mean=0)	1.370533	Signif Level	0.170632
Skewness	0.195499	Signif Level (Sk=0)	0.000027
Kurtosis (excess)	7.194324	Signif Level (Ku=0)	0.000000
Jarque-Bera	5993.578412	Signif Level (JB=0)	0.000000

Minimum	-33.437412	Maximum	34.901311
01-%ile	-9.868484	99-%ile	11.743784
05-%ile	-5.764741	95-%ile	6.493298
10-%ile	-4.318486	90-%ile	4.725616
25-%ile	-2.085847	75-%ile	2.132210
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.11 4.05 -5.76 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.061196	Variance	16.421726
Standard Error	4.052373	of Sample Mean	0.076982
t-Statistic (Mean=0)	0.794933	Signif Level	0.426721
Skewness	0.240445	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	7.193683	Signif Level (Ku=0)	0.000000
Jarque-Bera	6001.561617	Signif Level (JB=0)	0.000000

Minimum	-34.901311	Maximum	33.437412
01-%ile	-10.214466	99-%ile	11.160367
05-%ile	-6.038528	95-%ile	6.189258
10-%ile	-4.427252	90-%ile	4.635181
25-%ile	-2.097139	75-%ile	2.111625
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.06 4.05 -6.04 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.048075	Variance	0.077121
Standard Error	0.277706	of Sample Mean	0.005825
t-Statistic (Mean=0)	179.931159	Signif Level	0.000000
Skewness	1.745772	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	7.160523	Signif Level (Ku=0)	0.000000
Jarque-Bera	6010.567600	Signif Level (JB=0)	0.000000

Minimum	0.542588	Maximum	2.899287
01-%ile	0.612513	99-%ile	2.093989
05-%ile	0.687581	95-%ile	1.462320
10-%ile	0.746124	90-%ile	1.368855
25-%ile	0.856598	75-%ile	1.191767
Median	1.008969		

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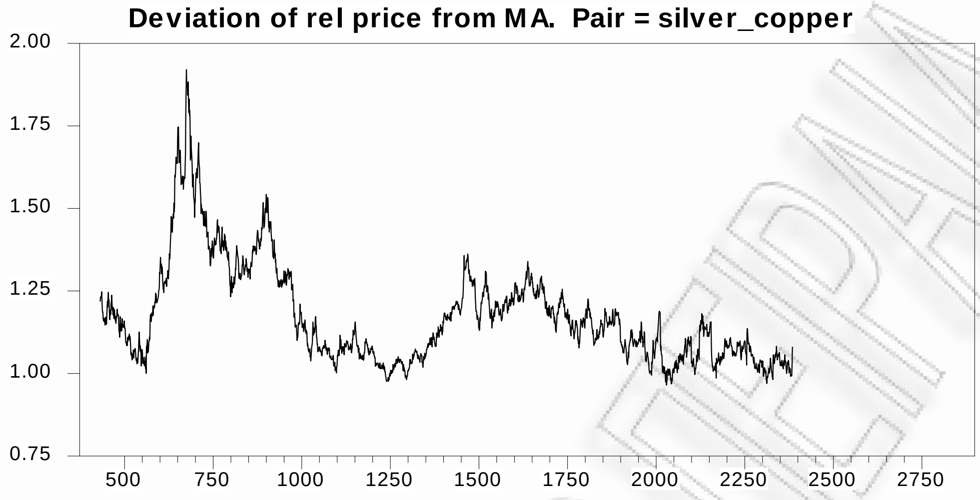
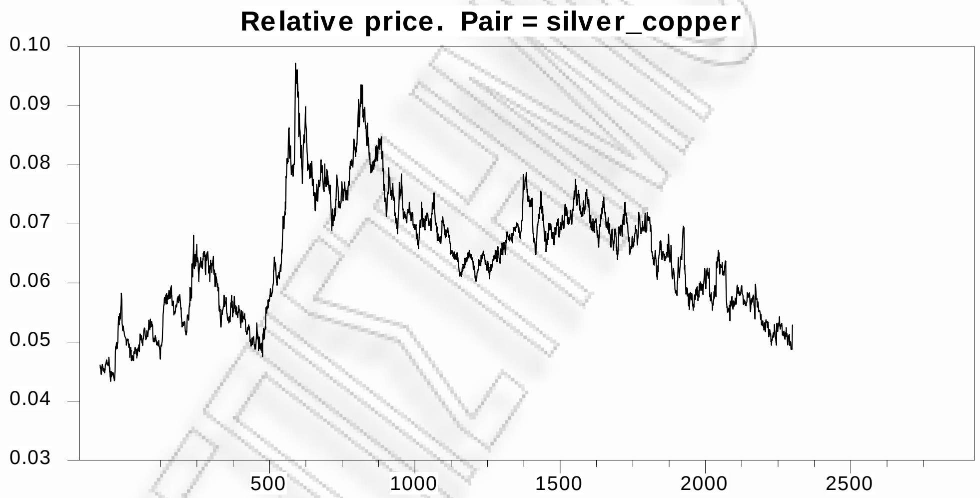
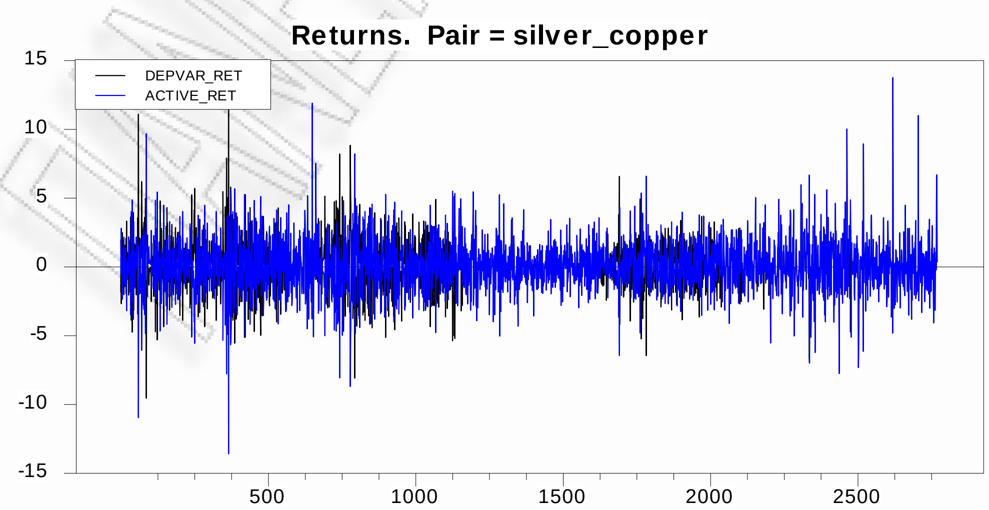

Deviation of rel price from MA. Pair = silver_copper
2.00
1.75
1.50
1.25
1.00
0.75
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = silver_copper
0.10
0.09
0.08
0.07
0.06
0.05
0.04
0.03
500
1000
1500
2000
2500


Returns. Pair = silver_copper
DEPVAR_RET
ACTIVE_RET
15
10
5
0
-5
-10
-15
500
1000
1500
2000
2500

****

******************** Pair = silver_copper

******************** SMA ---> 1   LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.025844	Variance	3.736357
Standard Error	1.932966	of Sample Mean	0.036720
t-Statistic (Mean=0)	0.703819	Signif Level	0.481605
Skewness	0.499363	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.173754	Signif Level (Ku=0)	0.000000
Jarque-Bera	2126.473768	Signif Level (JB=0)	0.000000

Minimum	-9.616879	Maximum	13.690975
01-%ile	-4.809632	99-%ile	5.049778
05-%ile	-2.954076	95-%ile	2.996497
10-%ile	-2.202539	90-%ile	2.279886
25-%ile	-1.068965	75-%ile	1.108465
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.03 1.93 -2.95 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.020711	Variance	3.736596
Standard Error	1.933028	of Sample Mean	0.036721
t-Statistic (Mean=0)	0.564003	Signif Level	0.572798
Skewness	0.146026	Signif Level (Sk=0)	0.001710

Kurtosis (excess)	4.193694	Signif Level (Ku=0)	0.000000
Jarque-Bera	2040.422008	Signif Level (JB=0)	0.000000

Minimum	-13.655939	Maximum	13.690975
01-%ile	-4.933706	99-%ile	4.989409
05-%ile	-2.905157	95-%ile	3.046368
10-%ile	-2.209580	90-%ile	2.277450
25-%ile	-1.080755	75-%ile	1.095901
Median	-0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.02 1.93 -2.91 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.001699	Variance	0.031688
Standard Error	0.178012	of Sample Mean	0.003734
t-Statistic (Mean=0)	268.279418	Signif Level	0.000000
Skewness	1.506639	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	2.763153	Signif Level (Ku=0)	0.000000
Jarque-Bera	1583.036832	Signif Level (JB=0)	0.000000

Minimum	0.759126	Maximum	1.870848
01-%ile	0.782618	99-%ile	1.587522
05-%ile	0.810101	95-%ile	1.357194
10-%ile	0.828043	90-%ile	1.238525
25-%ile	0.870630	75-%ile	1.082774
Median	0.960394		

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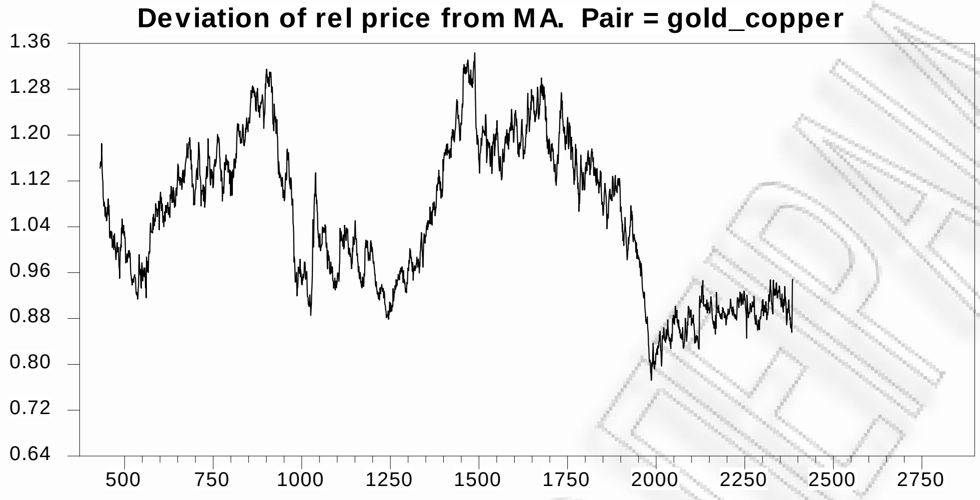
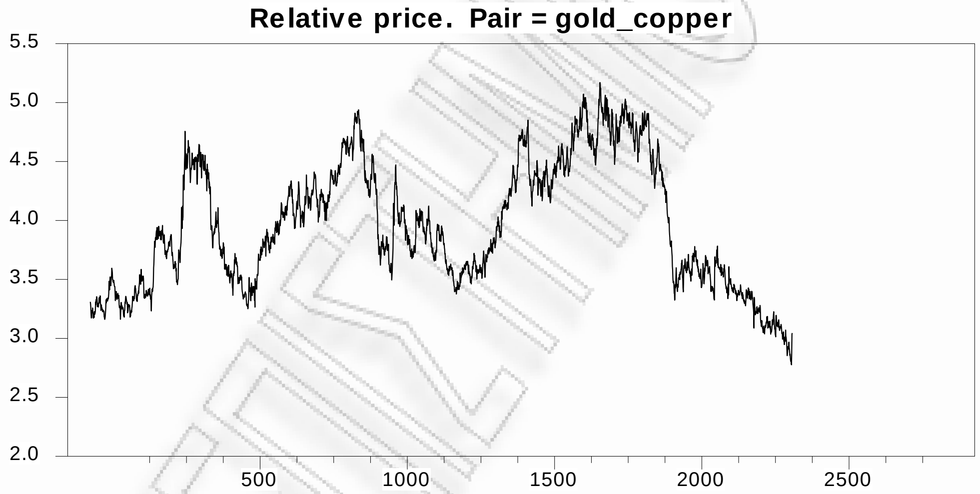
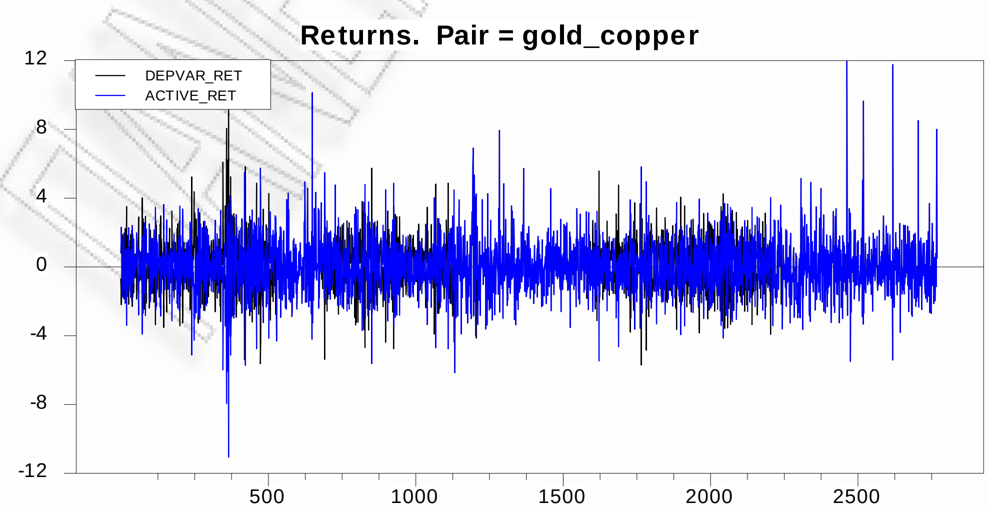

Deviation of rel price from MA. Pair = gold_copper
1.36
1.28
1.20
1.12
1.04
0.96
0.88
0.80
0.72
0.64
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = gold_copper
5.5
5.0
4.5
4.0
3.5
3.0
2.5
2.0
500
1000
1500
2000
2500


Returns. Pair = gold_copper
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = gold_copper

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.009399	Variance	2.727470
Standard Error	1.651505	of Sample Mean	0.031373
t-Statistic (Mean=0)	0.299573	Signif Level	0.764525
Skewness	0.795047	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.562394	Signif Level (Ku=0)	0.000000
Jarque-Bera	2695.240057	Signif Level (JB=0)	0.000000

Minimum	-6.211499	Maximum	11.907779
01-%ile	-3.666504	99-%ile	4.767870
05-%ile	-2.535768	95-%ile	2.598472
10-%ile	-1.929285	90-%ile	1.872203
25-%ile	-0.957426	75-%ile	0.945133
Median	-0.043587		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.01 1.65 -2.54 0.42 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.009025	Variance	2.727477
Standard Error	1.651508	of Sample Mean	0.031373
t-Statistic (Mean=0)	-0.287674	Signif Level	0.773618
Skewness	0.464876	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	4.590672	Signif Level (Ku=0)	0.000000
Jarque-Bera	2533.006270	Signif Level (JB=0)	0.000000

Minimum	-11.119383	Maximum	11.907779
01-%ile	-3.709815	99-%ile	4.473672
05-%ile	-2.556967	95-%ile	2.567926
10-%ile	-1.893217	90-%ile	1.900143
25-%ile	-0.981023	75-%ile	0.911140
Median	-0.032490		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -0.01 1.65 -2.56 0.42 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	0.979026	Variance	0.023433
Standard Error	0.153077	of Sample Mean	0.003211
t-Statistic (Mean=0)	304.919085	Signif Level	0.000000
Skewness	0.081960	Signif Level (Sk=0)	0.110892
Kurtosis (excess)	-1.124742	Signif Level (Ku=0)	0.000000
Jarque-Bera	122.355031	Signif Level (JB=0)	0.000000

Minimum	0.654829	Maximum	1.319718
01-%ile	0.708214	99-%ile	1.280067
05-%ile	0.754269	95-%ile	1.226513
10-%ile	0.785612	90-%ile	1.180801
25-%ile	0.841951	75-%ile	1.107143
Median	0.977734		

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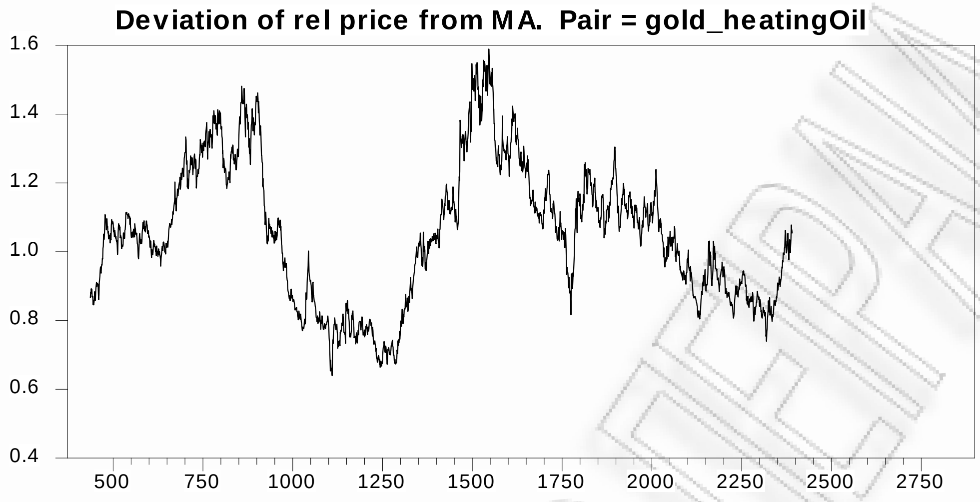
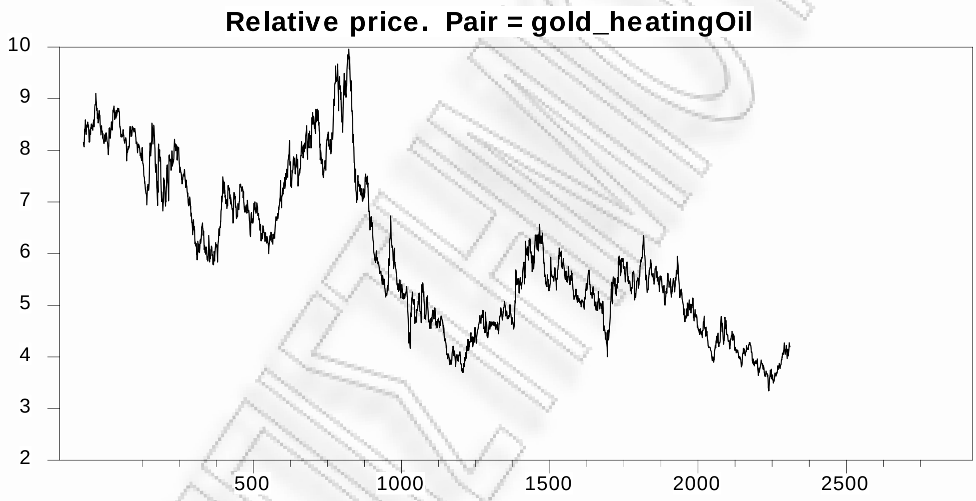
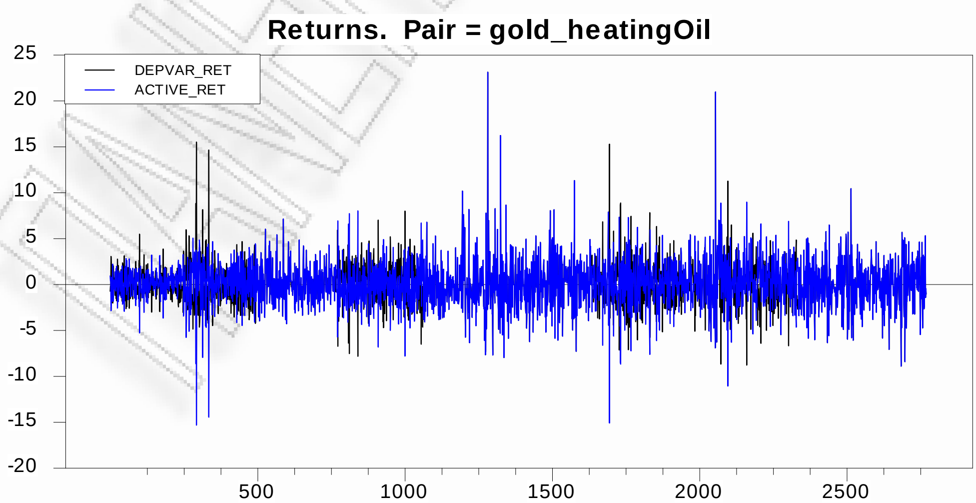

Deviation of rel price from MA. Pair = gold_heatingOil
1.6
1.4
1.2
1.0
0.8
0.6
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = gold_heatingOil
10
9
8
7
6
5
4
3
2
500
1000
1500
2000
2500


Returns. Pair = gold_heatingOil
DEPVAR_RET
ACTIVE_RET
25
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = gold_heatingOil

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.002381	Variance	6.335453
Standard Error	2.517033	of Sample Mean	0.047816
t-Statistic (Mean=0)	-0.049799	Signif Level	0.960286
Skewness	0.938446	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	6.761241	Signif Level (Ku=0)	0.000000
Jarque-Bera	5684.833674	Signif Level (JB=0)	0.000000
Minimum	-8.996379	Maximum	23.027192
01-%ile	-6.144760	99-%ile	6.886765
05-%ile	-3.696523	95-%ile	4.011560
10-%ile	-2.866694	90-%ile	2.910929
25-%ile	-1.471758	75-%ile	1.321581
Median	-0.072420		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of

BuyHold_Performance = -0.00 2.52 -3.70 0.42 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.068515	Variance	6.330763
Standard Error	2.516101	of Sample Mean	0.047798
t-Statistic (Mean=0)	1.433421	Signif Level	0.151850
Skewness	0.343819	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	6.730196	Signif Level (Ku=0)	0.000000
Jarque-Bera	5284.340802	Signif Level (JB=0)	0.000000

Minimum	-15.417329	Maximum	23.027192
01-%ile	-6.247142	99-%ile	6.625696
05-%ile	-3.699753	95-%ile	3.962665
10-%ile	-2.803193	90-%ile	2.944569
25-%ile	-1.330900	75-%ile	1.463739
Median	0.032608		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.07 2.52 -3.70 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	0.925670	Variance	0.054226
Standard Error	0.232866	of Sample Mean	0.004884
t-Statistic (Mean=0)	189.517841	Signif Level	0.000000
Skewness	0.255219	Signif Level (Sk=0)	0.000001
Kurtosis (excess)	-0.590494	Signif Level (Ku=0)	0.000000
Jarque-Bera	57.699211	Signif Level (JB=0)	0.000000

Minimum	0.447383	Maximum	1.552365
01-%ile	0.497973	99-%ile	1.463028
05-%ile	0.573951	95-%ile	1.333183
10-%ile	0.623898	90-%ile	1.248266
25-%ile	0.733069	75-%ile	1.080356
Median	0.921895		

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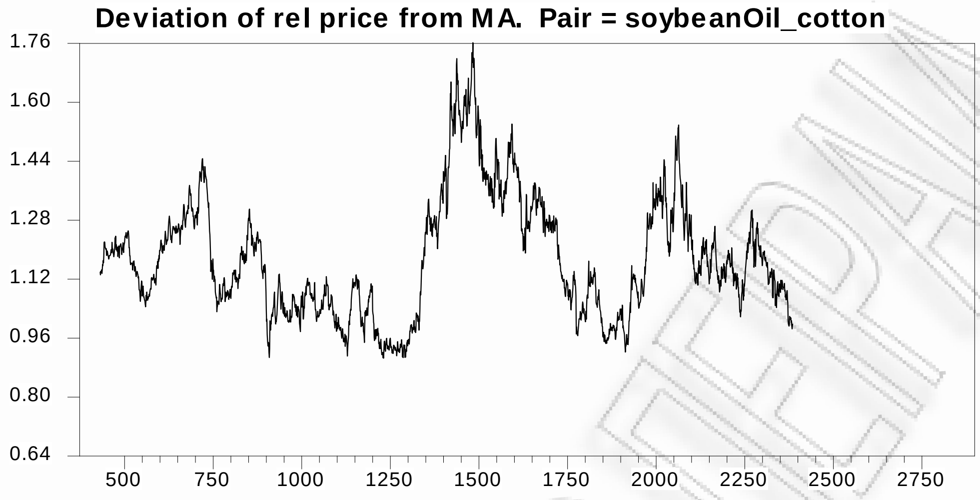
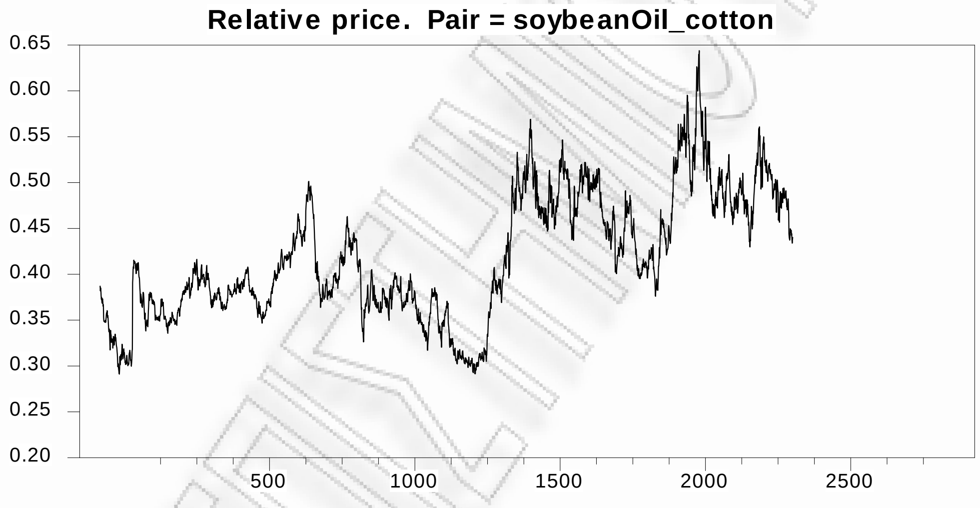
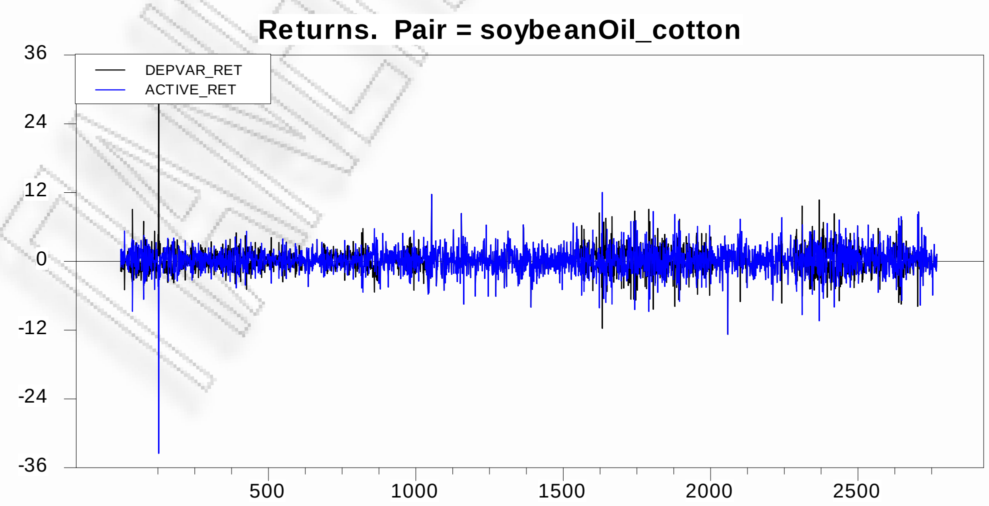

Deviation of rel price from MA. Pair = soybeanOil_cotton
1.76
1.60
1.44
1.28
1.12
0.96
0.80
0.64
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybeanOil_cotton
0.65
0.60
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
500
1000
1500
2000
2500


Returns. Pair = soybeanOil_cotton
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = soybeanOil_cotton

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.030510	Variance	4.940965
Standard Error	2.222828	of Sample Mean	0.042227
t-Statistic (Mean=0)	0.722520	Signif Level	0.470036
Skewness	1.241976	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	20.840276	Signif Level (Ku=0)	0.000000
Jarque-Bera	50857.908473	Signif Level (JB=0)	0.000000

Minimum	-12.906913	Maximum	33.687823
01-%ile	-5.723046	99-%ile	5.641720
05-%ile	-3.179187	95-%ile	3.414347
10-%ile	-2.394339	90-%ile	2.484422
25-%ile	-1.168966	75-%ile	1.209437
Median	-0.011833		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.03 2.22 -3.18 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.031343	Variance	4.940913
Standard Error	2.222816	of Sample Mean	0.042227
t-Statistic (Mean=0)	0.742252	Signif Level	0.457997
Skewness	-1.314438	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	20.983242	Signif Level (Ku=0)	0.000000
Jarque-Bera	51633.824985	Signif Level (JB=0)	0.000000

Minimum	-33.687823	Maximum	11.863640
01-%ile	-5.723046	99-%ile	5.641720
05-%ile	-3.228055	95-%ile	3.414347
10-%ile	-2.421730	90-%ile	2.465560
25-%ile	-1.129762	75-%ile	1.247963
Median	0.044092		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = 0.03 2.22 -3.23 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.047366	Variance	0.035373
Standard Error	0.188078	of Sample Mean	0.003945
t-Statistic (Mean=0)	265.497228	Signif Level	0.000000
Skewness	0.761375	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.364789	Signif Level (Ku=0)	0.000393
Jarque-Bera	232.209316	Signif Level (JB=0)	0.000000

Minimum	0.733179	Maximum	1.729080
01-%ile	0.753747	99-%ile	1.570145
05-%ile	0.785388	95-%ile	1.414421
10-%ile	0.824757	90-%ile	1.300074
25-%ile	0.910774	75-%ile	1.159140
Median	1.013612		

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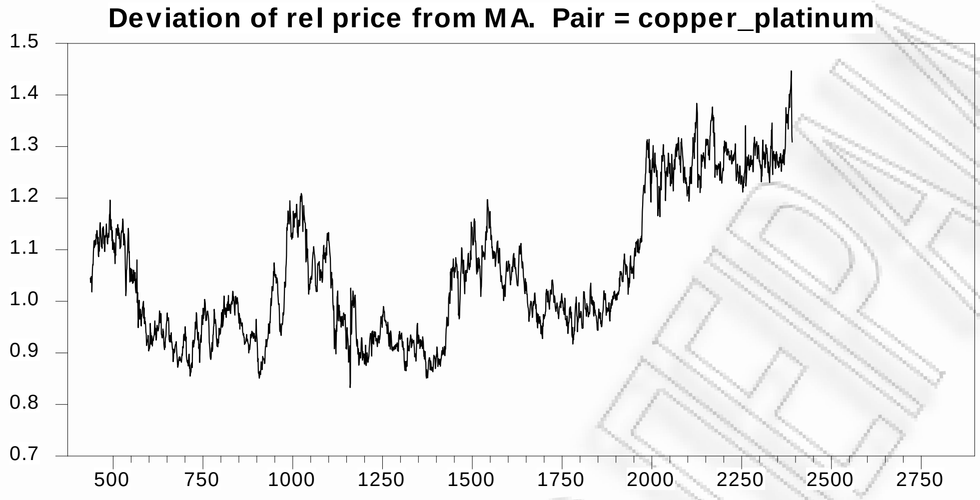
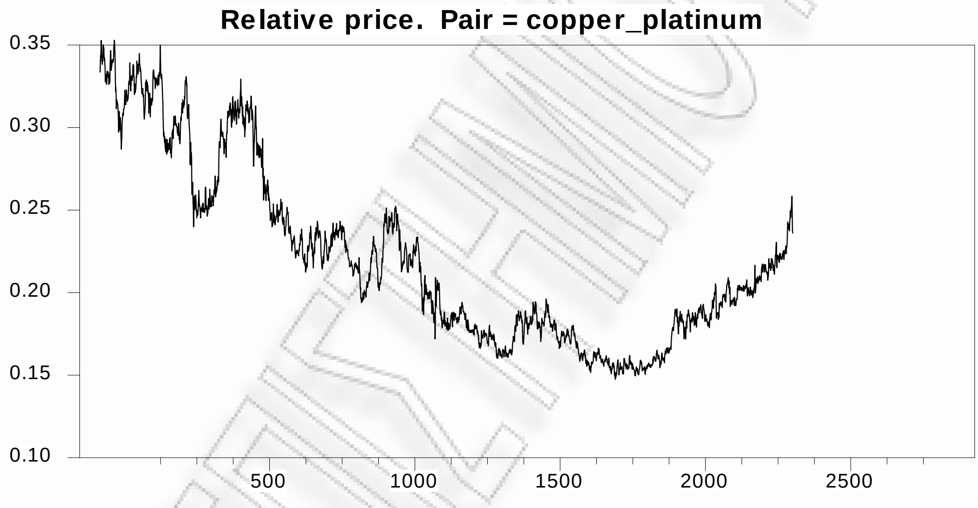
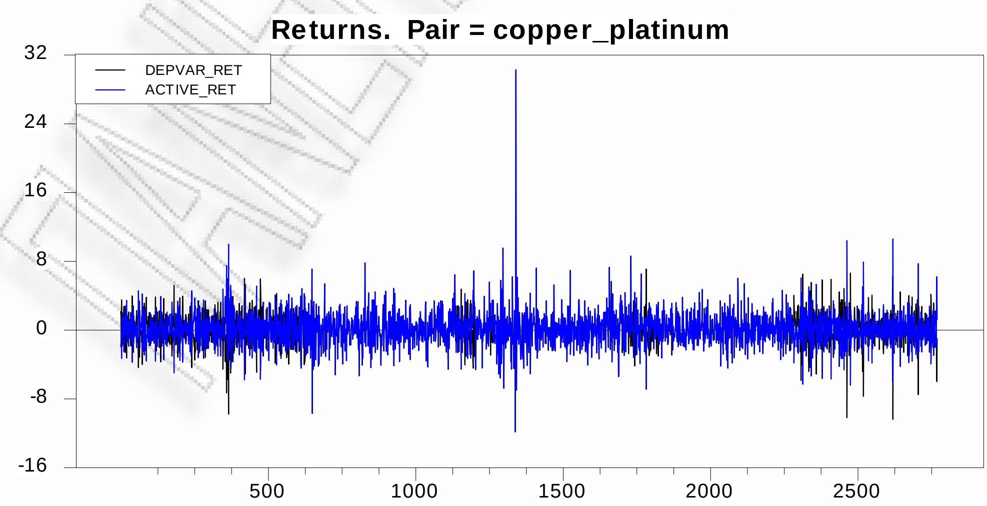

Deviation of rel price from MA. Pair = copper_platinum
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0.8
0.7
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = copper_platinum
0.35
0.30
0.25
0.20
0.15
0.10
500
1000
1500
2000
2500


Returns. Pair = copper_platinum
DEPVAR_RET
ACTIVE_RET
32
24
16
8
0
-8
-16
500
1000
1500
2000
2500

****

******************** Pair = copper_platinum

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.003913	Variance	3.946900
Standard Error	1.986681	of Sample Mean	0.037741
t-Statistic (Mean=0)	0.103671	Signif Level	0.917438
Skewness	1.129054	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	21.101568	Signif Level (Ku=0)	0.000000
Jarque-Bera	51999.573891	Signif Level (JB=0)	0.000000

Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.686501	99-%ile	5.193363
05-%ile	-2.915807	95-%ile	3.048069
10-%ile	-2.167735	90-%ile	2.208645
25-%ile	-1.080073	75-%ile	1.108897
Median	-0.006923		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.00 1.99 -2.92 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.021850	Variance	3.946438
Standard Error	1.986564	of Sample Mean	0.037738
t-Statistic (Mean=0)	0.578974	Signif Level	0.562654
Skewness	1.413962	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	21.053124	Signif Level (Ku=0)	0.000000
Jarque-Bera	52098.400543	Signif Level (JB=0)	0.000000

Minimum	-11.940563	Maximum	30.167996
01-%ile	-4.606703	99-%ile	5.237857
05-%ile	-2.927470	95-%ile	3.017259
10-%ile	-2.208645	90-%ile	2.174153
25-%ile	-1.087647	75-%ile	1.098262
	Median	-0.000000	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.02 1.99 -2.93 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	0.960185	Variance	0.024822
Standard Error	0.157549	of Sample Mean	0.003305
t-Statistic (Mean=0)	290.562621	Signif Level	0.000000
Skewness	0.622676	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.788303	Signif Level (Ku=0)	0.000000
Jarque-Bera	205.737045	Signif Level (JB=0)	0.000000

Minimum	0.700175	Maximum	1.414454
01-%ile	0.738743	99-%ile	1.309196
05-%ile	0.763912	95-%ile	1.238362
10-%ile	0.787518	90-%ile	1.213475
25-%ile	0.831998	75-%ile	1.060478
	Median	0.916581	

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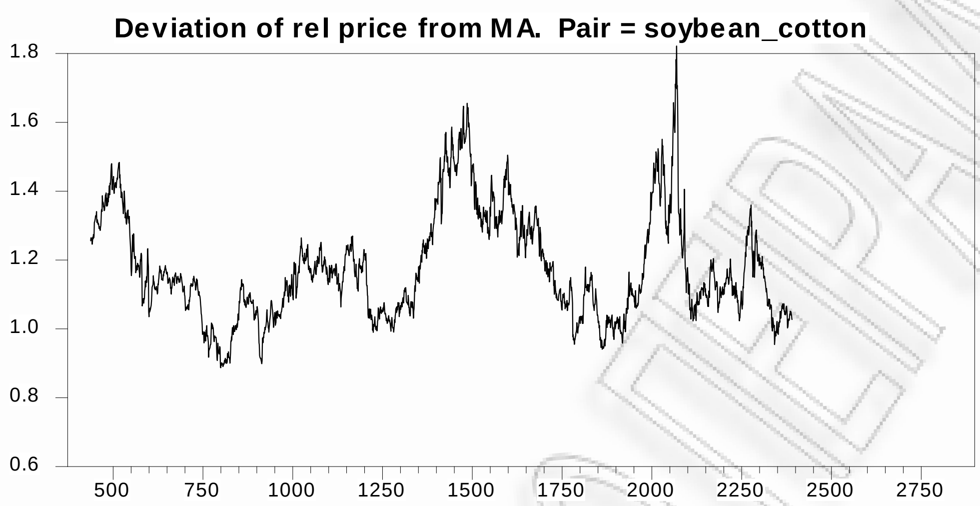
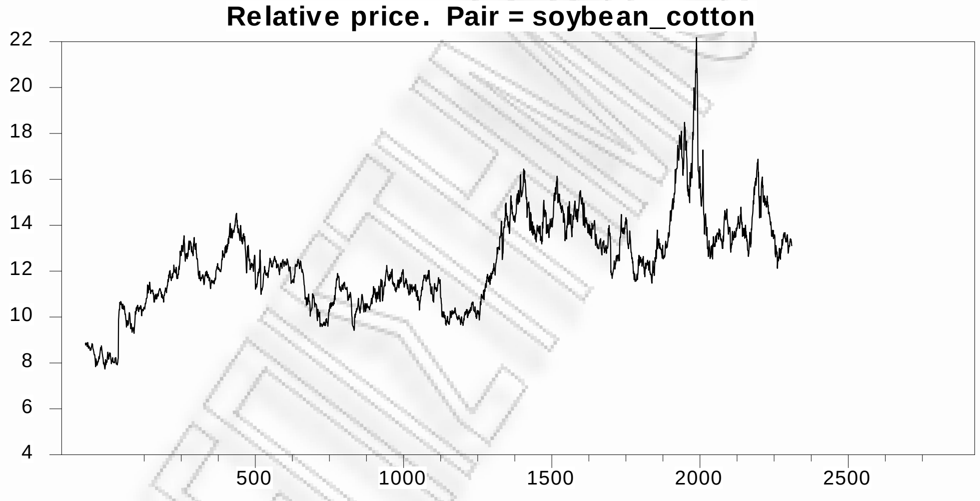
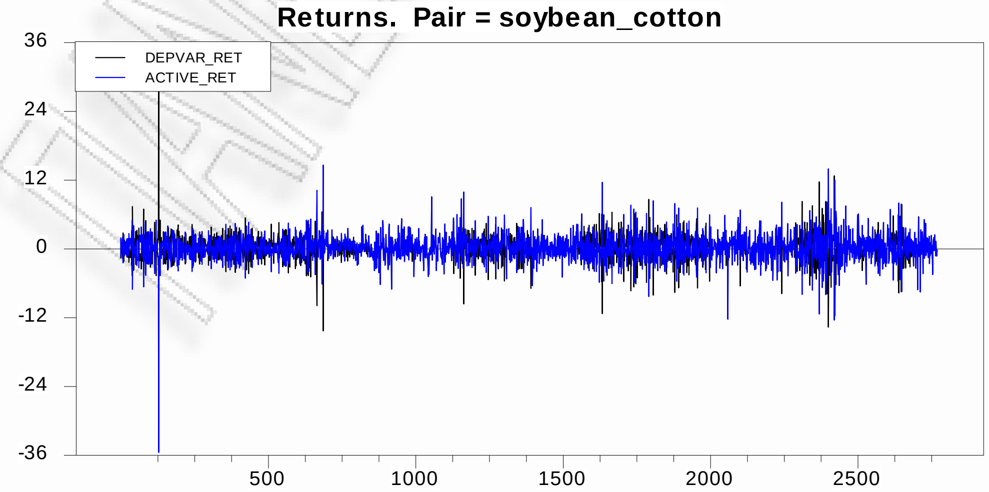

Deviation of rel price from MA. Pair = soybean_cotton
1.8
1.6
1.4
1.2
1.0
0.8
0.6
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = soybean_cotton
22
20
18
16
14
12
10
8
6
4
500
1000
1500
2000
2500


Returns. Pair = soybean_cotton
DEPVAR_RET
ACTIVE_RET
36
24
12
0
-12
-24
-36
500
1000
1500
2000
2500

****

******************** Pair = soybean_cotton

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.047598	Variance	5.364722
Standard Error	2.316187	of Sample Mean	0.044000
t-Statistic (Mean=0)	1.081777	Signif Level	0.279446
Skewness	0.979271	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	22.892304	Signif Level (Ku=0)	0.000000
Jarque-Bera	60949.698417	Signif Level (JB=0)	0.000000
Minimum	-14.465433	Maximum	35.687245
01-%ile	-6.359115	99-%ile	5.642728
05-%ile	-3.508506	95-%ile	3.427508
10-%ile	-2.444753	90-%ile	2.638881
25-%ile	-1.161338	75-%ile	1.277983
Median		0.093618	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.05 2.32 -3.51 0.39 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.051883	Variance	5.364296
Standard Error	2.316095	of Sample Mean	0.043999
t-Statistic (Mean=0)	1.179193	Signif Level	0.238423

Skewness	-1.098832	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	23.075171	Signif Level (Ku=0)	0.000000
Jarque-Bera	62034.982724	Signif Level (JB=0)	0.000000

Minimum	-35.687245	Maximum	14.465433
01-%ile	-5.631319	99-%ile	6.097875
05-%ile	-3.300507	95-%ile	3.589437
10-%ile	-2.482679	90-%ile	2.591310
25-%ile	-1.191738	75-%ile	1.234355
Median	0.037463		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.05 2.32 -3.30 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.038154	Variance	0.032539
Standard Error	0.180387	of Sample Mean	0.003784
t-Statistic (Mean=0)	274.382800	Signif Level	0.000000
Skewness	0.808609	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	0.310375	Signif Level (Ku=0)	0.002562
Jarque-Bera	256.823188	Signif Level (JB=0)	0.000000

Minimum	0.702682	Maximum	1.789920
01-%ile	0.726558	99-%ile	1.519444
05-%ile	0.805980	95-%ile	1.391822
10-%ile	0.840628	90-%ile	1.305733
25-%ile	0.906996	75-%ile	1.149783
Median	0.999549		

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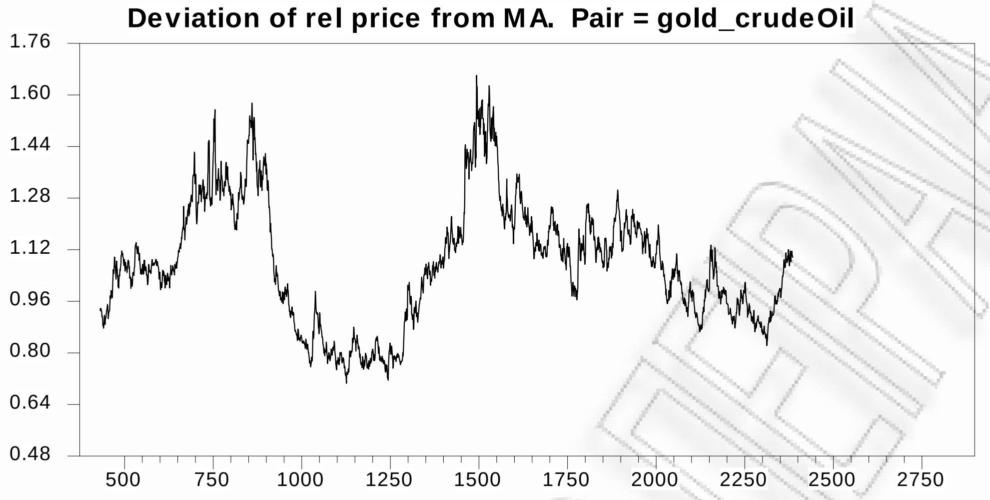
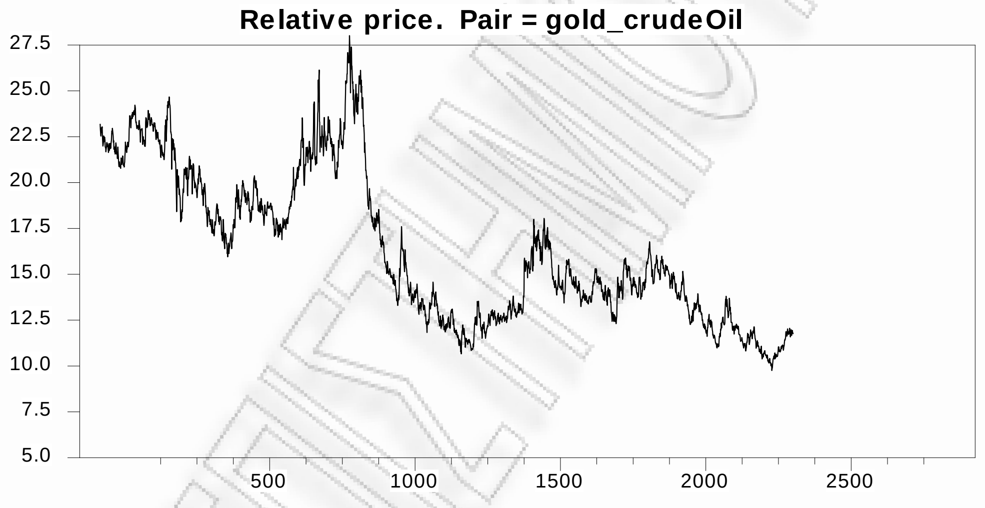
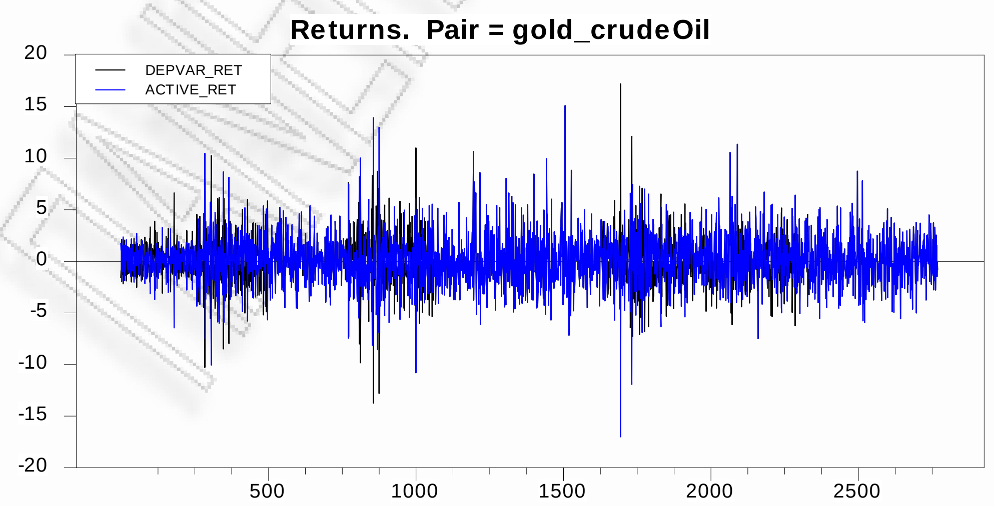

Deviation of rel price from MA. Pair = gold_crudeOil
1.76
1.60
1.44
1.28
1.12
0.96
0.80
0.64
0.48
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = gold_crudeOil
27.5
25.0
22.5
20.0
17.5
15.0
12.5
10.0
7.5
5.0
500
1000
1500
2000
2500


Returns. Pair = gold_crudeOil
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = gold_crudeOil

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.004970	Variance	5.845049
Standard Error	2.417654	of Sample Mean	0.045928
t-Statistic (Mean=0)	-0.108224	Signif Level	0.913826
Skewness	0.402744	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	3.451779	Signif Level (Ku=0)	0.000000
Jarque-Bera	1450.571046	Signif Level (JB=0)	0.000000

Minimum	-13.833198	Maximum	17.102538
01-%ile	-5.574459	99-%ile	6.277606
05-%ile	-3.729054	95-%ile	3.931820
10-%ile	-2.737744	90-%ile	2.933108
25-%ile	-1.420837	75-%ile	1.294938
Median	-0.118586		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = -0.00 2.42 -3.73 0.43 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.057131	Variance	5.841809
Standard Error	2.416983	of Sample Mean	0.045915
t-Statistic (Mean=0)	1.244274	Signif Level	0.213504
Skewness	0.219353	Signif Level (Sk=0)	0.000002

Kurtosis (excess)	3.431518	Signif Level (Ku=0)	0.000000
Jarque-Bera	1381.779382	Signif Level (JB=0)	0.000000

Minimum	-17.102538	Maximum	14.996125
01-%ile	-5.664363	99-%ile	6.457526
05-%ile	-3.780489	95-%ile	3.940034
10-%ile	-2.805550	90-%ile	2.887960
25-%ile	-1.299634	75-%ile	1.407504
Median	0.025417		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 0.06 2.42 -3.78 0.40 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	0.927049	Variance	0.049012
Standard Error	0.221387	of Sample Mean	0.004644
t-Statistic (Mean=0)	199.640893	Signif Level	0.000000
Skewness	0.350123	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-0.307735	Signif Level (Ku=0)	0.002788
Jarque-Bera	55.408756	Signif Level (JB=0)	0.000000

Minimum	0.495845	Maximum	1.606888
01-%ile	0.547783	99-%ile	1.462244
05-%ile	0.582544	95-%ile	1.329259
10-%ile	0.618691	90-%ile	1.227556
25-%ile	0.759953	75-%ile	1.064677
Median	0.918719		

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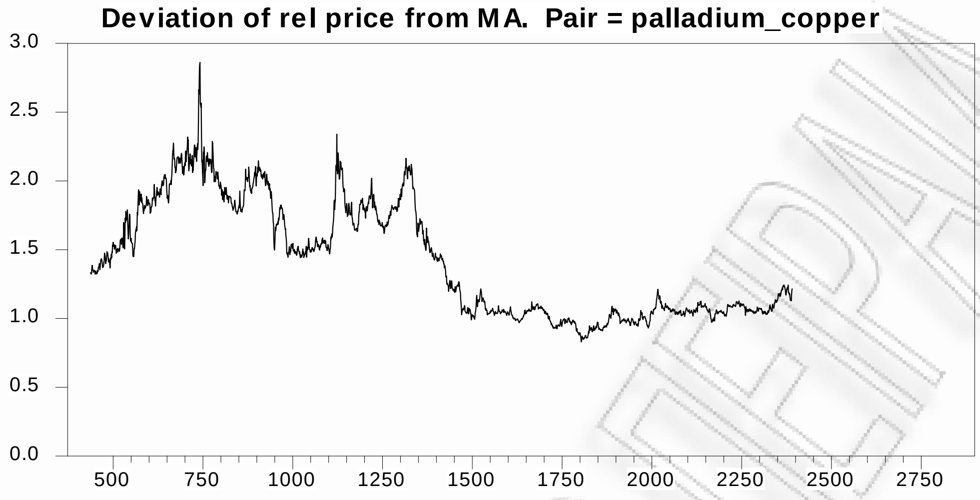
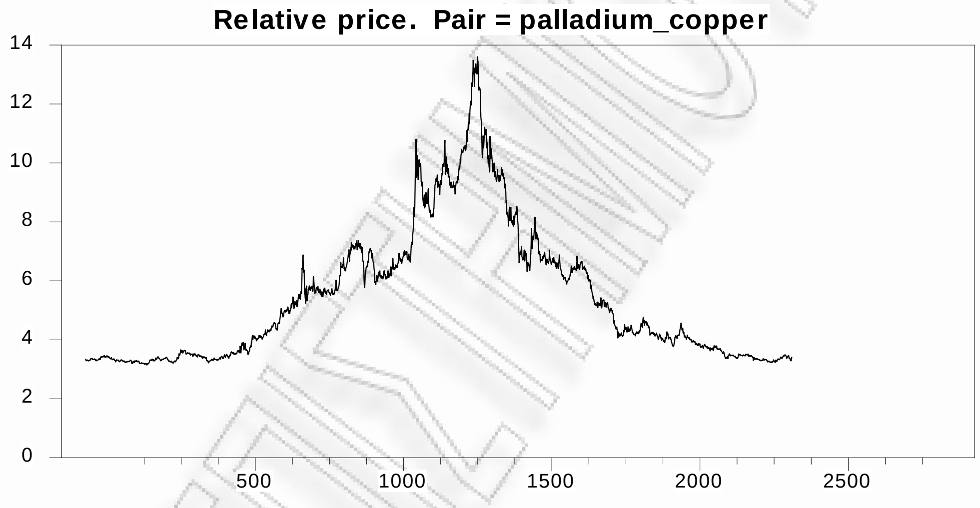
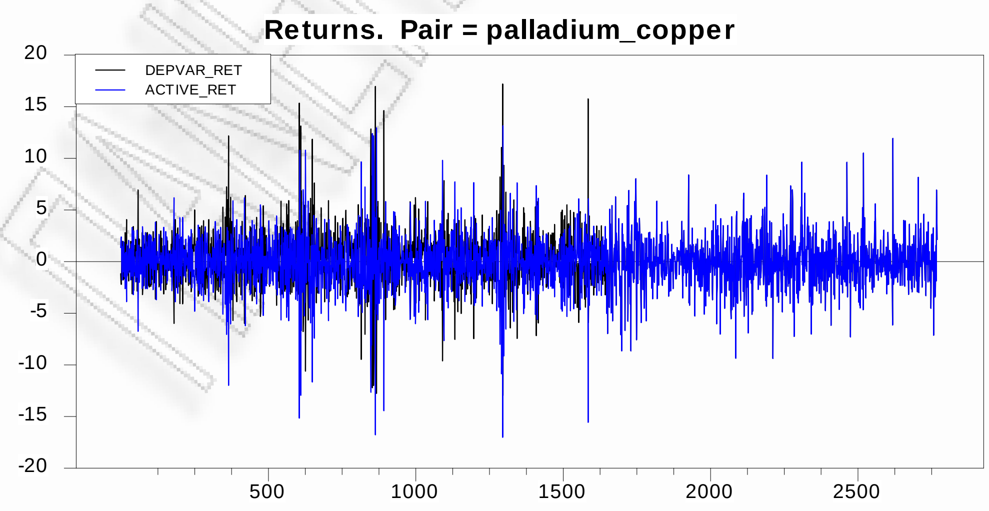

Deviation of rel price from MA. Pair = palladium_copper
3.0
2.5
2.0
1.5
1.0
0.5
0.0
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = palladium_copper
14
12
10
8
6
4
2
0
500
1000
1500
2000
2500


Returns. Pair = palladium_copper
DEPVAR_RET
ACTIVE_RET
20
15
10
5
0
-5
-10
-15
-20
500
1000
1500
2000
2500

****

******************** Pair = palladium_copper

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.035091	Variance	6.600882
Standard Error	2.569218	of Sample Mean	0.048807
t-Statistic (Mean=0)	0.718982	Signif Level	0.472213
Skewness	0.452895	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	4.976839	Signif Level (Ku=0)	0.000000
Jarque-Bera	2954.507552	Signif Level (JB=0)	0.000000

Minimum	-13.059365	Maximum	17.111132
01-%ile	-6.799694	99-%ile	7.038010
05-%ile	-3.724911	95-%ile	3.963386
10-%ile	-2.732144	90-%ile	2.918848
25-%ile	-1.364029	75-%ile	1.317172
Median	0.000000		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.04 2.57 -3.72 0.41 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.134495	Variance	6.584018
Standard Error	2.565934	of Sample Mean	0.048745
t-Statistic (Mean=0)	-2.759181	Signif Level	0.005833
Skewness	-0.317280	Signif Level (Sk=0)	0.000000

Kurtosis (excess)	4.960658	Signif Level (Ku=0)	0.000000
Jarque-Bera	2887.705049	Signif Level (JB=0)	0.000000

Minimum	-17.111132	Maximum	13.059365
01-%ile	-7.124070	99-%ile	6.608634
05-%ile	-4.094318	95-%ile	3.681345
10-%ile	-2.930004	90-%ile	2.697299
25-%ile	-1.435885	75-%ile	1.269316
Median	-0.119966		

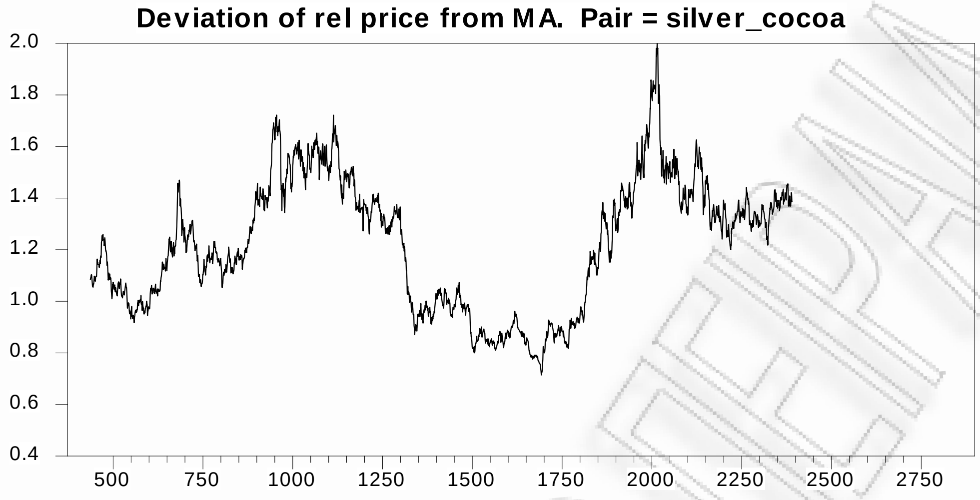
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.13 2.57 -4.09 0.43 %

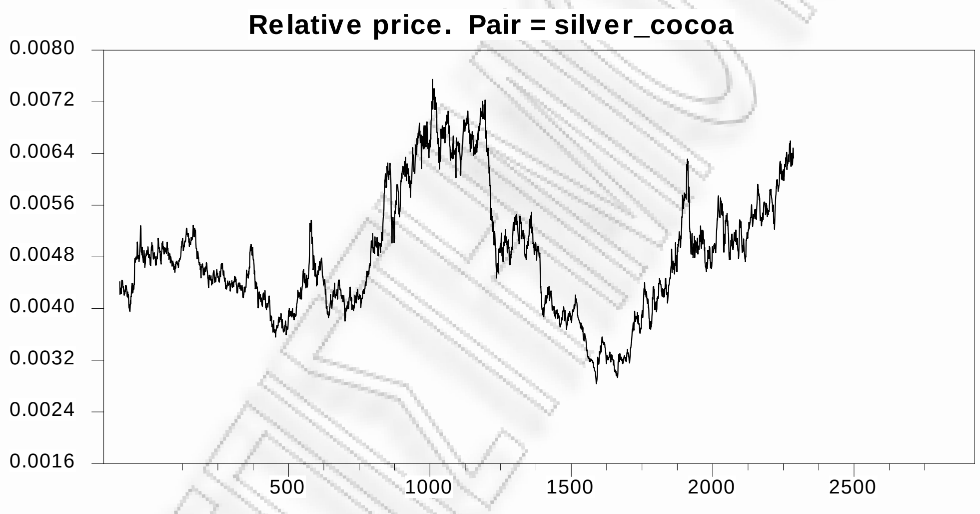
Statistics on Series MA_REL

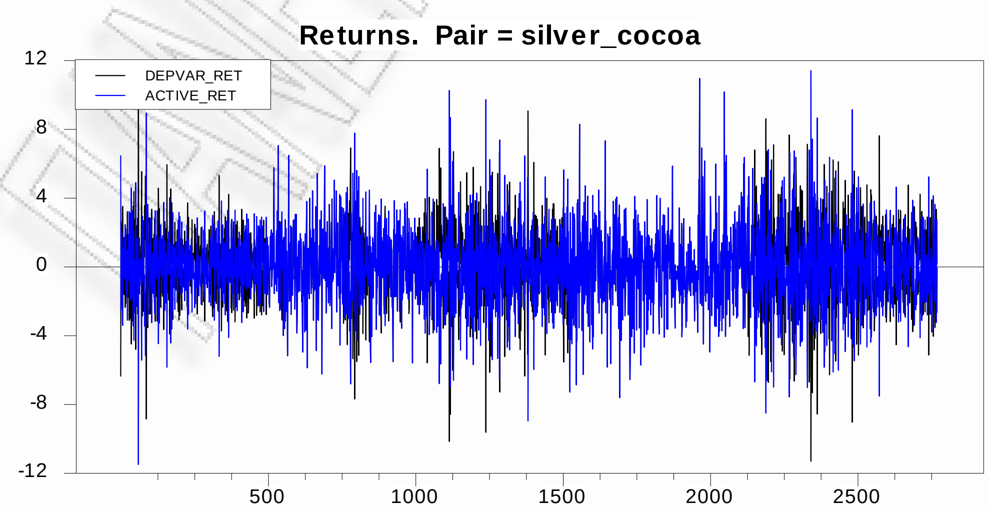
Observations	2273	Skipped/Missing	499
Sample Mean	1.072649	Variance	0.233544
Standard Error	0.483263	of Sample Mean	0.010136
t-Statistic (Mean=0)	105.821416	Signif Level	0.000000
Skewness	0.476678	Signif Level (Sk=0)	0.000000
Kurtosis (excess)	-1.063929	Signif Level (Ku=0)	0.000000
Jarque-Bera	193.284123	Signif Level (JB=0)	0.000000

Minimum	0.386395	Maximum	2.750408
01-%ile	0.440791	99-%ile	2.037491
05-%ile	0.521439	95-%ile	1.876912
10-%ile	0.562890	90-%ile	1.778937
25-%ile	0.641396	75-%ile	1.518442
Median	0.983751		

-31-


Deviation of rel price from MA. Pair = silver_cocoa
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
500
750
1000
1250
1500
1750
2000
2250
2500
2750


Relative price. Pair = silver_cocoa
0.0080
0.0072
0.0064
0.0056
0.0048
0.0040
0.0032
0.0024
0.0016
500
1000
1500
2000
2500


Returns. Pair = silver_cocoa
DEPVAR_RET
ACTIVE_RET
12
8
4
0
-4
-8
-12
500
1000
1500
2000
2500

****

******************** Pair = silver_cocoa

******************** SMA ---> 1 LMA ---> 500

****

Performance

Statistics on Series DEPVAR_RET

Observations	2771	Skipped/Missing	1
Sample Mean	0.043966	Variance	5.366252
Standard Error	2.316517	of Sample Mean	0.044007
t-Statistic (Mean=0)	0.999090	Signif Level	0.317839
Skewness	0.003227	Signif Level (Sk=0)	0.944743
Kurtosis (excess)	1.494435	Signif Level (Ku=0)	0.000000
Jarque-Bera	257.862042	Signif Level (JB=0)	0.000000
Minimum	-11.358750	Maximum	11.546872
01-%ile	-5.801129	99-%ile	6.035727
05-%ile	-3.641816	95-%ile	3.732680
10-%ile	-2.738549	90-%ile	2.826347
25-%ile	-1.351866	75-%ile	1.445741
Median	0.004736		

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
BuyHold_Performance = 0.04 2.32 -3.64 0.40 %

Statistics on Series ACTIVE_RET

Observations	2771	Skipped/Missing	1
Sample Mean	-0.027949	Variance	5.367404
Standard Error	2.316766	of Sample Mean	0.044011
t-Statistic (Mean=0)	-0.635036	Signif Level	0.525458

Skewness	0.121877	Signif Level (Sk=0)	0.008851
Kurtosis (excess)	1.499929	Signif Level (Ku=0)	0.000000
Jarque-Bera	266.616750	Signif Level (JB=0)	0.000000

Minimum	-11.546872	Maximum	11.358750
01-%ile	-5.886481	99-%ile	6.129877
05-%ile	-3.742664	95-%ile	3.586048
10-%ile	-2.836883	90-%ile	2.717023
25-%ile	-1.442676	75-%ile	1.356617
	Median	-0.011634	

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of
Active_Performance = -0.03 2.32 -3.74 0.41 %

Statistics on Series MA_REL

Observations	2273	Skipped/Missing	499
Sample Mean	1.048078	Variance	0.084848
Standard Error	0.291287	of Sample Mean	0.006110
t-Statistic (Mean=0)	171.542378	Signif Level	0.000000
Skewness	0.071458	Signif Level (Sk=0)	0.164554
Kurtosis (excess)	-0.807498	Signif Level (Ku=0)	0.000000
Jarque-Bera	63.689249	Signif Level (JB=0)	0.000000

Minimum	0.457244	Maximum	1.952084
01-%ile	0.537330	99-%ile	1.725075
05-%ile	0.603866	95-%ile	1.495131
10-%ile	0.646800	90-%ile	1.419983
25-%ile	0.784434	75-%ile	1.256859
	Median	1.07907	

ΠΑΡΑΡΤΗΜΑ 2

Κινούμενος Μέσος		ΖΕΥΓΟΣ1:ΚΑΡ.ΣΟΓΙΑΣ/ ΒΡ.ΣΟΓΙΑ		ΖΕΥΓΟΣ2:ΠΕΤΡ.ΘΕΡΜΑΝΣΗΣ/ ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ		ΖΕΥΓΟΣ3: ΚΑΡ.ΣΟΓΙΑΣ/ ΣΟΓΙΕΛΑΙΟ	
		BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE
SMA(1)-LMA(50)	ΑΠΟΔΟΣΗ	0,00	0,02	0,01	0,09	0,02	-0,01
	ΚΙΝΔΥΝΟΣ	1,03	1,03	1,73	1,73	1,24	1,24
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,51	0,49	0,47	0,47	0,46	0,49
	SHARPE RATIO	0,00	0,02	0,01	0,05	0,02	-0,01
SMA(1)-LMA(150)	ΑΠΟΔΟΣΗ	0,00	0,02	0,01	0,10	0,02	0,01
	ΚΙΝΔΥΝΟΣ	1,03	1,03	1,73	1,73	1,24	1,24
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,49	0,48	0,46	0,45	0,45	0,47
	SHARPE RATIO	0,00	0,02	0,01	0,06	0,02	0,01
SMA(1)-LMA(300)	ΑΠΟΔΟΣΗ	0,00	0,03	0,01	0,11	0,02	0,01
	ΚΙΝΔΥΝΟΣ	1,03	1,03	1,73	1,73	1,24	1,24
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,47	0,46	0,43	0,42	0,42	0,44
	SHARPE RATIO	0,00	0,03	0,01	0,06	0,02	0,01
SMA(1)-LMA(500)	ΑΠΟΔΟΣΗ	0,00	0,03	0,01	0,08	0,02	0,03
	ΚΙΝΔΥΝΟΣ	1,03	1,03	1,73	1,73	1,24	1,24
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,43	0,41	0,40	0,38	0,39	0,40
	SHARPE RATIO	0,00	0,03	0,01	0,05	0,02	0,02

Κινούμενος Μέσος		ΖΕΥΓΟΣ4:ΑΡΓΥΡΟΣ/ ΧΡΥΣΟΣ		ΖΕΥΓΟΣ5:ΣΙΤΑΡΙ/ ΑΡΑΒΟΣΙΤΟΣ		ΖΕΥΓΟΣ6:ΚΑΡ.ΣΟΓΙΑΣ/ ΑΡΑΒΟΣΙΤΟΣ	
		BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE
SMA(1)-LMA(50)	ΑΠΟΔΟΣΗ	0,02	0,00	0,01	0,06	0,02	0,02
	ΚΙΝΔΥΝΟΣ	1,21	1,21	1,72	1,72	1,63	1,63
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,48	0,47	0,52	0,48	0,48	0,50
	SHARPE RATIO	0,02	0,00	0,01	0,03	0,01	0,01
SMA(1)-LMA(150)	ΑΠΟΔΟΣΗ	2,00	0,03	0,01	0,07	0,02	0,03
	ΚΙΝΔΥΝΟΣ	1,21	1,21	1,72	1,72	1,63	1,63
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,46	0,46	0,48	0,46	0,46	0,48
	SHARPE RATIO	1,65	0,02	0,01	0,04	0,01	0,02
SMA(1)-LMA(300)	ΑΠΟΔΟΣΗ	0,02	0,01	0,01	0,08	0,02	0,07
	ΚΙΝΔΥΝΟΣ	1,21	1,21	1,72	1,72	1,63	1,63
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,43	0,44	0,45	0,43	0,43	0,44
	SHARPE RATIO	0,02	0,01	0,01	0,05	0,01	0,04
SMA(1)-LMA(500)	ΑΠΟΔΟΣΗ	0,02	0,00	0,01	0,06	0,02	0,05
	ΚΙΝΔΥΝΟΣ	1,21	1,21	1,72	1,72	1,63	1,63
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,40	0,41	0,42	0,40	0,39	0,40
	SHARPE RATIO	0,02	0,00	0,01	0,03	0,01	0,03

Κινούμενος Μέσος		ΖΕΥΓΟΣ7:ΛΕΥΚΟΧΡΥΣΟΣ/ ΠΑΛΛΑΔΙΟ		ΖΕΥΓΟΣ8:ΒΡ.ΣΟΓΙΑ/ ΑΡΑΒΟΣΙΤΟΣ		ΖΕΥΓΟΣ9:ΑΡΑΒΟΣΙΤΟΣ/ ΒΡΩΜΗ	
		BUY&HOLD	**ACTIVE**	**BUY&HOLD**	**ACTIVE**	**BUY&HOLD**	**ACTIVE**
SMA(1)-LMA(50)	**RETURN**	0,03	-0,07	0,03	-0,01	0,01	0,07
	RISK	2,00	2,00	1,81	1,81	2,32	2,32
	NEGATIVE RET.%	0,47	0,51	0,48	0,51	0,51	0,48
	SHARPE RATIO	0,02	-0,04	0,02	-0,01	0,00	0,03
SMA(1)-LMA(150)	**ΑΠΟΔΟΣΗ**	0,03	-0,04	0,03	0,01	0,01	0,04
	ΚΙΝΔΥΝΟΣ	2,00	2,00	1,81	1,81	2,32	2,32
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,46	0,49	0,46	0,49	0,49	0,48
	SHARPE RATIO	0,02	-0,02	0,02	0,01	0,00	0,02
SMA(1)-LMA(300)	**ΑΠΟΔΟΣΗ**	0,03	-0,08	0,03	0,03	0,01	0,04
	ΚΙΝΔΥΝΟΣ	2,00	2,00	1,81	1,81	2,32	2,32
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,43	0,47	0,43	0,45	0,46	0,45
	SHARPE RATIO	0,02	-0,04	0,02	0,02	0,00	0,02
SMA(1)-LMA(500)	**ΑΠΟΔΟΣΗ**	0,03	-0,09	0,03	0,04	0,01	0,01
	ΚΙΝΔΥΝΟΣ	2,00	2,00	1,81	1,81	2,32	2,32
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,40	0,44	0,39	0,41	0,43	0,42
	SHARPE RATIO	0,02	-0,05	0,02	0,02	0,00	0,00

Κινούμενος Μέσος		ΖΕΥΓΟΣ10:ΖΩΝΤΑ ΒΟΟΕΙΔΗ/ΒΟΟΕΙΔΗ ΠΡΟΣ ΠΑΧΥΝΣΗ		ΖΕΥΓΟΣ11:ΑΡΑΒΟΣΙΤΟΣ/ ΣΟΓΙΕΛΑΙΟ		ΖΕΥΓΟΣ12:ΒΡ.ΣΟΓΙΑ/ ΣΟΓΙΕΛΑΙΟ	
		BUY&HOLD	**ACTIVE**	**BUY&HOLD**	**ACTIVE**	**BUY&HOLD**	**ACTIVE**
SMA(1)-LMA(50)	**RETURN**	0,00	0,01	0,02	0,00	0,04	-0,02
	RISK	1,11	1,11	1,61	1,61	1,75	1,75
	NEGATIVE RET.%	0,49	0,49	0,47	0,50	0,47	0,49
	SHARPE RATIO	0,00	0,01	0,01	0,00	0,02	-0,01
SMA(1)-LMA(150)	**ΑΠΟΔΟΣΗ**	0,00	0,03	0,02	0,03	0,04	0,00
	ΚΙΝΔΥΝΟΣ	1,11	1,11	1,61	1,61	1,75	1,75
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,47	0,46	0,46	0,47	0,46	0,48
	SHARPE RATIO	0,00	0,03	0,01	0,02	0,02	0,00
SMA(1)-LMA(300)	**ΑΠΟΔΟΣΗ**	0,00	0,03	0,02	-0,01	0,04	-0,02
	ΚΙΝΔΥΝΟΣ	1,11	1,11	1,61	1,61	1,75	1,75
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,44	0,44	0,44	0,45	0,44	0,45
	SHARPE RATIO	0,00	0,03	0,01	-0,01	0,02	-0,01
SMA(1)-LMA(500)	**ΑΠΟΔΟΣΗ**	0,00	0,05	0,02	0,01	0,04	2,00
	ΚΙΝΔΥΝΟΣ	1,11	1,11	1,61	1,61	1,75	1,75
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,40	0,39	0,40	0,41	0,40	0,42
	SHARPE RATIO	0,00	0,05	0,01	0,01	0,02	1,14

Κινούμενος Μέσος		ΖΕΥΓΟΣ13:ΛΕΥΚΟΧΡΥΣΟΣ/ ΧΡΥΣΟΣ		ΖΕΥΓΟΣ14:ΚΑΡ.ΣΟΓΙΑΣ/ ΒΡΩΜΗ		ΖΕΥΓΟΣ15:ΛΕΥΚΟΧΡΥΣΟΣ/ ΑΡΓΥΡΟΣ	
		BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE
SMA(1)-LMA(50)	RETURN	0,03	0,03	0,02	0,05	0,02	0,01
	RISK	1,37	1,37	2,44	2,44	1,70	1,70
	NEGATIVE RET.%	0,47	0,47	0,50	0,49	0,48	0,48
	SHARPE RATIO	0,02	0,02	0,01	0,02	0,01	0,01
SMA(1)-LMA(150)	ΑΠΟΔΟΣΗ	0,03	0,01	0,02	0,00	0,02	0,03
	ΚΙΝΔΥΝΟΣ	1,37	1,37	2,44	2,44	1,70	1,70
	7th CENTILE	1,98	1,94	3,29	3,11	2,60	2,55
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,45	0,47	0,47	0,48	0,46	0,47
	SHARPE RATIO	0,02	0,01	0,01	0,00	0,01	0,02
SMA(1)-LMA(300)	ΑΠΟΔΟΣΗ	0,03	-0,01	0,02	0,07	0,02	0,05
	ΚΙΝΔΥΝΟΣ	1,37	1,37	2,44	2,44	1,70	1,70
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,42	0,45	0,44	0,45	0,43	0,44
	SHARPE RATIO	0,02	-0,01	0,01	0,03	0,01	0,03
SMA(1)-LMA(500)	ΑΠΟΔΟΣΗ	0,03	0,00	0,02	0,00	0,02	0,01
	ΚΙΝΔΥΝΟΣ	1,37	1,37	2,44	2,44	1,70	1,70
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,39	0,41	0,41	0,42	0,40	0,41
	SHARPE RATIO	0,02	0,00	0,01	0,00	0,01	0,01

Κινούμενος Μέσος		ΖΕΥΓΟΣ16:ΚΑΡ.ΣΟΓΙΑΣ/ ΣΙΤΑΡΙ		ΖΕΥΓΟΣ17:ΒΡ.ΣΟΓΙΑ/ΒΡΩΜΗ		ΖΕΥΓΟΣ18:ΦΥΣ.ΑΕΡΙΟ/ ΠΕΤΡ.ΘΕΡΜΑΝΣΗΣ	
		BUY&HOLD	**ACTIVE**	**BUY&HOLD**	**ACTIVE**	**BUY&HOLD**	**ACTIVE**
SMA(1)-LMA(50)	**RETURN**	0,03	0,01	0,02	0,00	0,10	0,12
	RISK	1,99	1,99	2,52	2,52	3,93	3,93
	NEGATIVE RET.%	0,47	0,49	0,49	0,49	0,49	0,47
	SHARPE RATIO	0,02	0,01	0,01	0,00	0,03	0,03
SMA(1)-LMA(150)	**ΑΠΟΔΟΣΗ**	0,03	0,01	0,02	-0,03	0,10	0,18
	ΚΙΝΔΥΝΟΣ	1,99	1,99	2,52	2,52	3,93	3,93
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,45	0,46	0,47	0,47	0,47	0,46
	SHARPE RATIO	0,02	0,01	0,01	-0,01	0,03	0,05
SMA(1)-LMA(300)	**ΑΠΟΔΟΣΗ**	0,03	0,07	0,02	0,04	0,10	0,14
	ΚΙΝΔΥΝΟΣ	1,99	1,99	2,52	2,52	3,93	3,93
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,43	0,43	0,44	0,45	0,45	0,44
	SHARPE RATIO	0,02	0,04	0,01	0,02	0,03	0,04
SMA(1)-LMA(500)	**ΑΠΟΔΟΣΗ**	0,03	0,03	0,02	-0,02	0,10	0,07
	ΚΙΝΔΥΝΟΣ	1,99	1,99	2,52	2,52	3,93	3,94
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,39	0,40	0,41	0,42	0,41	0,40
	SHARPE RATIO	0,02	0,02	0,01	-0,01	0,03	0,02

Κινούμενος Μέσος		ΖΕΥΓΟΣ19:ΣΟΓΙΕΛΑΙΟ/ ΣΙΤΑΡΙ		ΖΕΥΓΟΣ20:ΠΑΛΛΑΔΙΟ ΧΡΥΣΟΣ		ΖΕΥΓΟΣ21:ΠΑΛΛΑΔΙΟ/ ΧΡΥΣΟΣ	
		BUY&HOLD	**ACTIVE**	**BUY&HOLD**	**ACTIVE**	**BUY&HOLD**	**ACTIVE**
SMA(1)-LMA(50)	**RETURN**	0,01	0,03	0,02	-0,06	0,03	-0,11
	RISK	1,95	1,95	2,36	2,36	2,19	2,19
	NEGATIVE RET.%	0,48	0,49	0,50	0,50	0,49	0,51
	SHARPE RATIO	0,01	0,02	0,01	-0,03	0,01	-0,05
SMA(1)-LMA(150)	**ΑΠΟΔΟΣΗ**	0,01	0,03	0,02	-0,04	0,03	-0,13
	ΚΙΝΔΥΝΟΣ	1,95	1,95	2,36	2,36	2,19	2,19
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,46	0,47	0,48	0,48	0,47	0,50
	SHARPE RATIO	0,01	0,02	0,01	-0,02	0,01	-0,06
SMA(1)-LMA(300)	**ΑΠΟΔΟΣΗ**	0,01	0,05	0,02	-0,07	0,03	-0,12
	ΚΙΝΔΥΝΟΣ	1,95	1,95	2,36	2,36	2,19	2,19
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,43	0,44	0,45	0,46	0,44	0,48
	SHARPE RATIO	0,01	0,03	0,01	-0,03	0,01	-0,05
SMA(1)-LMA(500)	**ΑΠΟΔΟΣΗ**	0,01	0,02	0,02	-0,09	0,03	-0,10
	ΚΙΝΔΥΝΟΣ	1,95	1,95	2,36	2,36	2,19	2,19
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,40	0,41	0,41	0,43	0,41	0,43
	SHARPE RATIO	0,01	0,01	0,01	-0,04	0,01	-0,05

Κινούμενος Μέσος		ΖΕΥΓΟΣ22:ΦΥΣ.ΑΕΡΙΟ/ ΑΡΓ.ΠΕΤΡΕΛΑΙΟ		ΖΕΥΓΟΣ23:ΑΡΓΥΡΟΣ/ ΧΑΛΚΟΣ		ΖΕΥΓΟΣ24:ΧΡΥΣΟΣ/ ΧΑΛΚΟΣ	
		BUY&HOLD	**ACTIVE**	**BUY&HOLD**	**ACTIVE**	**BUY&HOLD**	**ACTIVE**
SMA(1)-LMA(50)	**RETURN**	0,11	0,13	0,03	0,08	0,01	0,06
	RISK	4,05	4,05	1,93	1,93	1,65	1,65
	NEGATIVE RET.%	0,49	0,48	0,49	0,47	0,50	0,46
	SHARPE RATIO	0,03	0,03	0,02	0,04	0,01	0,04
SMA(1)-LMA(150)	**ΑΠΟΔΟΣΗ**	0,11	0,17	0,03	0,03	0,01	0,04
	ΚΙΝΔΥΝΟΣ	4,05	4,05	1,93	1,93	1,65	1,65
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,47	0,46	0,47	0,47	0,49	0,46
	SHARPE RATIO	0,03	0,04	0,02	0,02	0,01	0,02
SMA(1)-LMA(300)	**ΑΠΟΔΟΣΗ**	0,11	0,12	0,03	0,03	0,01	-0,01
	ΚΙΝΔΥΝΟΣ	4,05	4,05	1,93	1,93	1,65	1,65
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,44	0,44	0,44	0,44	0,46	0,46
	SHARPE RATIO	0,03	0,03	0,02	0,02	0,01	-0,01
SMA(1)-LMA(500)	**ΑΠΟΔΟΣΗ**	0,11	0,06	0,03	0,02	0,01	-0,01
	ΚΙΝΔΥΝΟΣ	4,05	4,05	1,93	1,93	1,65	1,65
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,41	0,40	0,41	0,41	0,42	0,42
	SHARPE RATIO	0,03	0,01	0,02	0,01	0,01	-0,01

Κινούμενος Μέσος		ΖΕΥΓΟΣ25:ΧΡΥΣΟΣ/ ΠΕΤΡ.ΘΕΡΜΑΝΣΗΣ		ΖΕΥΓΟΣ26:ΣΟΓΙΕΛΑΙΟ/ ΒΑΜΒΑΚΙ		ΖΕΥΓΟΣ27:ΧΑΛΚΟΣ/ ΛΕΥΚΟΧΡΥΣΟΣ	
		BUY&HOLD	**ACTIVE**	**BUY&HOLD**	**ACTIVE**	**BUY&HOLD**	**ACTIVE**
SMA(1)-LMA(50)	**ΑΠΟΔΟΣΗ**	0,00	0,05	0,03	0,05	0,00	0,09
	ΚΙΝΔΥΝΟΣ	2,52	2,52	2,22	2,22	1,99	1,98
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ..%	0,51	0,48	0,49	0,49	0,49	0,47
	SHARPE RATIO	0,00	0,02	0,01	0,02	0,00	0,05
SMA(1)-LMA(150)	**ΑΠΟΔΟΣΗ**	0,00	0,01	0,03	0,06	0,00	0,02
	ΚΙΝΔΥΝΟΣ	2,52	2,52	2,22	2,22	1,99	1,99
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,49	0,47	0,47	0,46	0,48	0,46
	SHARPE RATIO	0,00	0,00	0,01	0,03	0,00	0,01
SMA(1)-LMA(300)	**ΑΠΟΔΟΣΗ**	0,00	0,03	0,03	0,08	0,00	0,03
	ΚΙΝΔΥΝΟΣ	2,52	2,52	2,22	2,22	1,99	1,99
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,46	0,44	0,44	0,44	0,45	0,44
	SHARPE RATIO	0,00	0,01	0,01	0,04	0,00	0,02
SMA(1)-LMA(500)	**ΑΠΟΔΟΣΗ**	0,00	0,07	0,03	0,03	0,00	0,02
	ΚΙΝΔΥΝΟΣ	2,52	2,52	2,22	2,22	1,99	1,99
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,42	0,40	0,41	0,40	0,41	0,41
	SHARPE RATIO	0,00	0,03	0,01	0,01	0,00	0,01

Κινούμενος Μέσος		ΖΕΥΓΟΣ28:ΚΑΡ.ΣΟΓΙΑΣ/ ΒΑΜΒΑΚΙ		ΖΕΥΓΟΣ29:ΧΡΥΣΟΣ/ ΑΡΓ.ΠΕΤΡΕΛΑΙΟ		ΖΕΥΓΟΣ30:ΠΑΛΛΑΔΙΟ/ ΧΑΛΚΟΣ	
		BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE	BUY&HOLD	ACTIVE
SMA(1)-LMA(50)	ΑΠΟΔΟΣΗ	0,05	0,06	0,00	0,07	0,04	0,08
	ΚΙΝΔΥΝΟΣ	2,32	2,32	2,42	2,42	2,57	2,57
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,47	0,47	0,51	0,48	0,49	0,50
	SHARPE RATIO	0,02	0,03	0,00	0,03	0,02	0,03
SMA(1)-LMA(150)	ΑΠΟΔΟΣΗ	0,05	0,06	0,00	0,03	0,04	-0,08
	ΚΙΝΔΥΝΟΣ	2,32	2,32	2,42	2,42	2,57	2,57
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,45	0,46	0,49	0,48	0,47	0,48
	SHARPE RATIO	0,02	0,03	0,00	0,01	0,02	-0,03
SMA(1)-LMA(300)	ΑΠΟΔΟΣΗ	0,05	0,04	0,00	0,05	0,04	-0,08
	ΚΙΝΔΥΝΟΣ	2,32	2,32	2,42	2,42	2,57	2,57
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,42	0,43	0,46	0,44	0,45	0,46
	SHARPE RATIO	0,02	0,02	0,00	0,02	0,02	-0,03
SMA(1)-LMA(500)	ΑΠΟΔΟΣΗ	0,05	0,05	0,00	0,06	0,04	-0,13
	ΚΙΝΔΥΝΟΣ	2,32	2,32	2,42	2,42	2,57	2,57
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,39	0,40	0,43	0,40	0,41	0,43
	SHARPE RATIO	0,02	0,02	0,00	0,02	0,02	-0,05

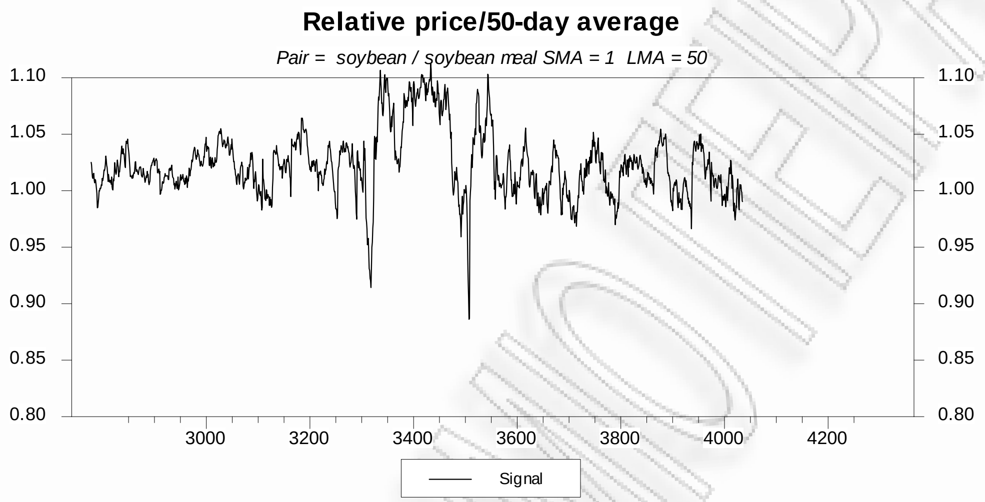
Κινούμενος Μέσος	ΖΕΥΓΟΣ31: ΑΡΓΥΡΟΣ/ ΚΑΚΑΟ		
		BUY&HOLD	ACTIVE
SMA(1)-LMA(50)	RETURN	0,04	0,08
	RISK	2,32	2,32
	NEGATIVE RET.%	0,48	0,47
	SHARPE RATIO	0,02	0,03
SMA(1)-LMA(150)	ΑΠΟΔΟΣΗ	0,04	0,01
	ΚΙΝΔΥΝΟΣ	2,32	2,32
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,46	0,46
	SHARPE RATIO	0,02	0,00
SMA(1)-LMA(300)	ΑΠΟΔΟΣΗ	0,04	-0,03
	ΚΙΝΔΥΝΟΣ	2,32	2,32
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,44	0,44
	SHARPE RATIO	0,02	-0,01
SMA(1)-LMA(500)	ΑΠΟΔΟΣΗ	0,04	-0,03
	ΚΙΝΔΥΝΟΣ	2,32	2,32
	ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	0,40	0,41
	SHARPE RATIO	0,02	-0,01

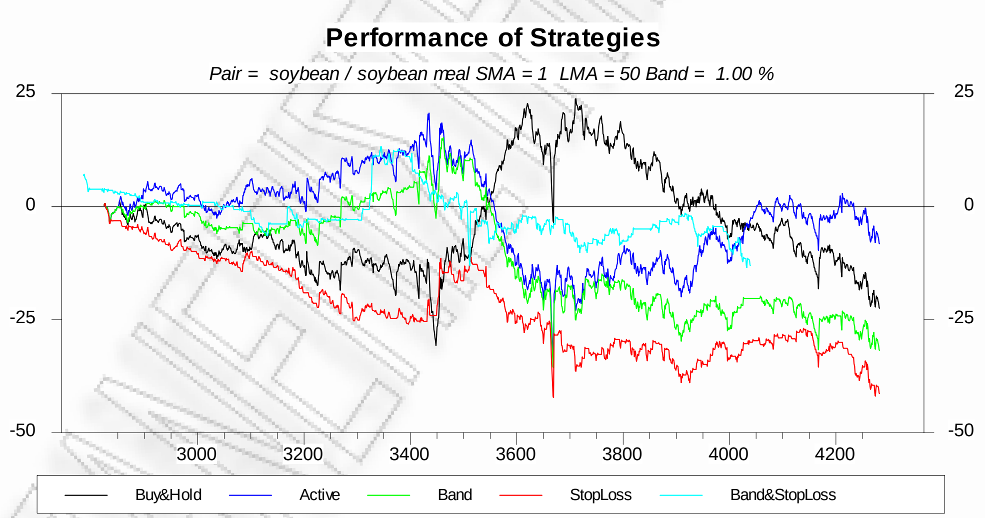
ΠΑΡΑΡΤΗΜΑ 3

1. ΠΙΝΑΚΕΣ Out of Sample (2773- 4284, 1512 obs, dated 2006-2011)

1.1. 1-50, band 1%

-1-





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -22.75380613123 -8.51791202055 -32.08362856426 -41.65705064076 -23.08742414364

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -22.75380613123 -8.51791202055 -32.08362856426 -41.65705064076 -23.08742414364

Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 100.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 173.0

Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -62.08 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -74.99 %
Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 100.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 173.0

Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -62.08 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -74.99 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.90 15.59 -1.43 53.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.46 15.59 -1.45 50.89 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -0.41 14.43 -1.30 38.75 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.89 11.82 -0.95 25.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.89 11.12 -0.78 18.79 %

Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -22.75380613123 -8.51791202055 -32.08362856426 -41.65705064076 -23.08742414364

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 -22.75380613123 -8.51791202055 -32.08362856426 -41.65705064076 -23.08742414364

Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 100.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 173.0

Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -62.08 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -74.99 %
Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 100.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 173.0

Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -62.08 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -74.99 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.90 15.59 -1.43 53.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.46 15.59 -1.45 50.89 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -0.41 14.43 -1.30 38.75 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.89 11.82 -0.95 25.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.89 11.12 -0.78 18.79 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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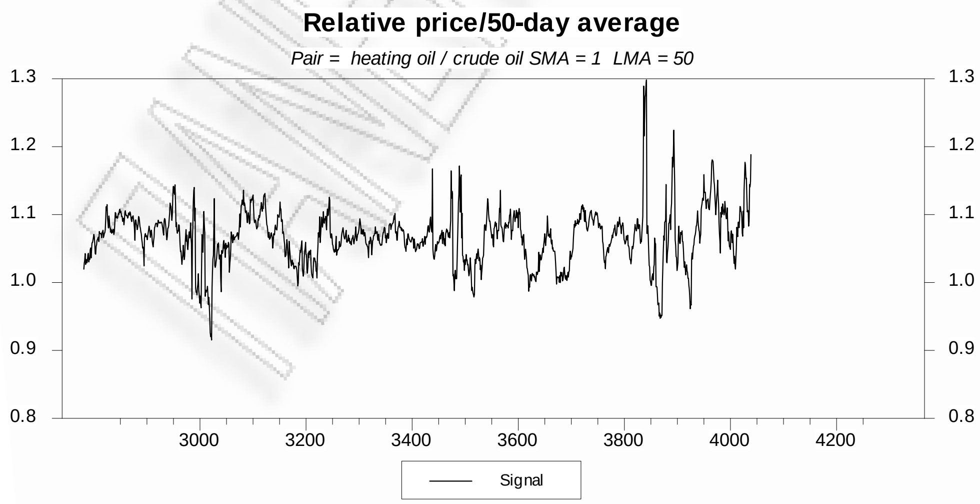

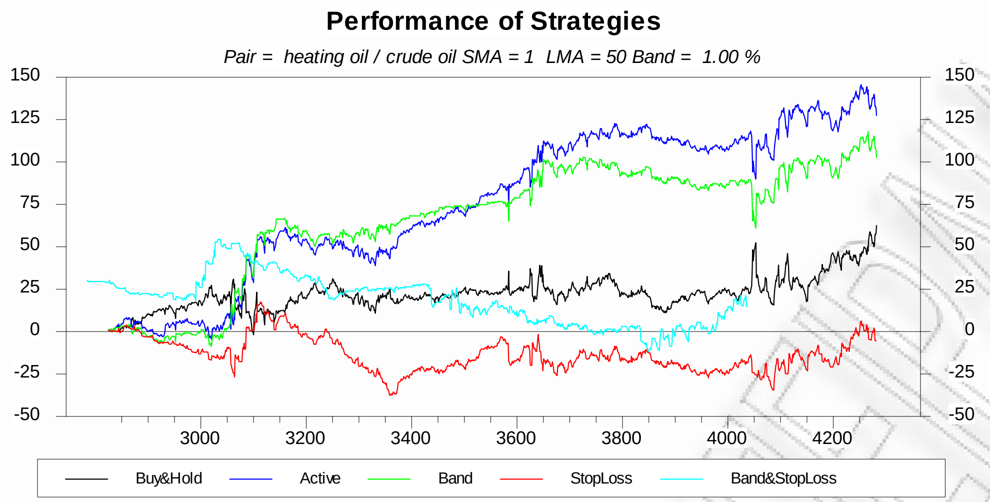

Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -22.75380613123 -8.51791202055 -32.08362856426 -41.65705064076 -23.08742414364

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -22.75380613123 -8.51791202055 -32.08362856426 -41.65705064076 -23.08742414364

Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 100.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 173.0

Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -62.08 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -74.99 %
Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 100.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 173.0

Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -62.08 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -74.99 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.90 15.59 -1.43 53.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.46 15.59 -1.45 50.89 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -0.41 14.43 -1.30 38.75 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.89 11.82 -0.95 25.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.89 11.12 -0.78 18.79 %

Pair = heating oil / crude oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 62.14342245327 126.5853701783 101.9244706169 -6.00940621754 -17.38549747982

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 62.14342245327 126.5853701783 101.9244706169 -6.00940621754 -17.38549747982

Nr.of Switches of Active_Performance = 148.0
Nr.of Switches of Band_Performance = 114.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 196.0

Net Performance of BuyHold_Performance = 62.14
Net Performance of Active_Performance = 82.19 %
Net Performance of Band_Performance = 67.72 %
Net Performance of StopLoss_Performance = -40.81 %
Net Performance of Band&StopLoss_Performance = -76.19 %
Nr.of Switches of Active_Performance = 148.0
Nr.of Switches of Band_Performance = 114.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 196.0

Net Performance of BuyHold_Performance = 62.14
Net Performance of Active_Performance = 82.19 %
Net Performance of Band_Performance = 67.72 %
Net Performance of StopLoss_Performance = -40.81 %
Net Performance of Band&StopLoss_Performance = -76.19 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 10.66 30.12 -2.16 47.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 21.71 30.10 -2.15 49.52 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 23.29 28.37 -1.99 38.13 %

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 4.89 23.26 -1.83 39.78 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 7.05 21.06 -1.67 28.53 %
I1. Expected Instruction - PAI Is Not Recognizable As One

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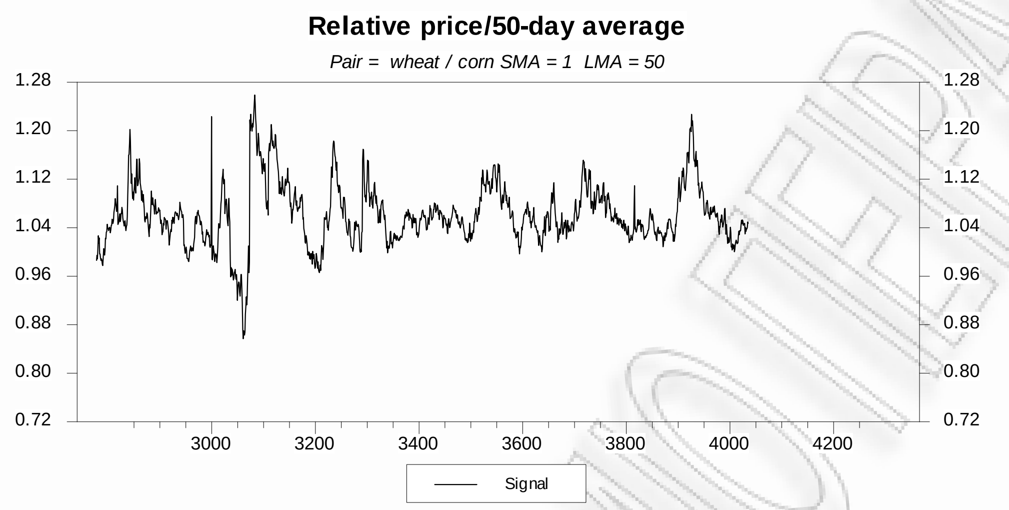
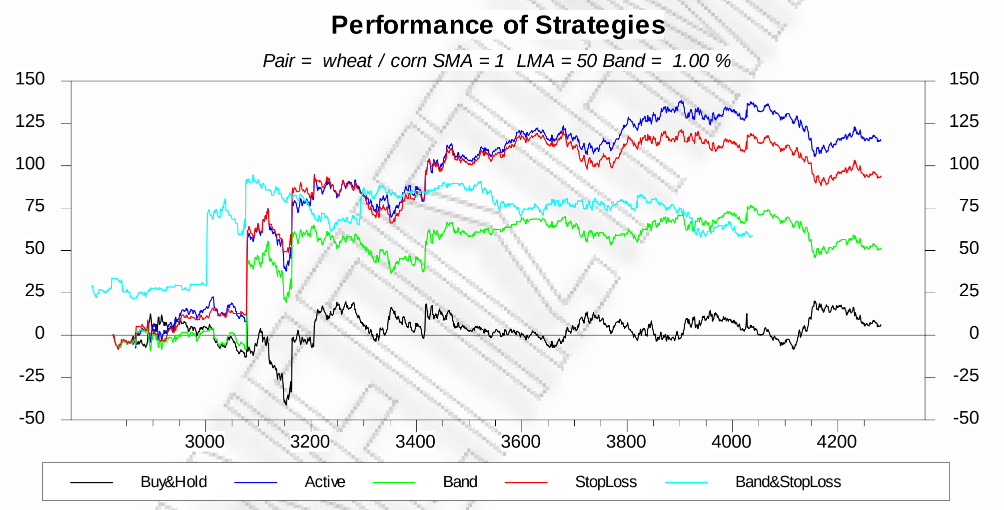




Pair = wheat / corn
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 5.08577755566 114.3838734375 50.34484150252 92.8373865732 33.47092450545

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 5.08577755566 114.3838734375 50.34484150252 92.8373865732 33.47092450545

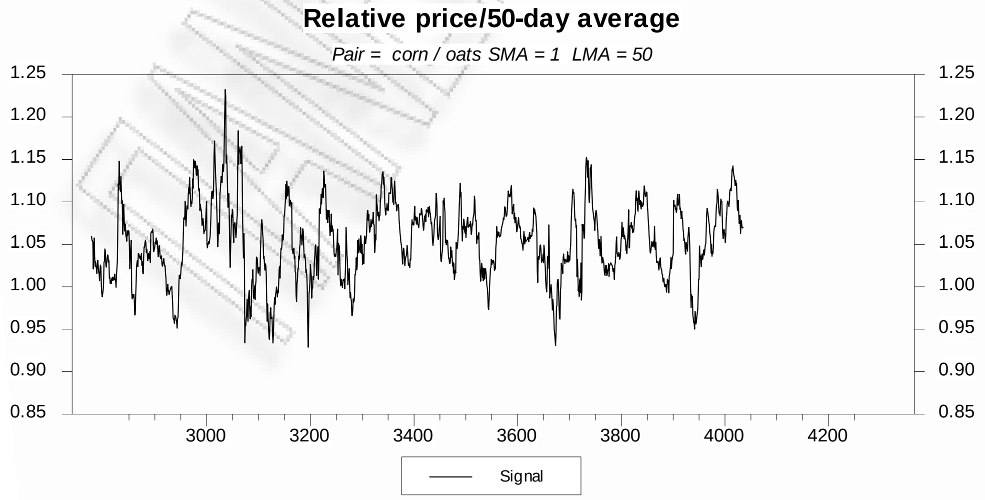
Nr.of Switches of Active_Performance = 117.0
Nr.of Switches of Band_Performance = 103.0
Nr.of Switches of StopLoss_Performance = 101.0
Nr.of Switches of Band&StopLoss_performance = 185.0

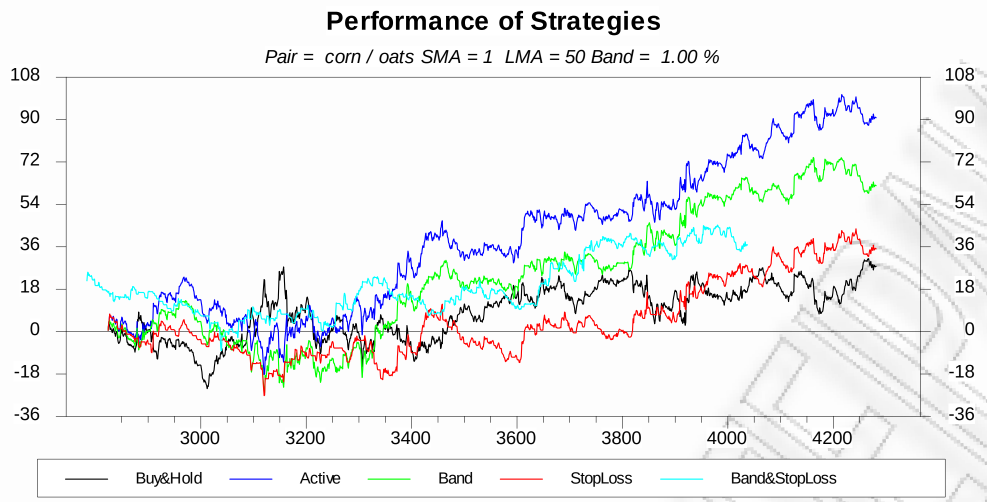
Net Performance of BuyHold_Performance = 5.09
Net Performance of Active_Performance = 79.28 %
Net Performance of Band_Performance = 19.44 %
Net Performance of StopLoss_Performance = 62.54 %
Net Performance of Band&StopLoss_Performance = -22.03 %
Nr.of Switches of Active_Performance = 117.0
Nr.of Switches of Band_Performance = 103.0
Nr.of Switches of StopLoss_Performance = 101.0
Nr.of Switches of Band&StopLoss_performance = 185.0

Net Performance of BuyHold_Performance = 5.09
Net Performance of Active_Performance = 79.28 %
Net Performance of Band_Performance = 19.44 %
Net Performance of StopLoss_Performance = 62.54 %
Net Performance of Band&StopLoss_Performance = -22.03 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.87 30.39 -2.13 51.17 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 19.61 30.37 -2.16 49.45 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 13.88 29.03 -2.07 40.74 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.06 28.41 -1.93 40.74 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 15.20 27.00 -1.76 32.37 %

-9-





Pair = corn / oats
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 27.29547045950 90.3770345278 61.53232682358 34.71492168889 17.87229223042

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 27.29547045950 90.3770345278 61.53232682358 34.71492168889 17.87229223042

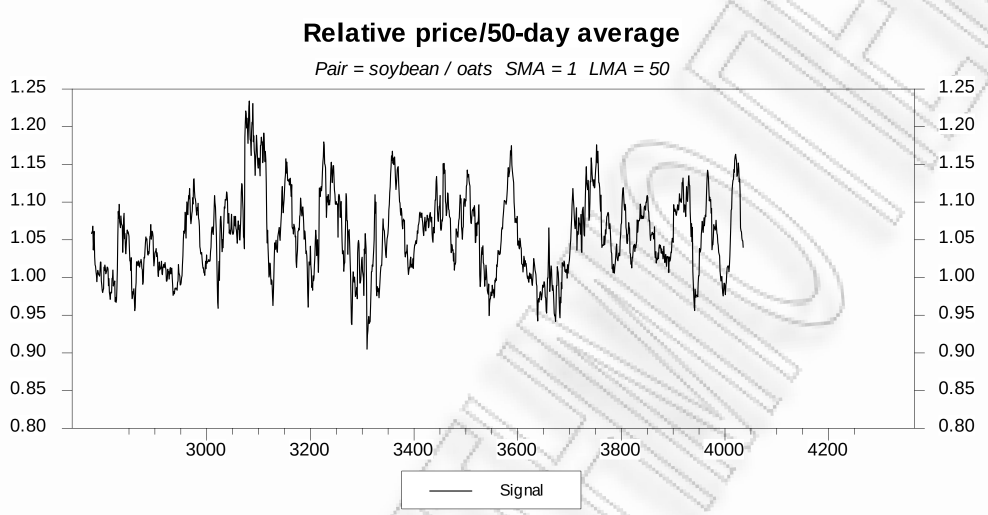
Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 90.0
Nr.of Switches of StopLoss_Performance = 157.0
Nr.of Switches of Band&StopLoss_performance = 216.0

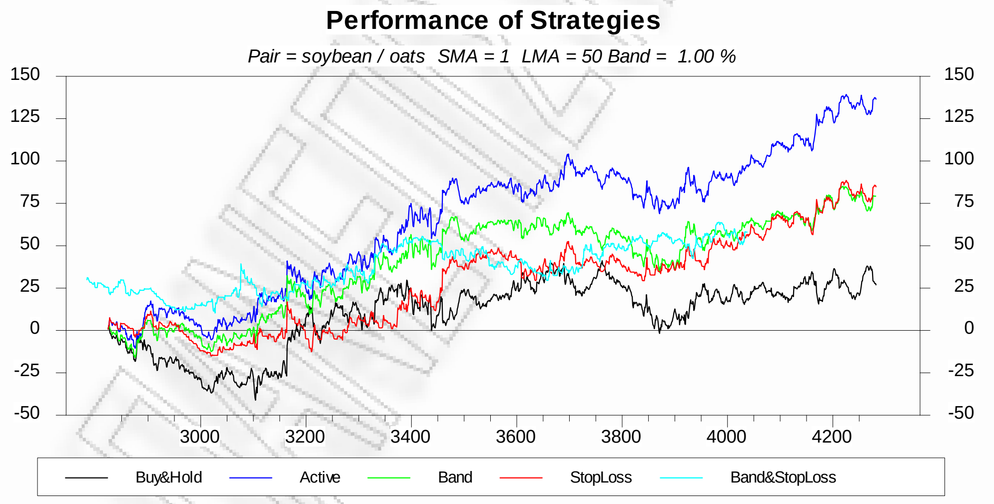
Net Performance of BuyHold_Performance = 27.30
Net Performance of Active_Performance = 57.38 %
Net Performance of Band_Performance = 34.53 %
Net Performance of StopLoss_Performance = -12.39 %
Net Performance of Band&StopLoss_Performance = -46.93 %
Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 90.0
Nr.of Switches of StopLoss_Performance = 157.0
Nr.of Switches of Band&StopLoss_performance = 216.0

Net Performance of BuyHold_Performance = 27.30
Net Performance of Active_Performance = 57.38 %
Net Performance of Band_Performance = 34.53 %
Net Performance of StopLoss_Performance = -12.39 %
Net Performance of Band&StopLoss_Performance = -46.93 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 4.68 24.88 -2.22 48.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 15.50 24.86 -2.16 48.56 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.13 23.08 -2.01 41.98 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 13.98 19.21 -1.67 32.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 14.12 17.01 -1.49 26.41 %

-14-





Pair = soybean / oats
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 26.14126275778 135.6713909335 78.67695901217 83.98442870704 32.97684426600

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 26.14126275778 135.6713909335 78.67695901217 83.98442870704 32.97684426600

Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 85.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 194.0

Net Performance of BuyHold_Performance = 26.14
Net Performance of Active_Performance = 102.97 %
Net Performance of Band_Performance = 53.18 %
Net Performance of StopLoss_Performance = 43.48 %
Net Performance of Band&StopLoss_Performance = -25.22 %
Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 85.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 194.0

Net Performance of BuyHold_Performance = 26.14
Net Performance of Active_Performance = 102.97 %
Net Performance of Band_Performance = 53.18 %
Net Performance of StopLoss_Performance = 43.48 %
Net Performance of Band&StopLoss_Performance = -25.22 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 4.48 29.17 -2.73 50.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 23.26 29.14 -2.46 50.14 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 17.81 27.53 -2.37 44.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.29 24.40 -2.09 36.49 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 15.58 22.58 -1.86 31.21 %

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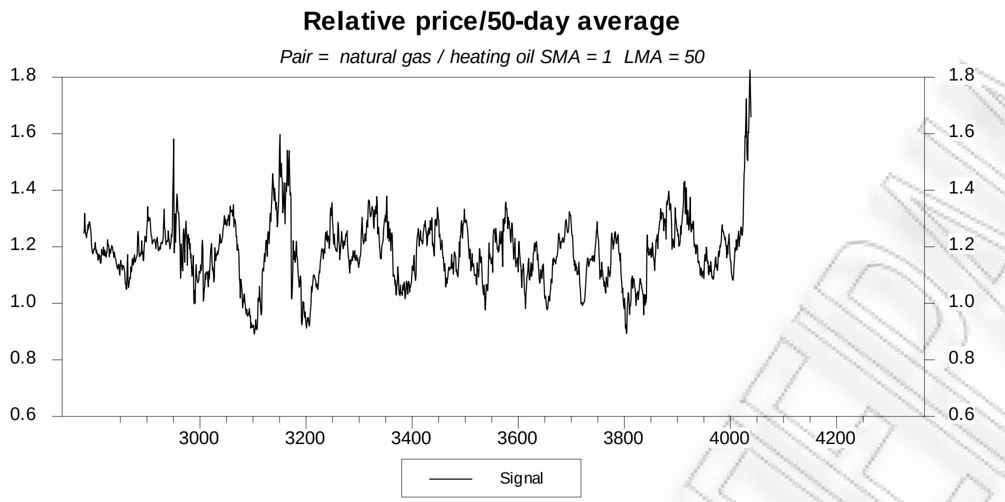

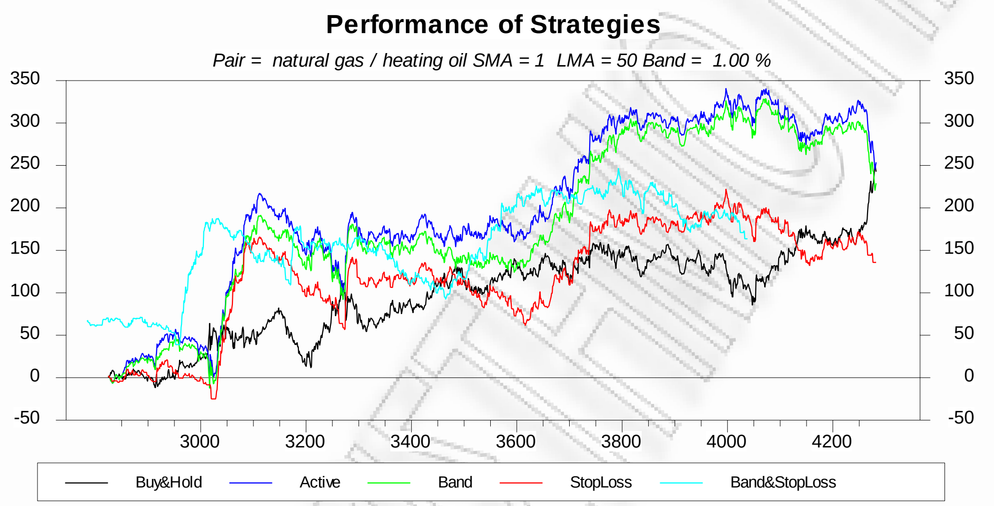

Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 241.5044962092 252.4918293938 227.8609185746 134.6307429159 112.9998320966

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 241.5044962092 252.4918293938 227.8609185746 134.6307429159 112.9998320966

Nr.of Switches of Active_Performance = 129.0
Nr.of Switches of Band_Performance = 72.0
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 190.0

Net Performance of BuyHold_Performance = 241.50
Net Performance of Active_Performance = 213.79 %
Net Performance of Band_Performance = 206.26 %
Net Performance of StopLoss_Performance = 95.93 %
Net Performance of Band&StopLoss_Performance = 56.00 %
Nr.of Switches of Active_Performance = 129.0
Nr.of Switches of Band_Performance = 72.0
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 190.0

Net Performance of BuyHold_Performance = 241.50
Net Performance of Active_Performance = 213.79 %
Net Performance of Band_Performance = 206.26 %
Net Performance of StopLoss_Performance = 95.93 %
Net Performance of Band&StopLoss_Performance = 56.00 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 41.41 65.43 -5.58 49.11 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 43.29 65.42 -5.62 48.63 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 42.72 63.30 -5.50 45.54 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 29.67 56.52 -5.22 38.96 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 29.10 54.05 -4.92 35.87 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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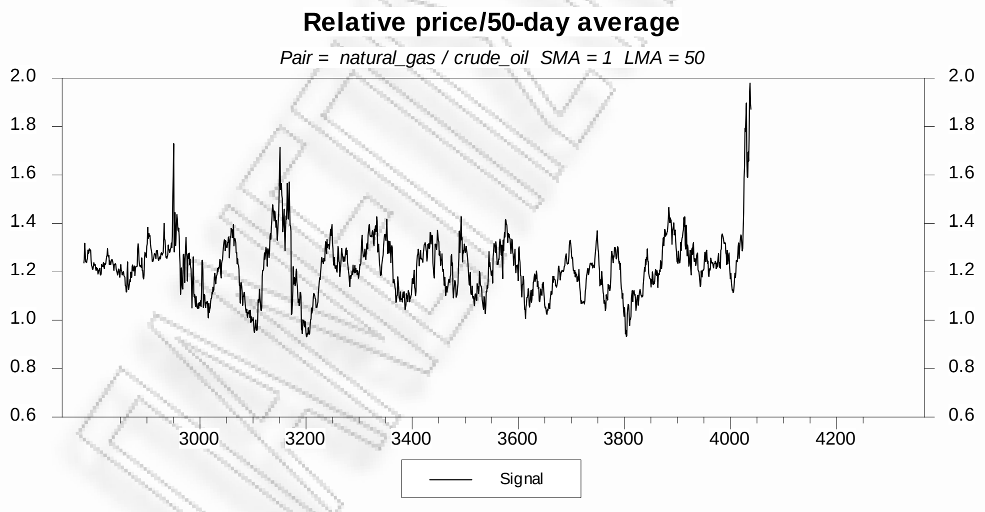

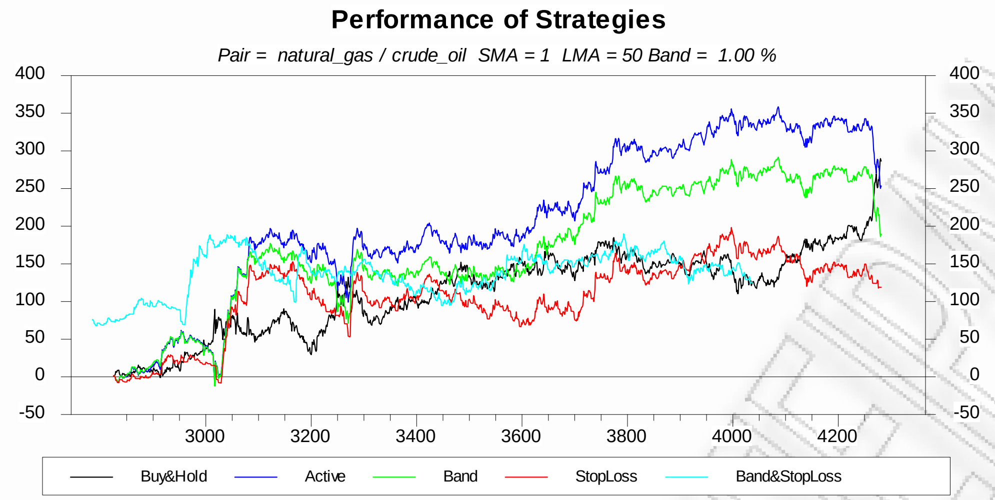

Pair = natural_gas / crude_oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 285.7978596070 251.5410608265 187.5806157257 117.6312892796 57.1706727598

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 285.7978596070 251.5410608265 187.5806157257 117.6312892796 57.1706727598

Nr.of Switches of Active_Performance = 125.0
Nr.of Switches of Band_Performance = 67.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 192.0

Net Performance of BuyHold_Performance = 285.80
Net Performance of Active_Performance = 214.04 %
Net Performance of Band_Performance = 167.48 %
Net Performance of StopLoss_Performance = 77.13 %
Net Performance of Band&StopLoss_Performance = -0.43 %
Nr.of Switches of Active_Performance = 125.0
Nr.of Switches of Band_Performance = 67.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 192.0

Net Performance of BuyHold_Performance = 285.80
Net Performance of Active_Performance = 214.04 %
Net Performance of Band_Performance = 167.48 %
Net Performance of StopLoss_Performance = 77.13 %
Net Performance of Band&StopLoss_Performance = -0.43 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 49.01 67.67 -6.05 47.87 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 43.13 67.68 -6.05 49.11 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 35.56 66.15 -5.99 46.16 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 27.06 57.88 -5.38 38.89 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 19.63 56.08 -5.36 36.15 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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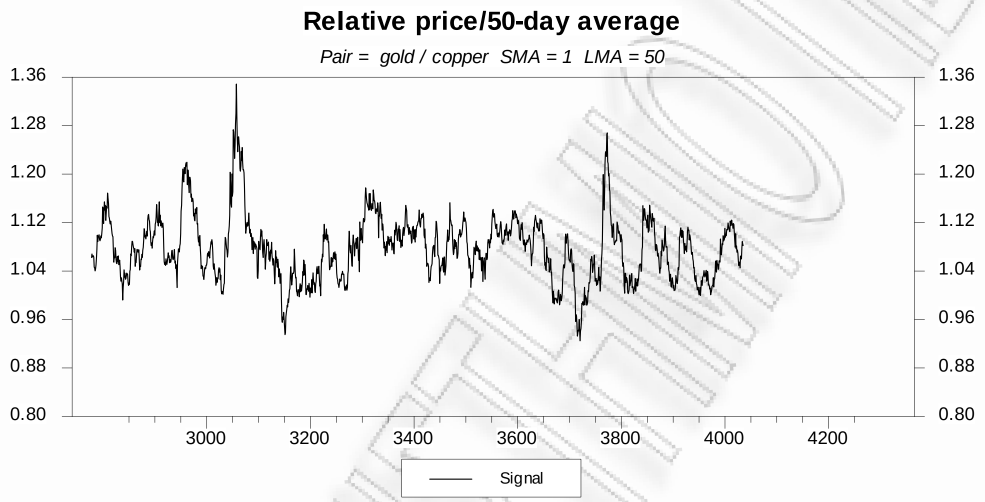

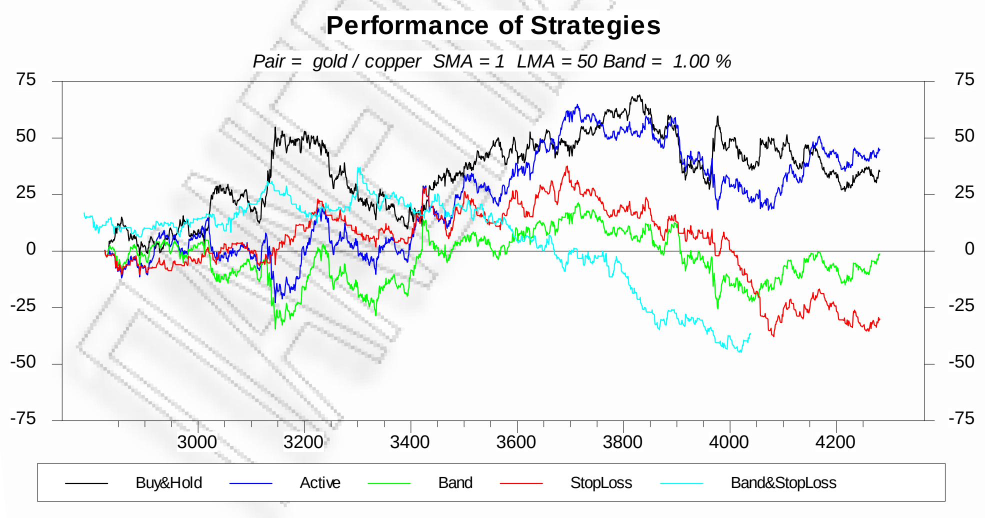

Pair = gold / copper
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 34.65260510053 44.59914374287 -1.47928016445 -30.32274763951 -61.98432330652

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 34.65260510053 44.59914374287 -1.47928016445 -30.32274763951 -61.98432330652

Nr.of Switches of Active_Performance = 120.0
Nr.of Switches of Band_Performance = 96.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 244.0

Net Performance of BuyHold_Performance = 34.65
Net Performance of Active_Performance = 8.60 %
Net Performance of Band_Performance = -30.28 %
Net Performance of StopLoss_Performance = -89.72 %
Net Performance of Band&StopLoss_Performance = -135.18 %
Nr.of Switches of Active_Performance = 120.0
Nr.of Switches of Band_Performance = 96.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 244.0

Net Performance of BuyHold_Performance = 34.65
Net Performance of Active_Performance = 8.60 %
Net Performance of Band_Performance = -30.28 %
Net Performance of StopLoss_Performance = -89.72 %
Net Performance of Band&StopLoss_Performance = -135.18 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 5.94 26.70 -2.61 51.30 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 7.65 26.70 -2.68 46.78 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 4.63 25.03 -2.54 41.56 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 4.93 20.25 -2.21 28.94 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 1.87 18.47 -2.00 24.62 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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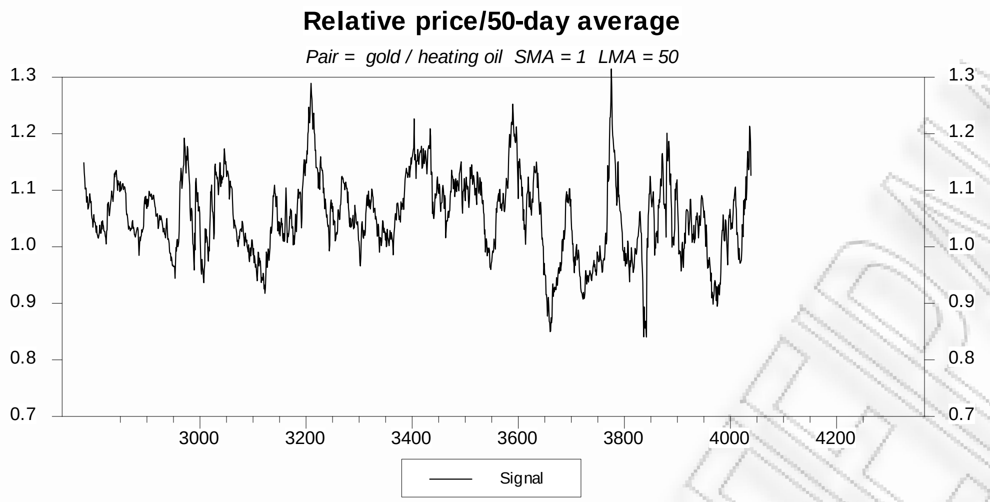

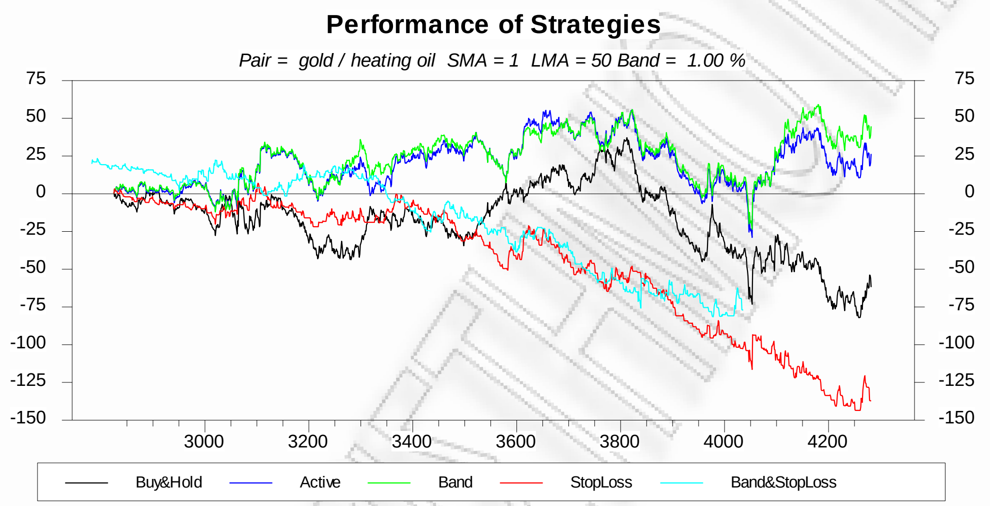

Pair = gold / heating oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -62.48661272308 25.74176625335 43.99742357673 -137.8432287733 -113.1683232175

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -62.48661272308 25.74176625335 43.99742357673 -137.8432287733 -113.1683232175

Nr.of Switches of Active_Performance = 107.0
Nr.of Switches of Band_Performance = 76.0
Nr.of Switches of StopLoss_Performance = 208.0
Nr.of Switches of Band&StopLoss_performance = 249.0

Net Performance of BuyHold_Performance = -62.49
Net Performance of Active_Performance = -6.36 %
Net Performance of Band_Performance = 21.20 %
Net Performance of StopLoss_Performance = -200.24 %
Net Performance of Band&StopLoss_Performance = -187.87 %
Nr.of Switches of Active_Performance = 107.0
Nr.of Switches of Band_Performance = 76.0
Nr.of Switches of StopLoss_Performance = 208.0
Nr.of Switches of Band&StopLoss_performance = 249.0

Net Performance of BuyHold_Performance = -62.49
Net Performance of Active_Performance = -6.36 %
Net Performance of Band_Performance = 21.20 %
Net Performance of StopLoss_Performance = -200.24 %
Net Performance of Band&StopLoss_Performance = -187.87 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.71 38.48 -3.54 52.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 4.41 38.49 -3.51 51.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 11.40 37.32 -3.42 46.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -12.99 27.89 -2.86 28.40 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -6.65 26.37 -2.60 23.94 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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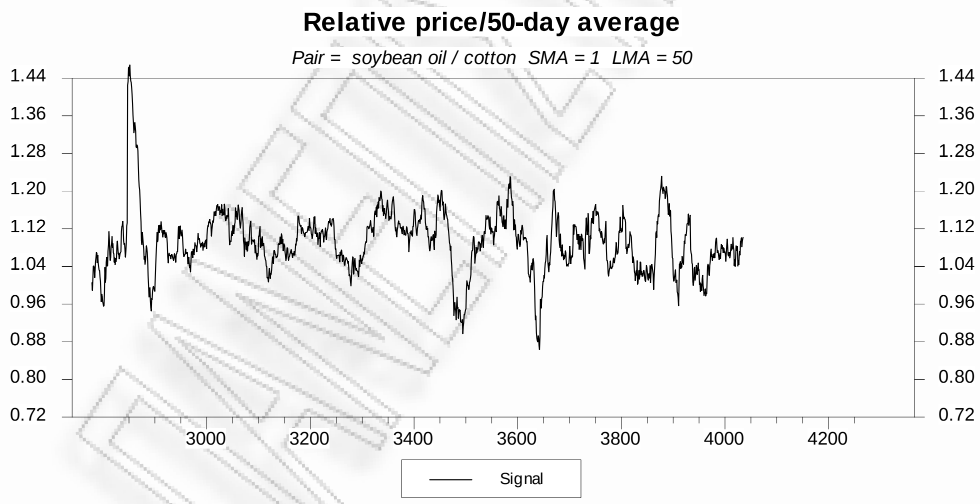

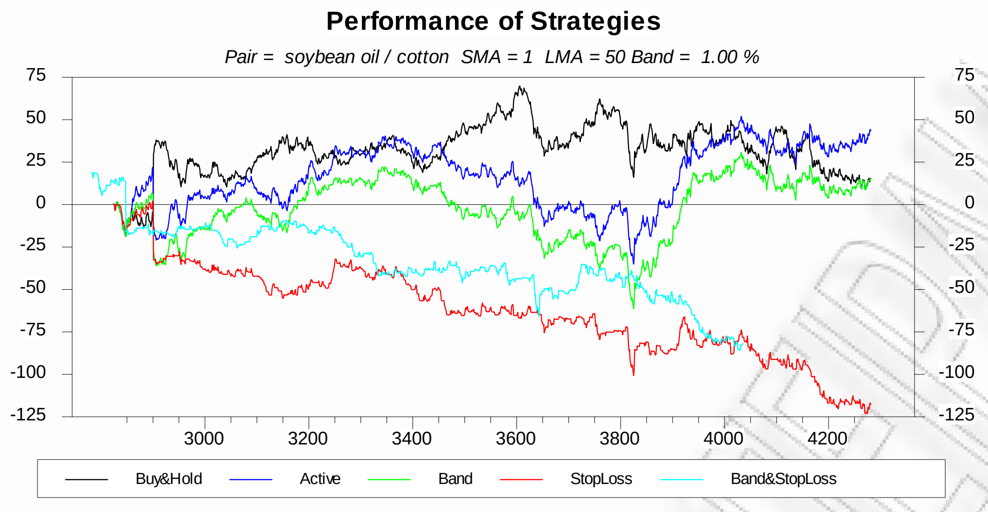

Pair = soybean oil / cotton
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 15.01956577418 42.72550071733 14.40641435988 -118.4214296925 -117.8804004969

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 15.01956577418 42.72550071733 14.40641435988 -118.4214296925 -117.8804004969

Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 90.0
Nr.of Switches of StopLoss_Performance = 197.0
Nr.of Switches of Band&StopLoss_performance = 233.0

Net Performance of BuyHold_Performance = 15.02
Net Performance of Active_Performance = 6.13 %
Net Performance of Band_Performance = -12.59 %
Net Performance of StopLoss_Performance = -177.52 %
Net Performance of Band&StopLoss_Performance = -187.78 %
Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 90.0
Nr.of Switches of StopLoss_Performance = 197.0
Nr.of Switches of Band&StopLoss_performance = 233.0

Net Performance of BuyHold_Performance = 15.02
Net Performance of Active_Performance = 6.13 %
Net Performance of Band_Performance = -12.59 %
Net Performance of StopLoss_Performance = -177.52 %
Net Performance of Band&StopLoss_Performance = -187.78 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 2.58 31.67 -2.86 50.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 7.33 31.67 -2.80 49.73 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 7.05 30.50 -2.69 43.62 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -10.22 25.36 -2.28 28.46 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -8.28 24.28 -1.96 23.59 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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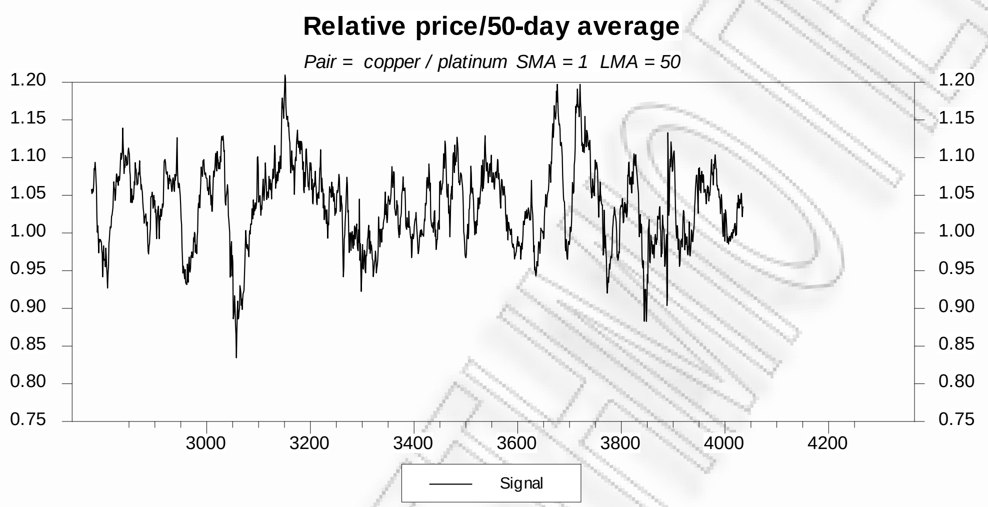
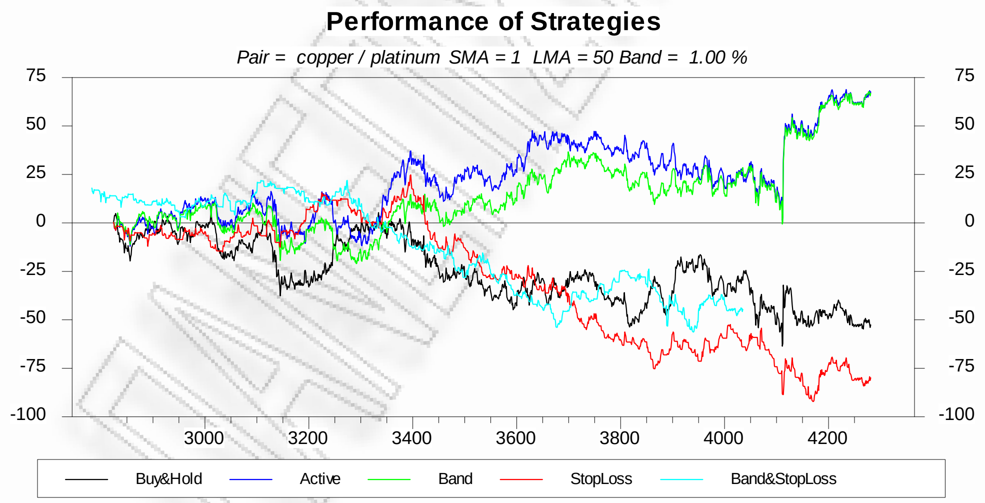




Pair = copper / platinum
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -53.05730878916 67.16306795248 66.36607271707 -80.37647090664 -72.88845844788

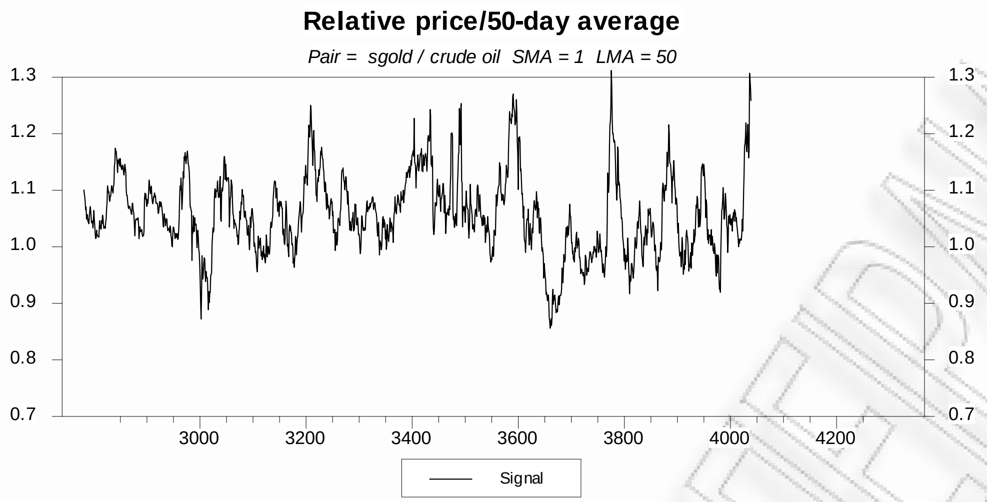
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -53.05730878916 67.16306795248 66.36607271707 -80.37647090664 -72.88845844788

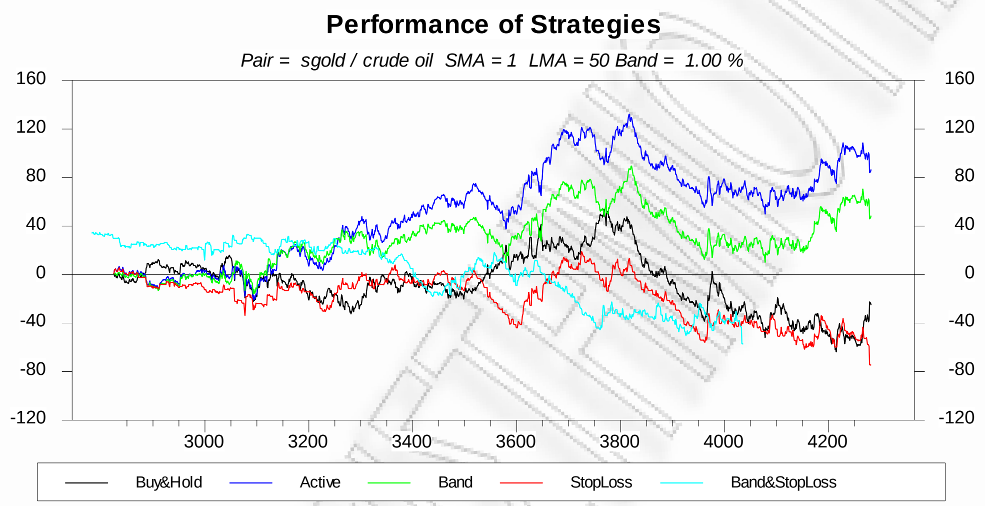
Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 103.0
Nr.of Switches of StopLoss_Performance = 205.0
Nr.of Switches of Band&StopLoss_performance = 255.0

Net Performance of BuyHold_Performance = -53.06
Net Performance of Active_Performance = 30.56 %
Net Performance of Band_Performance = 35.47 %
Net Performance of StopLoss_Performance = -141.88 %
Net Performance of Band&StopLoss_Performance = -149.39 %
Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 103.0
Nr.of Switches of StopLoss_Performance = 205.0
Nr.of Switches of Band&StopLoss_performance = 255.0

Net Performance of BuyHold_Performance = -53.06
Net Performance of Active_Performance = 30.56 %
Net Performance of Band_Performance = 35.47 %
Net Performance of StopLoss_Performance = -141.88 %
Net Performance of Band&StopLoss_Performance = -149.39 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -9.10 33.60 -3.39 51.71 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 11.52 33.60 -3.25 47.74 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 16.68 31.93 -3.09 41.36 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -3.29 22.97 -2.49 28.33 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 0.62 20.91 -2.24 23.05 %
I2. Expected Instruction Here
-29-





Pair = sgold / crude oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -26.05410943365 85.8979816646 47.84358283654 -75.35648881185 -106.7210829701

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -26.05410943365 85.8979816646 47.84358283654 -75.35648881185 -106.7210829701

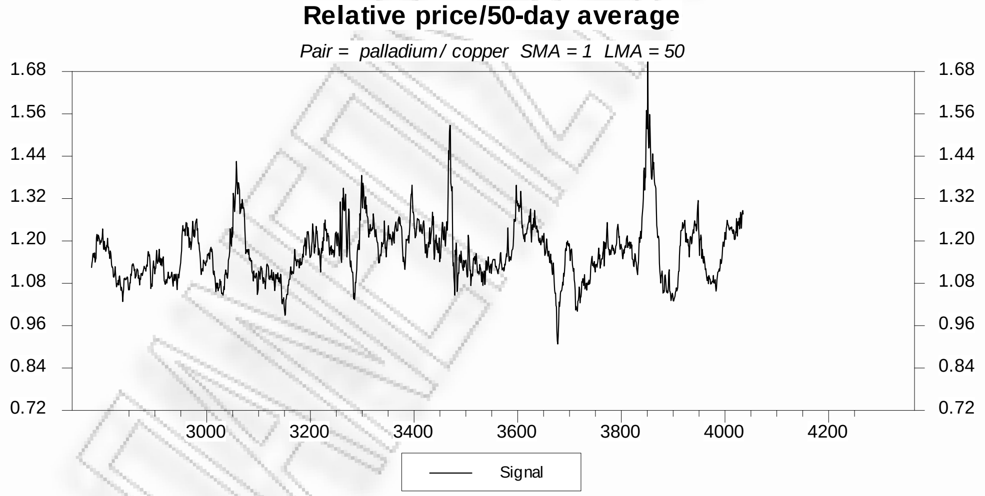
Nr.of Switches of Active_Performance = 116.0
Nr.of Switches of Band_Performance = 91.0
Nr.of Switches of StopLoss_Performance = 191.0
Nr.of Switches of Band&StopLoss_performance = 253.0

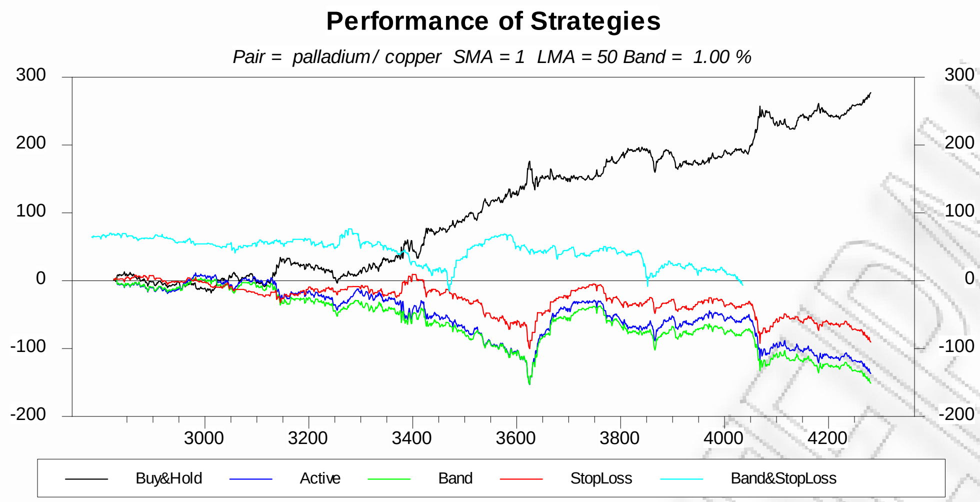
Net Performance of BuyHold_Performance = -26.05
Net Performance of Active_Performance = 51.10 %
Net Performance of Band_Performance = 20.54 %
Net Performance of StopLoss_Performance = -132.66 %
Net Performance of Band&StopLoss_Performance = -182.62 %
Nr.of Switches of Active_Performance = 116.0
Nr.of Switches of Band_Performance = 91.0
Nr.of Switches of StopLoss_Performance = 191.0
Nr.of Switches of Band&StopLoss_performance = 253.0

Net Performance of BuyHold_Performance = -26.05
Net Performance of Active_Performance = 51.10 %
Net Performance of Band_Performance = 20.54 %
Net Performance of StopLoss_Performance = -132.66 %
Net Performance of Band&StopLoss_Performance = -182.62 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -4.47 38.75 -3.70 52.81 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 14.73 38.74 -3.70 49.18 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 12.88 36.94 -3.56 43.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -3.15 31.25 -3.26 30.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -5.28 29.01 -3.02 26.13 %

-30-





Pair = palladium / copper
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 275.0837615824 -137.6960481094 -152.0230963107 -91.3159244260 -81.44885004813

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 275.0837615824 -137.6960481094 -152.0230963107 -91.3159244260 -81.44885004813

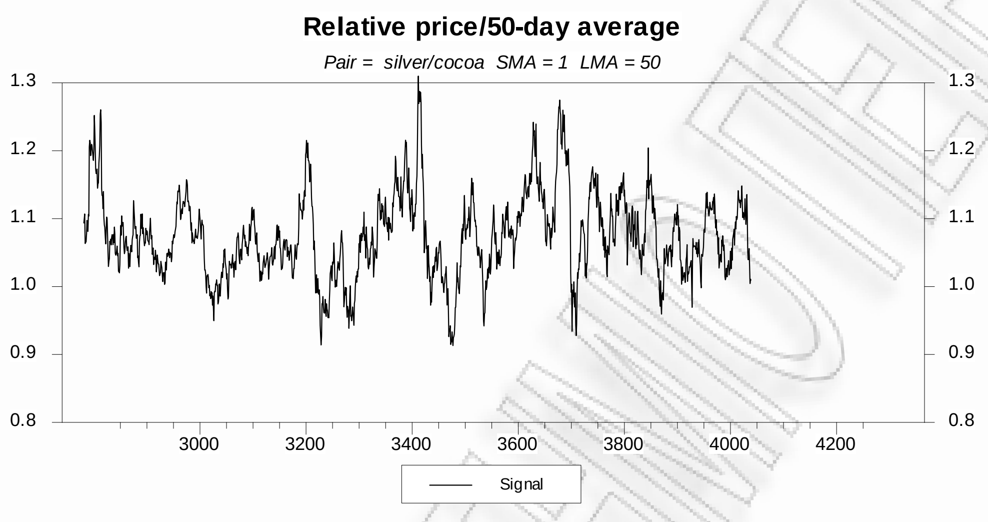
Nr.of Switches of Active_Performance = 91.0
Nr.of Switches of Band_Performance = 71.0
Nr.of Switches of StopLoss_Performance = 180.0
Nr.of Switches of Band&StopLoss_performance = 177.0

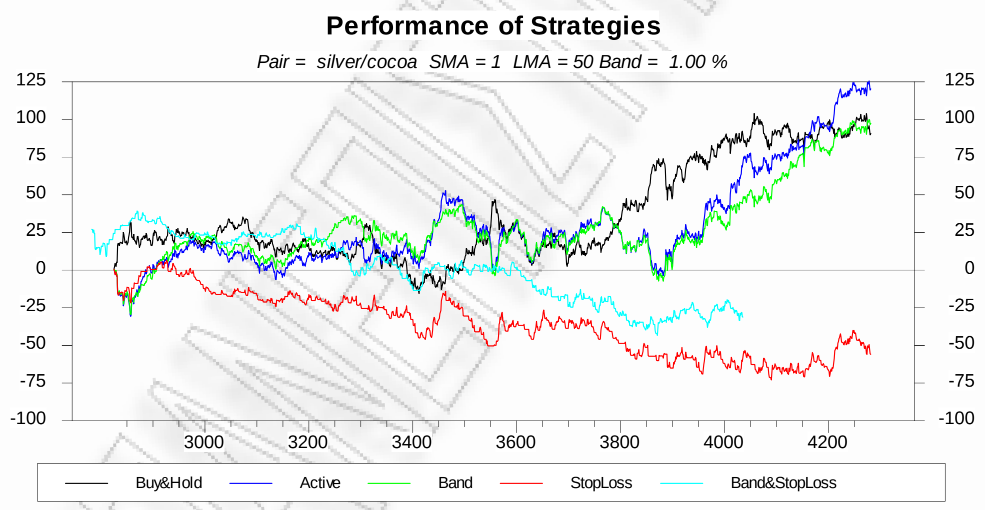
Net Performance of BuyHold_Performance = 275.08
Net Performance of Active_Performance = -165.00 %
Net Performance of Band_Performance = -173.32 %
Net Performance of StopLoss_Performance = -145.32 %
Net Performance of Band&StopLoss_Performance = -134.55 %
Nr.of Switches of Active_Performance = 91.0
Nr.of Switches of Band_Performance = 71.0
Nr.of Switches of StopLoss_Performance = 180.0
Nr.of Switches of Band&StopLoss_performance = 177.0

Net Performance of BuyHold_Performance = 275.08
Net Performance of Active_Performance = -165.00 %
Net Performance of Band_Performance = -173.32 %
Net Performance of StopLoss_Performance = -145.32 %
Net Performance of Band&StopLoss_Performance = -134.55 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 47.17 42.27 -3.42 46.36 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -23.61 42.35 -4.08 51.58 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -22.47 41.42 -3.98 47.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -6.45 35.43 -3.30 32.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -4.91 35.22 -3.28 31.21 %

-31-





Pair = silver/cocoa
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 89.6554481680 119.3414069958 96.47440059326 -56.50381452104 -68.03668863115

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 89.6554481680 119.3414069958 96.47440059326 -56.50381452104 -68.03668863115

Nr.of Switches of Active_Performance = 132.0
Nr.of Switches of Band_Performance = 115.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 261.0

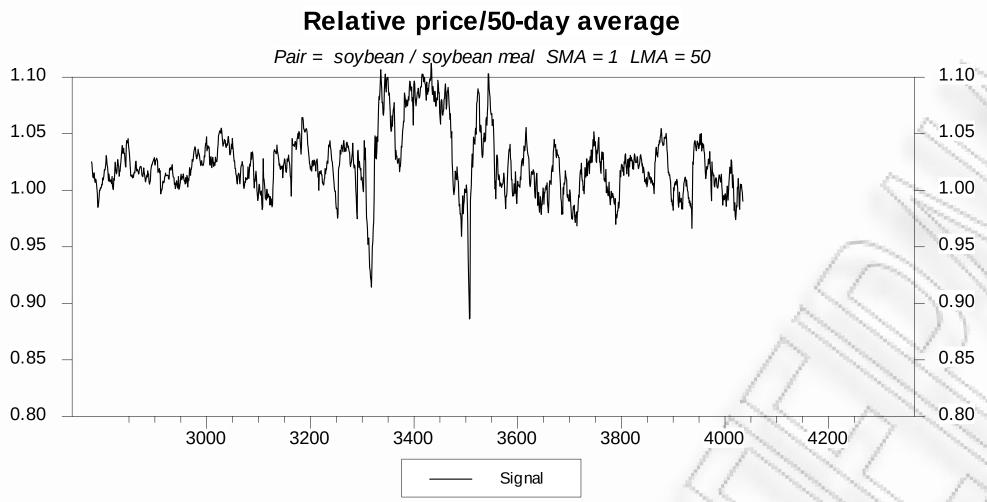
Net Performance of BuyHold_Performance = 89.66
Net Performance of Active_Performance = 79.74 %
Net Performance of Band_Performance = 61.97 %
Net Performance of StopLoss_Performance = -115.90 %
Net Performance of Band&StopLoss_Performance = -146.34 %
Nr.of Switches of Active_Performance = 132.0
Nr.of Switches of Band_Performance = 115.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 261.0

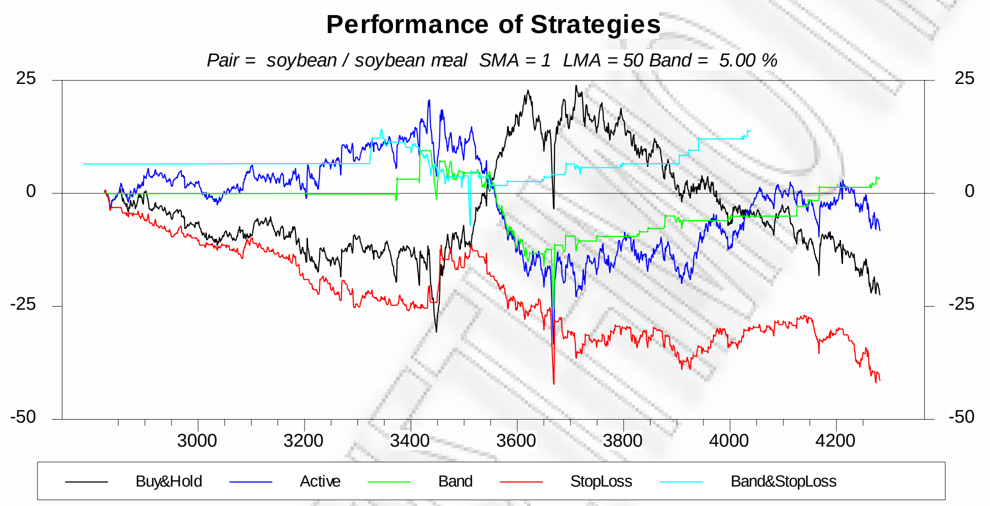
Net Performance of BuyHold_Performance = 89.66
Net Performance of Active_Performance = 79.74 %
Net Performance of Band_Performance = 61.97 %
Net Performance of StopLoss_Performance = -115.90 %
Net Performance of Band&StopLoss_Performance = -146.34 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 15.37 34.10 -3.22 48.42 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 20.46 34.09 -3.35 47.05 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 22.46 32.21 -3.23 40.33 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 0.45 25.76 -2.83 29.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 1.76 23.36 -2.70 22.91 %

1.2. **1-50, band 5%**

-1-





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -22.75380613123 -8.51791202055 3.11443177676 -41.65705064076 8.12717208005

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -22.75380613123 -8.51791202055 3.11443177676 -41.65705064076 8.12717208005

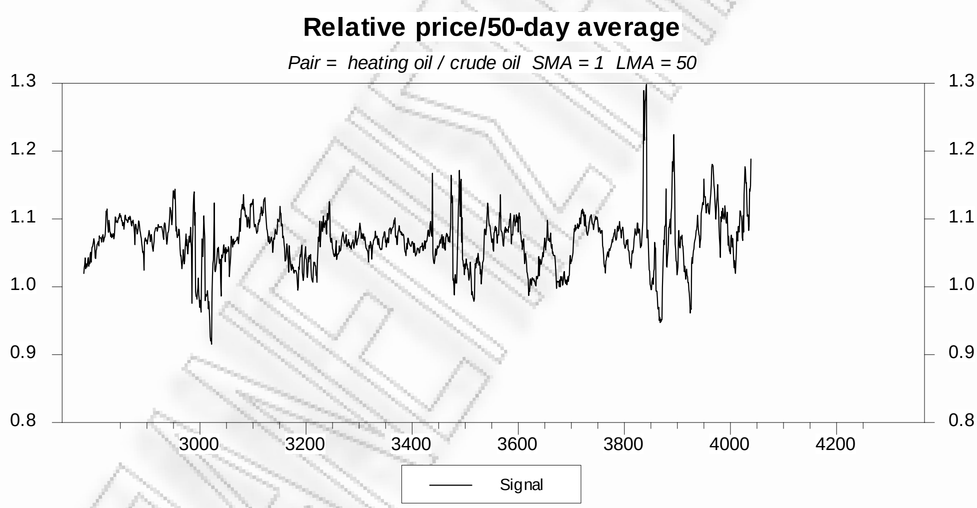
Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 35.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 39.0

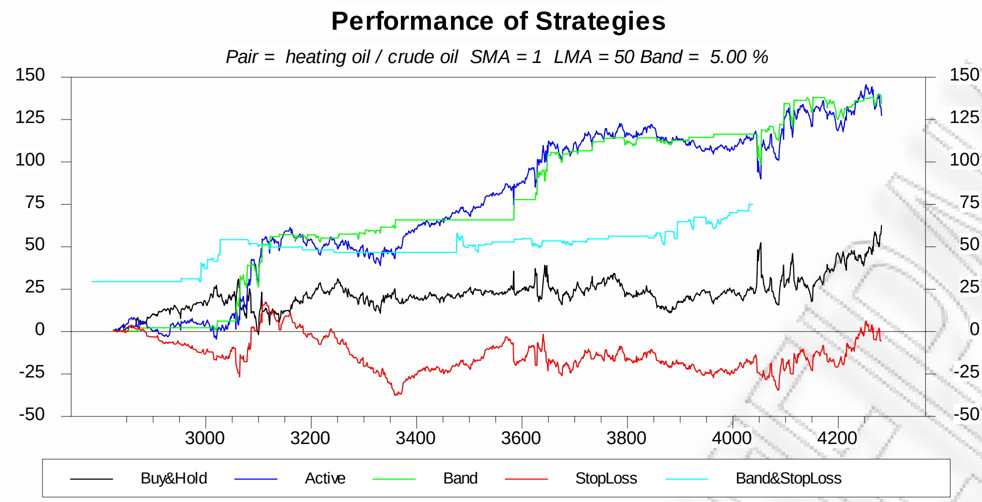
Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -7.39 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -3.57 %
Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 35.0
Nr.of Switches of StopLoss_Performance = 196.0
Nr.of Switches of Band&StopLoss_performance = 39.0

Net Performance of BuyHold_Performance = -22.75
Net Performance of Active_Performance = -41.22 %
Net Performance of Band_Performance = -7.39 %
Net Performance of StopLoss_Performance = -100.46 %
Net Performance of Band&StopLoss_Performance = -3.57 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.90 15.59 -1.43 53.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.46 15.59 -1.45 50.89 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 2.33 9.40 -0.39 7.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.89 11.82 -0.95 25.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 3.40 7.93 0.00 4.39 %

-2-





Pair = heating oil / crude oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 62.14342245327 126.5853701783 133.3247003700 -6.00940621754 52.66849203911

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 62.14342245327 126.5853701783 133.3247003700 -6.00940621754 52.66849203911

Nr.of Switches of Active_Performance = 148.0
Nr.of Switches of Band_Performance = 64.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 64.0

Net Performance of BuyHold_Performance = 62.14
Net Performance of Active_Performance = 82.19 %
Net Performance of Band_Performance = 114.12 %
Net Performance of StopLoss_Performance = -40.81 %
Net Performance of Band&StopLoss_Performance = 33.47 %
Nr.of Switches of Active_Performance = 148.0
Nr.of Switches of Band_Performance = 64.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 64.0

Net Performance of BuyHold_Performance = 62.14
Net Performance of Active_Performance = 82.19 %
Net Performance of Band_Performance = 114.12 %
Net Performance of StopLoss_Performance = -40.81 %
Net Performance of Band&StopLoss_Performance = 33.47 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 10.66 30.12 -2.16 47.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 21.71 30.10 -2.15 49.52 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 26.15 22.35 -0.99 10.77 %

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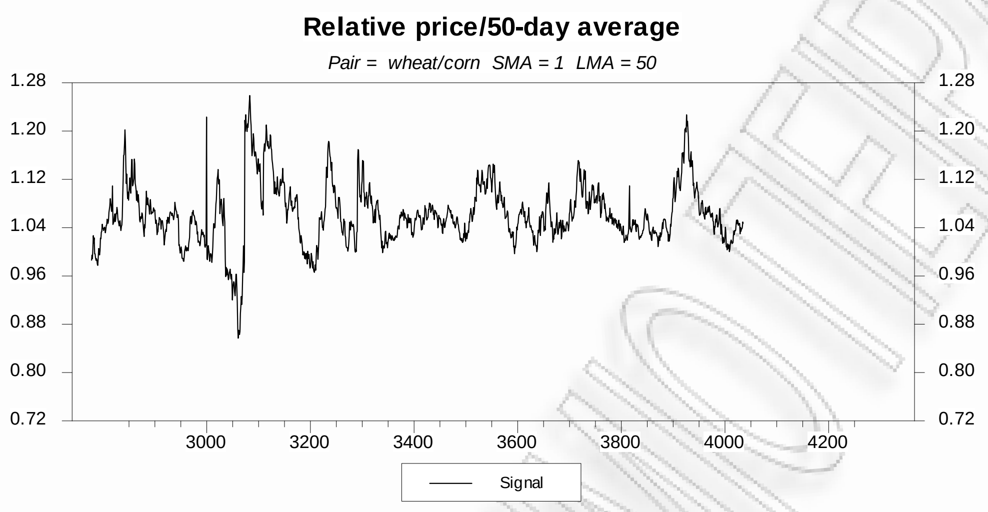
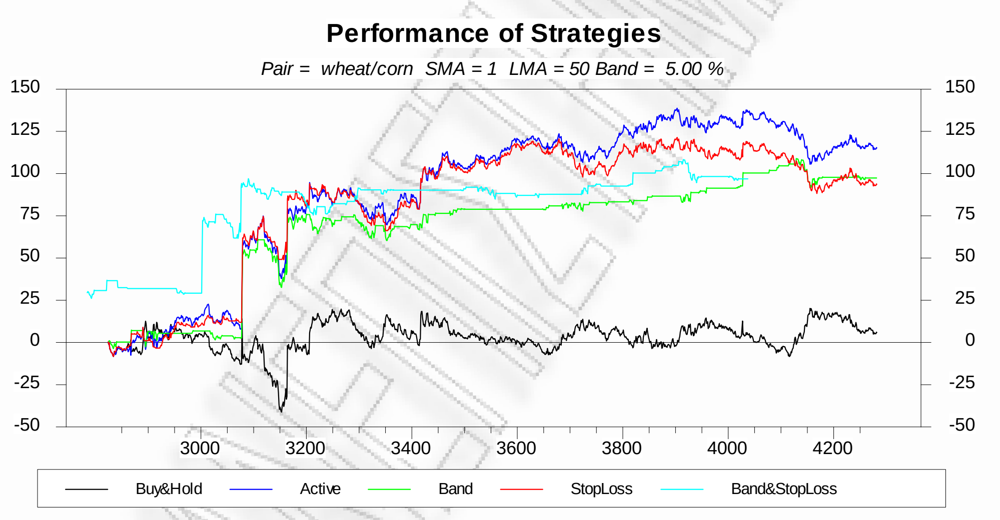




Pair = wheat/corn
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 5.08577755566 114.3838734375 96.8215573311 92.8373865732 78.12616498213

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 5.08577755566 114.3838734375 96.8215573311 92.8373865732 78.12616498213

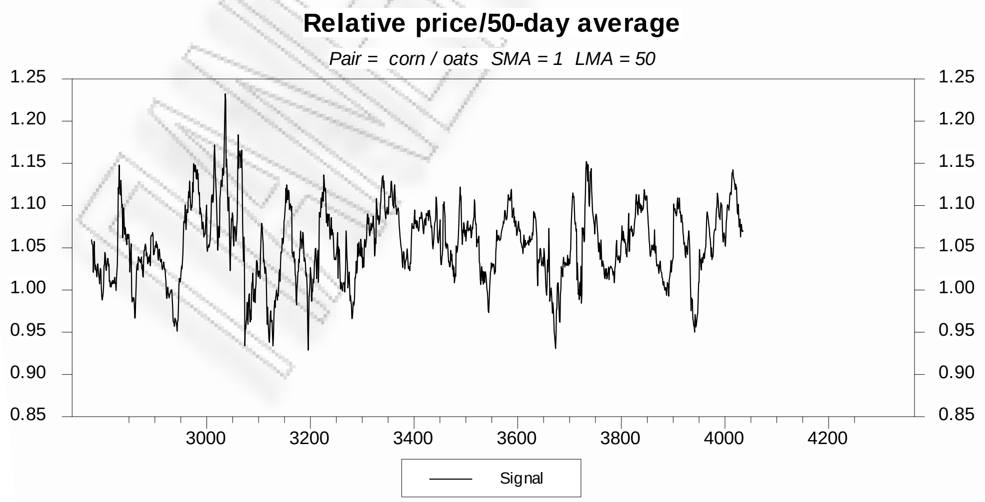
Nr.of Switches of Active_Performance = 117.0
Nr.of Switches of Band_Performance = 68.0
Nr.of Switches of StopLoss_Performance = 101.0
Nr.of Switches of Band&StopLoss_performance = 97.0

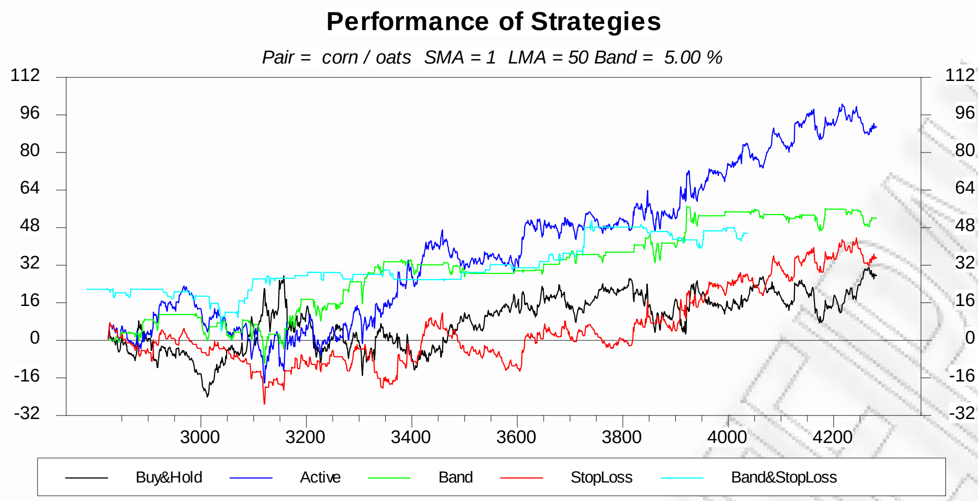
Net Performance of BuyHold_Performance = 5.09
Net Performance of Active_Performance = 79.28 %
Net Performance of Band_Performance = 76.42 %
Net Performance of StopLoss_Performance = 62.54 %
Net Performance of Band&StopLoss_Performance = 49.03 %
Nr.of Switches of Active_Performance = 117.0
Nr.of Switches of Band_Performance = 68.0
Nr.of Switches of StopLoss_Performance = 101.0
Nr.of Switches of Band&StopLoss_performance = 97.0

Net Performance of BuyHold_Performance = 5.09
Net Performance of Active_Performance = 79.28 %
Net Performance of Band_Performance = 76.42 %
Net Performance of StopLoss_Performance = 62.54 %
Net Performance of Band&StopLoss_Performance = 49.03 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.87 30.39 -2.13 51.17 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 19.61 30.37 -2.16 49.45 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 20.10 24.48 -1.49 15.02 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.06 28.41 -1.93 40.74 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 18.39 22.63 -0.97 9.33 %

-9-





Pair = corn / oats
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 27.29547045950 90.3770345278 51.62346266104 34.71492168889 27.47674126371

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 27.29547045950 90.3770345278 51.62346266104 34.71492168889 27.47674126371

Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 74.0
Nr.of Switches of StopLoss_Performance = 157.0
Nr.of Switches of Band&StopLoss_performance = 87.0

Net Performance of BuyHold_Performance = 27.30
Net Performance of Active_Performance = 57.38 %
Net Performance of Band_Performance = 29.42 %
Net Performance of StopLoss_Performance = -12.39 %
Net Performance of Band&StopLoss_Performance = 1.38 %
Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 74.0
Nr.of Switches of StopLoss_Performance = 157.0
Nr.of Switches of Band&StopLoss_performance = 87.0

Net Performance of BuyHold_Performance = 27.30
Net Performance of Active_Performance = 57.38 %
Net Performance of Band_Performance = 29.42 %
Net Performance of StopLoss_Performance = -12.39 %
Net Performance of Band&StopLoss_Performance = 1.38 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 4.68 24.88 -2.22 48.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 15.50 24.86 -2.16 48.56 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 12.66 15.41 -1.39 15.36 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 13.98 19.21 -1.67 32.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 9.19 11.06 -0.34 6.38 %

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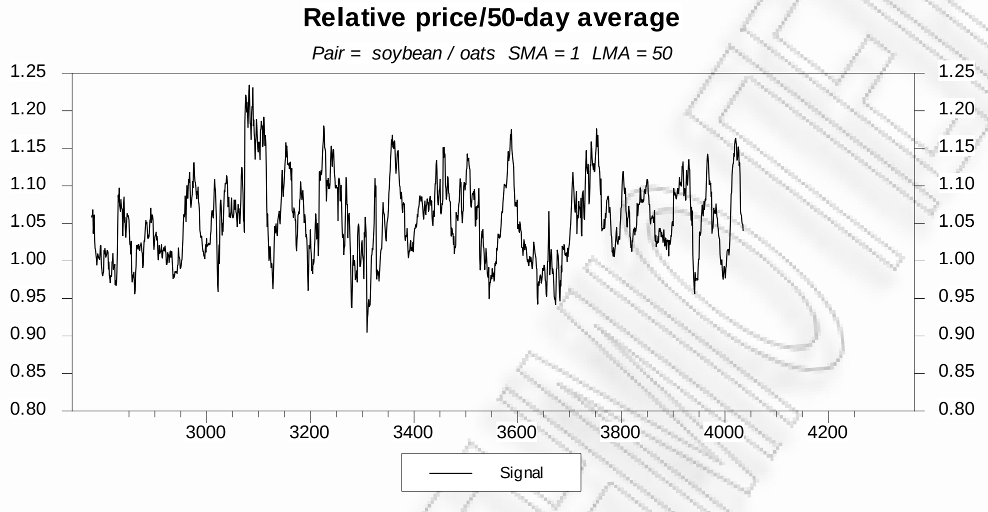

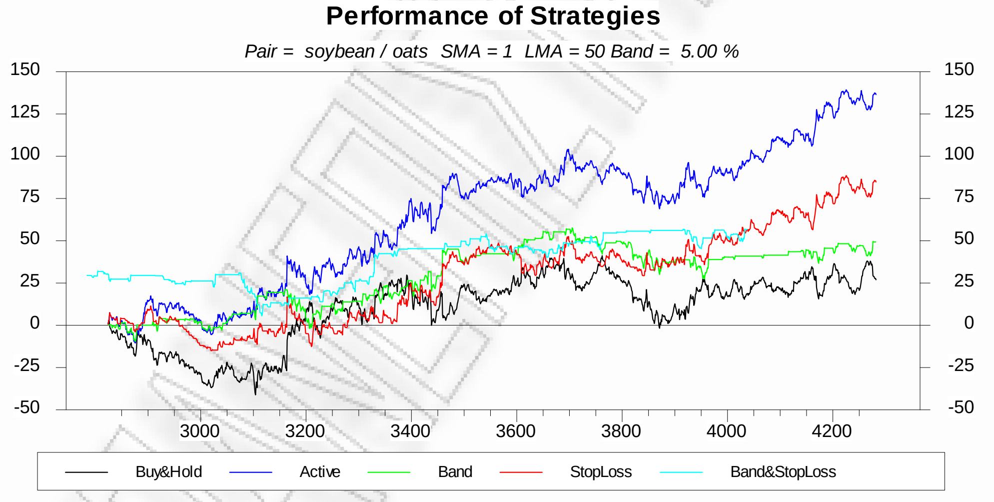

Pair = soybean / oats
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 26.14126275778 135.6713909335 48.73065437391 83.98442870704 31.32111440028

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 26.14126275778 135.6713909335 48.73065437391 83.98442870704 31.32111440028

Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 91.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 111.0

Net Performance of BuyHold_Performance = 26.14
Net Performance of Active_Performance = 102.97 %
Net Performance of Band_Performance = 21.43 %
Net Performance of StopLoss_Performance = 43.48 %
Net Performance of Band&StopLoss_Performance = -1.98 %
Nr.of Switches of Active_Performance = 109.0
Nr.of Switches of Band_Performance = 91.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 111.0

Net Performance of BuyHold_Performance = 26.14
Net Performance of Active_Performance = 102.97 %
Net Performance of Band_Performance = 21.43 %
Net Performance of StopLoss_Performance = 43.48 %
Net Performance of Band&StopLoss_Performance = -1.98 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 4.48 29.17 -2.73 50.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 23.26 29.14 -2.46 50.14 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 13.04 19.63 -1.80 20.99 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.29 24.40 -2.09 36.49 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 11.08 14.45 -1.06 11.66 %

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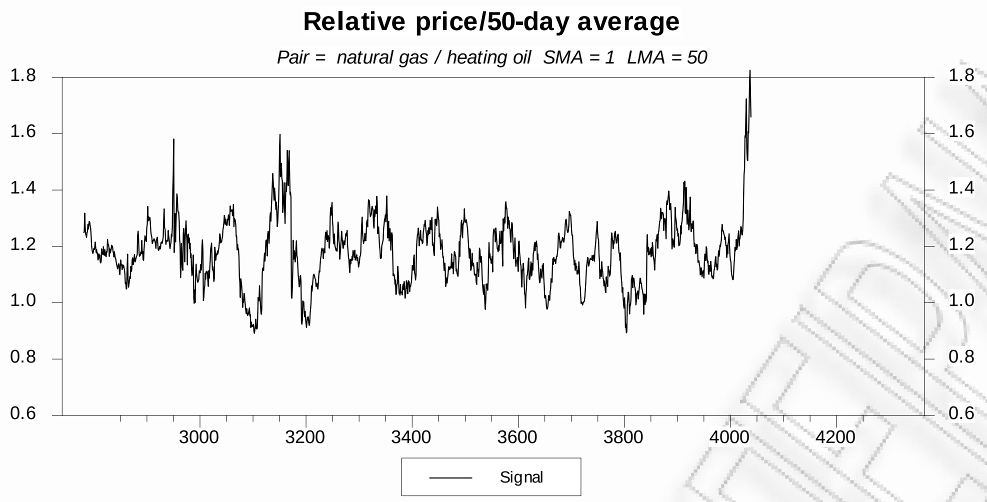
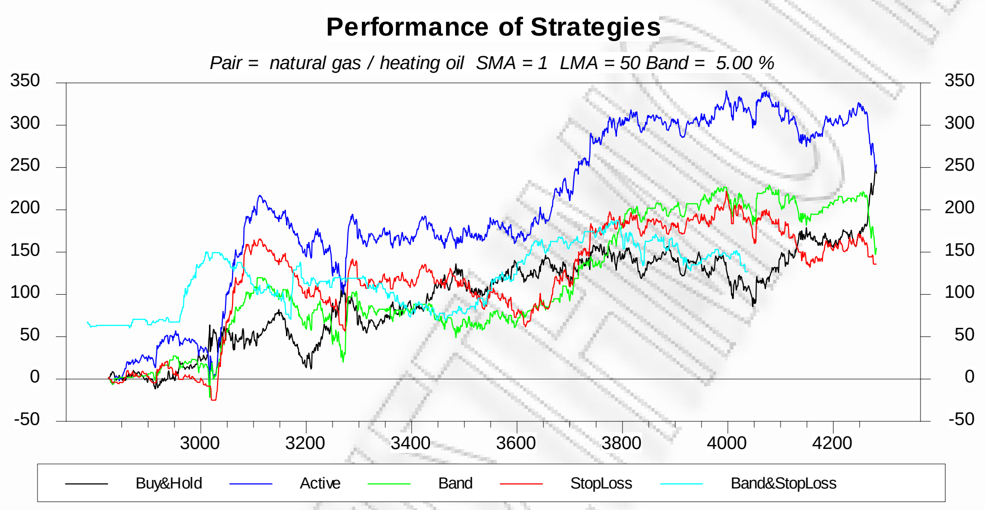




Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 241.5044962092 252.4918293938 154.0253938165 134.6307429159 70.0689701490

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 241.5044962092 252.4918293938 154.0253938165 134.6307429159 70.0689701490

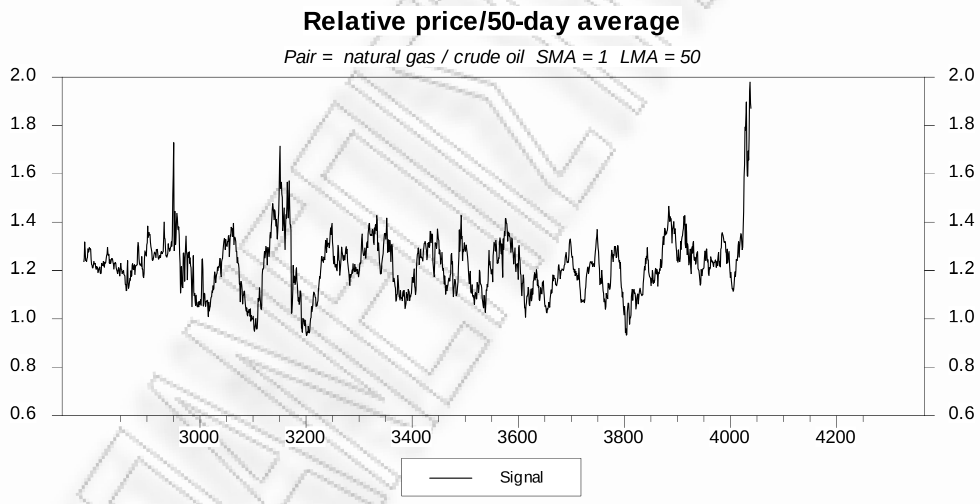
Nr.of Switches of Active_Performance = 129.0
Nr.of Switches of Band_Performance = 120.0
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 199.0

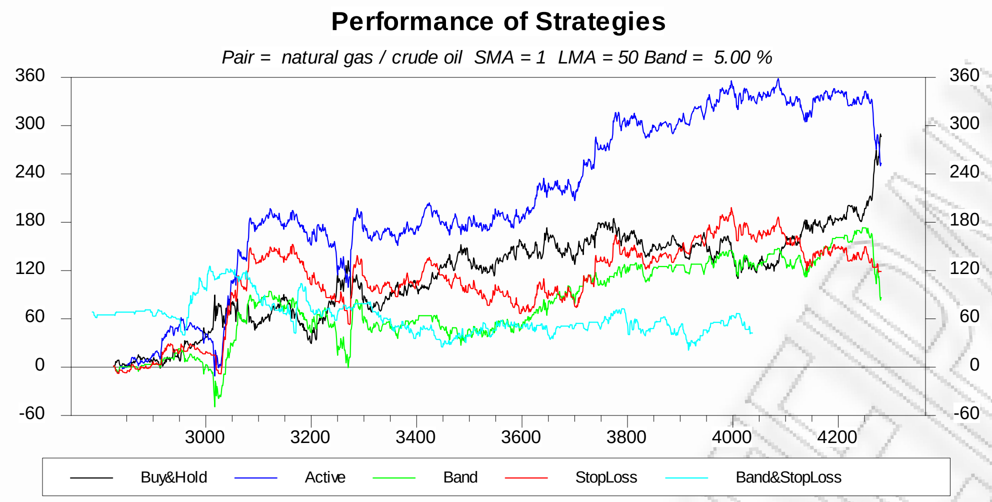
Net Performance of BuyHold_Performance = 241.50
Net Performance of Active_Performance = 213.79 %
Net Performance of Band_Performance = 118.03 %
Net Performance of StopLoss_Performance = 95.93 %
Net Performance of Band&StopLoss_Performance = 10.37 %
Nr.of Switches of Active_Performance = 129.0
Nr.of Switches of Band_Performance = 120.0
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 199.0

Net Performance of BuyHold_Performance = 241.50
Net Performance of Active_Performance = 213.79 %
Net Performance of Band_Performance = 118.03 %
Net Performance of StopLoss_Performance = 95.93 %
Net Performance of Band&StopLoss_Performance = 10.37 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 41.41 65.43 -5.58 49.11 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 43.29 65.42 -5.62 48.63 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 32.53 56.90 -5.36 33.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 29.67 56.52 -5.22 38.96 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 22.20 46.50 -4.40 25.03 %

-22-





Pair = natural gas / crude oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 285.7978596070 251.5410608265 84.6904315467 117.6312892796 -30.59736302132

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 285.7978596070 251.5410608265 84.6904315467 117.6312892796 -30.59736302132

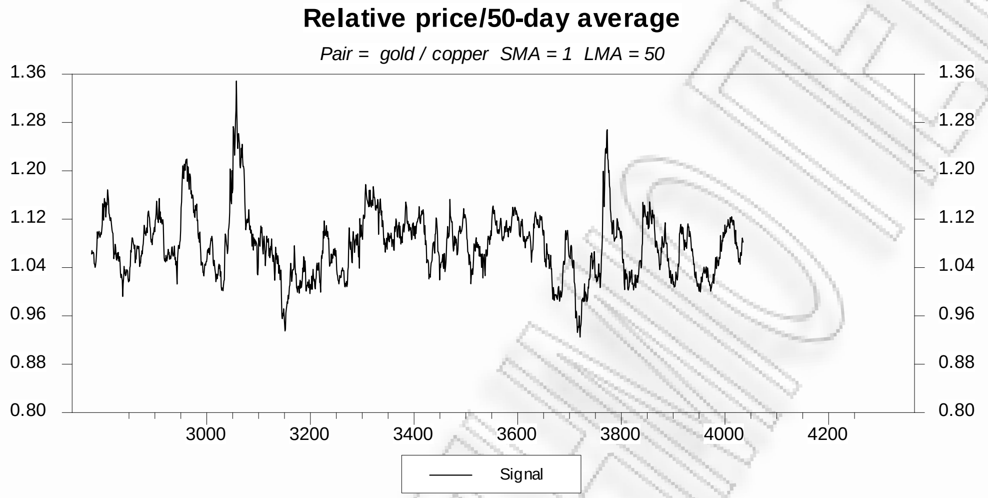
Nr.of Switches of Active_Performance = 125.0
Nr.of Switches of Band_Performance = 109.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 214.0

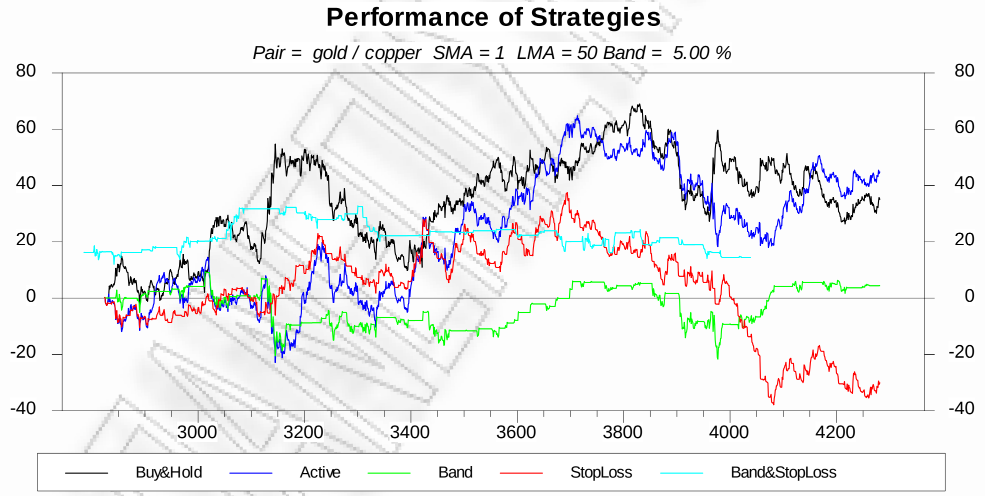
Net Performance of BuyHold_Performance = 285.80
Net Performance of Active_Performance = 214.04 %
Net Performance of Band_Performance = 51.99 %
Net Performance of StopLoss_Performance = 77.13 %
Net Performance of Band&StopLoss_Performance = -94.80 %
Nr.of Switches of Active_Performance = 125.0
Nr.of Switches of Band_Performance = 109.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 214.0

Net Performance of BuyHold_Performance = 285.80
Net Performance of Active_Performance = 214.04 %
Net Performance of Band_Performance = 51.99 %
Net Performance of StopLoss_Performance = 77.13 %
Net Performance of Band&StopLoss_Performance = -94.80 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 49.01 67.67 -6.05 47.87 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 43.13 67.68 -6.05 49.11 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 20.13 59.33 -5.53 34.71 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 27.06 57.88 -5.38 38.89 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 5.76 47.96 -4.87 25.31 %

-24-





Pair = gold / copper
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 34.65260510053 44.59914374287 4.02322164729 -30.32274763951 -2.37307591764

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 34.65260510053 44.59914374287 4.02322164729 -30.32274763951 -2.37307591764

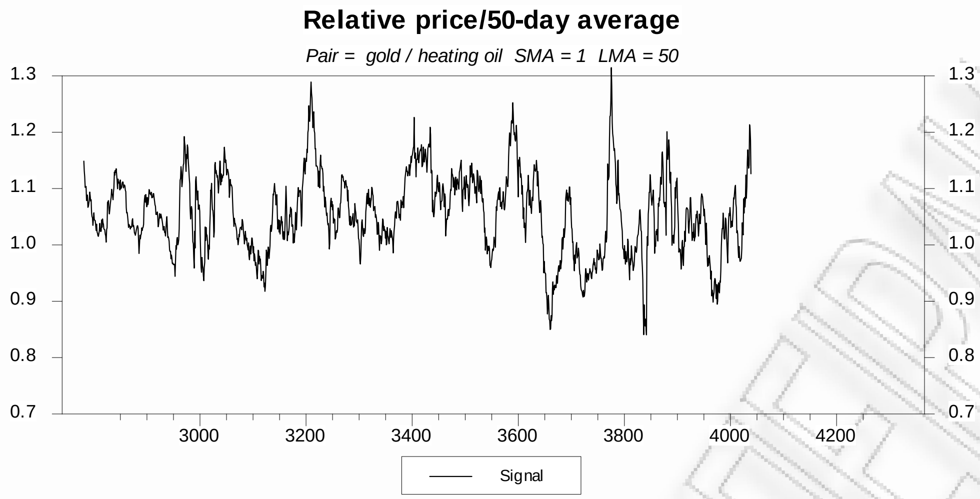
Nr.of Switches of Active_Performance = 120.0
Nr.of Switches of Band_Performance = 84.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 102.0

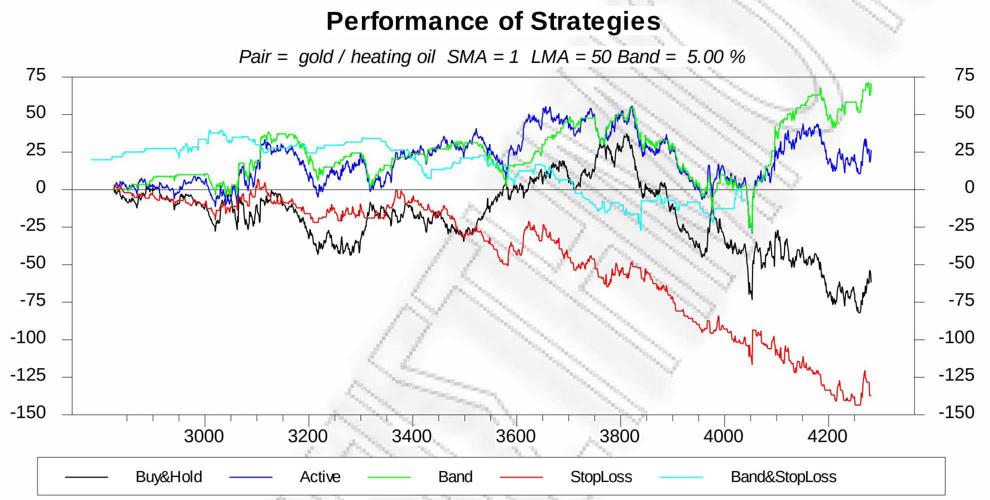
Net Performance of BuyHold_Performance = 34.65
Net Performance of Active_Performance = 8.60 %
Net Performance of Band_Performance = -21.18 %
Net Performance of StopLoss_Performance = -89.72 %
Net Performance of Band&StopLoss_Performance = -32.97 %
Nr.of Switches of Active_Performance = 120.0
Nr.of Switches of Band_Performance = 84.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 102.0

Net Performance of BuyHold_Performance = 34.65
Net Performance of Active_Performance = 8.60 %
Net Performance of Band_Performance = -21.18 %
Net Performance of StopLoss_Performance = -89.72 %
Net Performance of Band&StopLoss_Performance = -32.97 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 5.94 26.70 -2.61 51.30 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 7.65 26.70 -2.68 46.78 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 5.01 16.96 -1.63 16.94 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 4.93 20.25 -2.21 28.94 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.84 10.52 -0.71 8.16 %

-25-





Pair = gold / heating oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -62.48661272308 25.74176625335 70.05779461845 -137.8432287733 -32.57839839867

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -62.48661272308 25.74176625335 70.05779461845 -137.8432287733 -32.57839839867

Nr.of Switches of Active_Performance = 107.0
Nr.of Switches of Band_Performance = 102.0

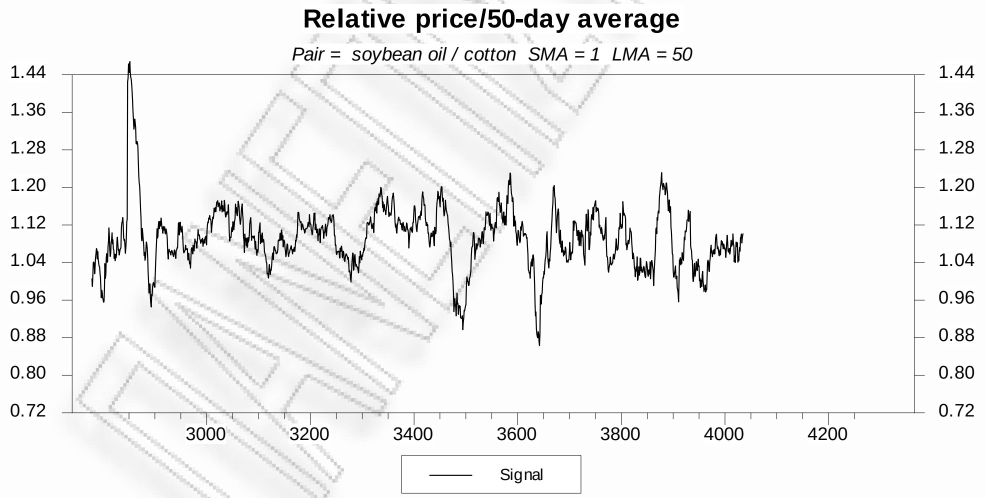
Nr.of Switches of StopLoss_Performance = 208.0
Nr.of Switches of Band&StopLoss_performance = 133.0

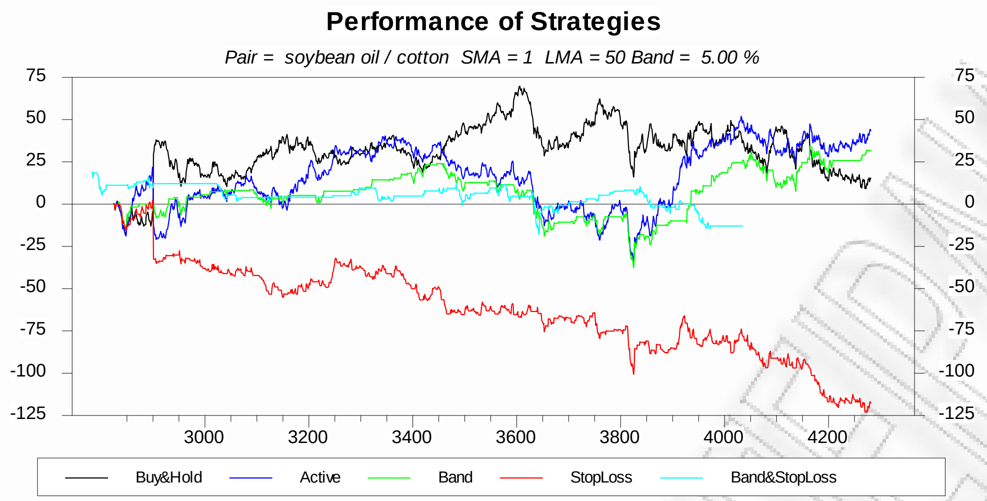
Net Performance of BuyHold_Performance = -62.49
Net Performance of Active_Performance = -6.36 %
Net Performance of Band_Performance = 39.46 %
Net Performance of StopLoss_Performance = -200.24 %
Net Performance of Band&StopLoss_Performance = -72.48 %
Nr.of Switches of Active_Performance = 107.0
Nr.of Switches of Band_Performance = 102.0
Nr.of Switches of StopLoss_Performance = 208.0
Nr.of Switches of Band&StopLoss_performance = 133.0

Net Performance of BuyHold_Performance = -62.49
Net Performance of Active_Performance = -6.36 %
Net Performance of Band_Performance = 39.46 %
Net Performance of StopLoss_Performance = -200.24 %
Net Performance of Band&StopLoss_Performance = -72.48 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.71 38.48 -3.54 52.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 4.41 38.49 -3.51 51.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 17.26 30.74 -2.83 27.23 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -12.99 27.89 -2.86 28.40 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 1.26 19.72 -1.40 10.56 %

-26-





Pair = soybean oil / cotton
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 15.01956577418 42.72550071733 31.15557353248 -118.4214296925 -37.35310141142

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 15.01956577418 42.72550071733 31.15557353248 -118.4214296925 -37.35310141142

Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 85.0
Nr.of Switches of StopLoss_Performance = 197.0
Nr.of Switches of Band&StopLoss_performance = 101.0

Net Performance of BuyHold_Performance = 15.02
Net Performance of Active_Performance = 6.13 %
Net Performance of Band_Performance = 5.66 %
Net Performance of StopLoss_Performance = -177.52 %
Net Performance of Band&StopLoss_Performance = -67.65 %
Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 85.0
Nr.of Switches of StopLoss_Performance = 197.0
Nr.of Switches of Band&StopLoss_performance = 101.0

Net Performance of BuyHold_Performance = 15.02
Net Performance of Active_Performance = 6.13 %
Net Performance of Band_Performance = 5.66 %
Net Performance of StopLoss_Performance = -177.52 %
Net Performance of Band&StopLoss_Performance = -67.65 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 2.58 31.67 -2.86 50.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 7.33 31.67 -2.80 49.73 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 9.66 20.32 -1.96 20.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -10.22 25.36 -2.28 28.46 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -1.26 14.37 -1.19 9.67 %

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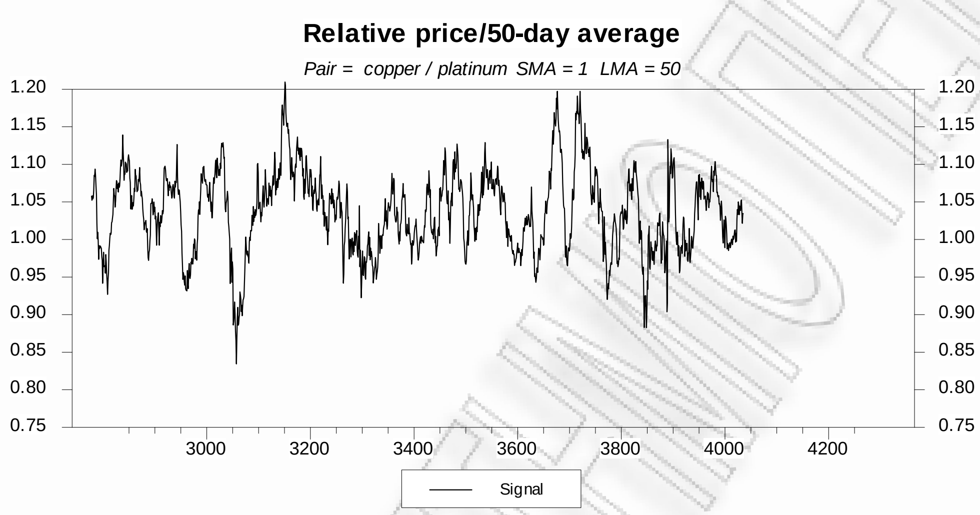

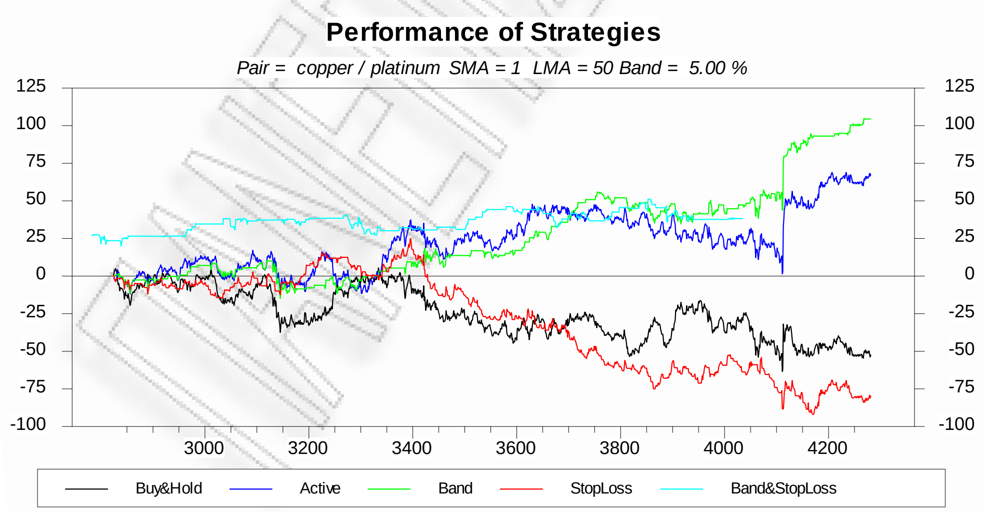

Pair = copper / platinum
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3

Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -53.05730878916 67.16306795248 103.8030371112 -80.37647090664 12.69168689619

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -53.05730878916 67.16306795248 103.8030371112 -80.37647090664 12.69168689619

Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 108.0
Nr.of Switches of StopLoss_Performance = 205.0
Nr.of Switches of Band&StopLoss_performance = 116.0

Net Performance of BuyHold_Performance = -53.06
Net Performance of Active_Performance = 30.56 %
Net Performance of Band_Performance = 71.40 %
Net Performance of StopLoss_Performance = -141.88 %
Net Performance of Band&StopLoss_Performance = -22.11 %
Nr.of Switches of Active_Performance = 122.0
Nr.of Switches of Band_Performance = 108.0
Nr.of Switches of StopLoss_Performance = 205.0
Nr.of Switches of Band&StopLoss_performance = 116.0

Net Performance of BuyHold_Performance = -53.06
Net Performance of Active_Performance = 30.56 %
Net Performance of Band_Performance = 71.40 %
Net Performance of StopLoss_Performance = -141.88 %
Net Performance of Band&StopLoss_Performance = -22.11 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -9.10 33.60 -3.39 51.71 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 11.52 33.60 -3.25 47.74 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 23.35 25.20 -2.15 19.34 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -3.29 22.97 -2.49 28.33 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 8.14 13.80 -0.71 8.37 %

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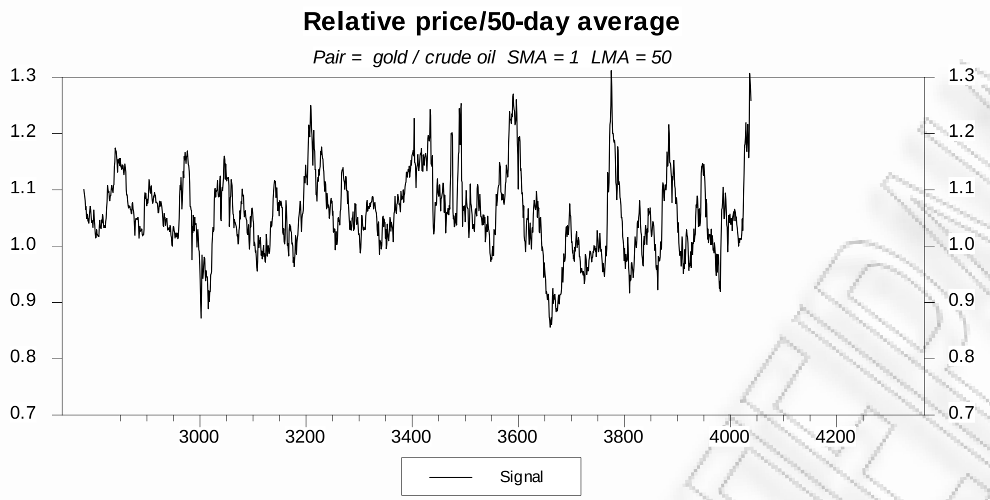
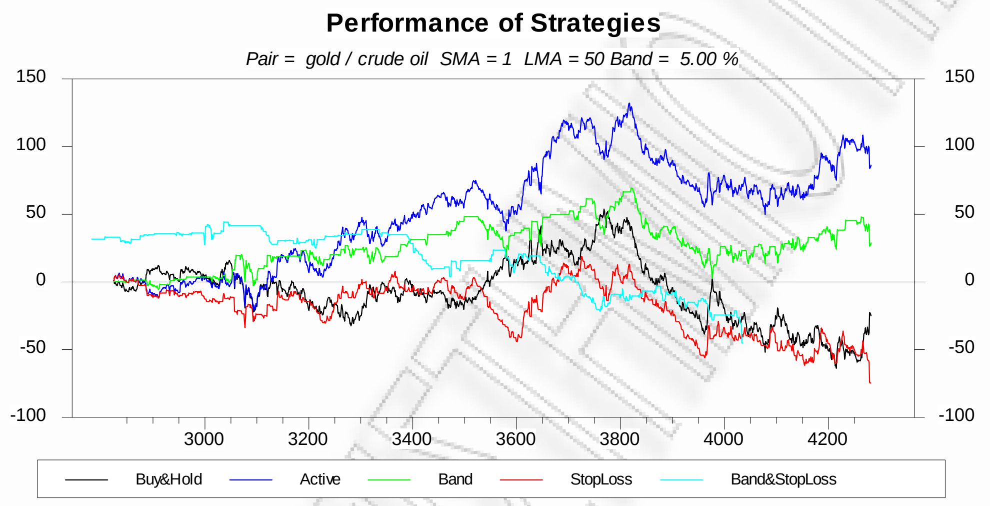




Pair = gold / crude oil
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -26.05410943365 85.8979816646 28.42156689419 -75.35648881185 -89.69171382617

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -26.05410943365 85.8979816646 28.42156689419 -75.35648881185 -89.69171382617

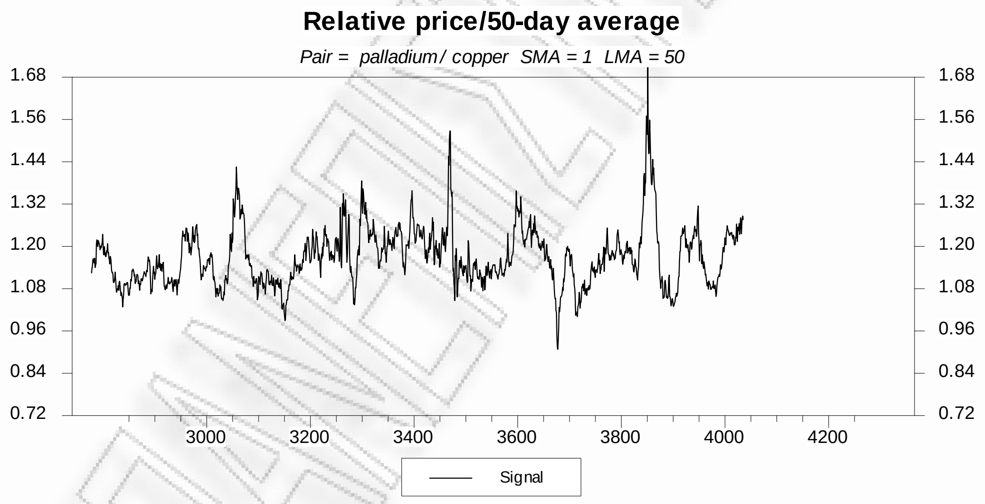
Nr.of Switches of Active_Performance = 116.0
Nr.of Switches of Band_Performance = 95.0
Nr.of Switches of StopLoss_Performance = 191.0
Nr.of Switches of Band&StopLoss_performance = 151.0

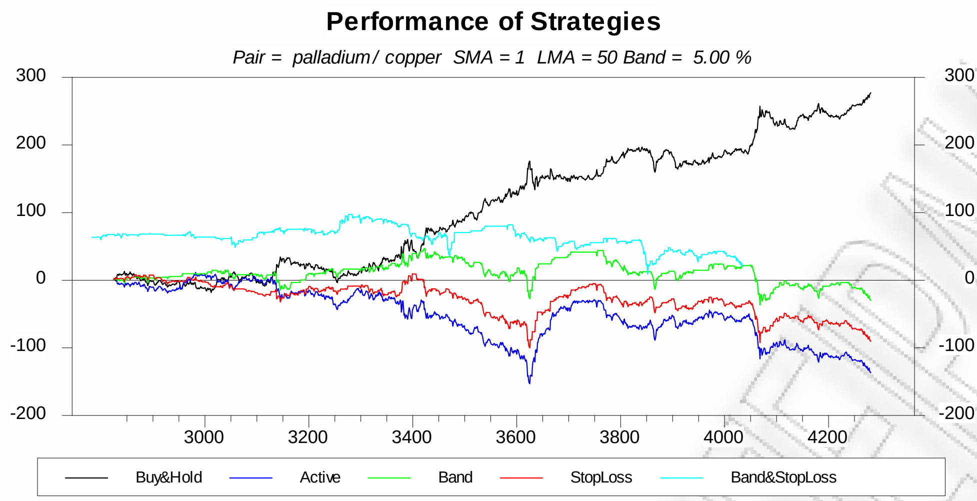
Net Performance of BuyHold_Performance = -26.05
Net Performance of Active_Performance = 51.10 %
Net Performance of Band_Performance = -0.08 %
Net Performance of StopLoss_Performance = -132.66 %
Net Performance of Band&StopLoss_Performance = -134.99 %
Nr.of Switches of Active_Performance = 116.0
Nr.of Switches of Band_Performance = 95.0
Nr.of Switches of StopLoss_Performance = 191.0
Nr.of Switches of Band&StopLoss_performance = 151.0

Net Performance of BuyHold_Performance = -26.05
Net Performance of Active_Performance = 51.10 %
Net Performance of Band_Performance = -0.08 %
Net Performance of StopLoss_Performance = -132.66 %
Net Performance of Band&StopLoss_Performance = -134.99 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -4.47 38.75 -3.70 52.81 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 14.73 38.74 -3.70 49.18 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 9.76 30.31 -2.91 25.38 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -3.15 31.25 -3.26 30.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -7.61 21.83 -2.05 13.31 %

-30-





Pair = palladium / copper
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 275.0837615824 -137.6960481094 -30.77475436453 -91.3159244260 -50.54218529076

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 275.0837615824 -137.6960481094 -30.77475436453 -91.3159244260 -50.54218529076

Nr.of Switches of Active_Performance = 91.0
Nr.of Switches of Band_Performance = 96.0
Nr.of Switches of StopLoss_Performance = 180.0
Nr.of Switches of Band&StopLoss_performance = 133.0

Net Performance of BuyHold_Performance = 275.08
Net Performance of Active_Performance = -165.00 %
Net Performance of Band_Performance = -59.57 %
Net Performance of StopLoss_Performance = -145.32 %
Net Performance of Band&StopLoss_Performance = -90.44 %
Nr.of Switches of Active_Performance = 91.0
Nr.of Switches of Band_Performance = 96.0
Nr.of Switches of StopLoss_Performance = 180.0
Nr.of Switches of Band&StopLoss_performance = 133.0

Net Performance of BuyHold_Performance = 275.08
Net Performance of Active_Performance = -165.00 %
Net Performance of Band_Performance = -59.57 %
Net Performance of StopLoss_Performance = -145.32 %
Net Performance of Band&StopLoss_Performance = -90.44 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 47.17 42.27 -3.42 46.36 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -23.61 42.35 -4.08 51.58 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -0.34 34.92 -3.19 29.15 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -6.45 35.43 -3.30 32.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -1.82 31.54 -2.83 22.98 %

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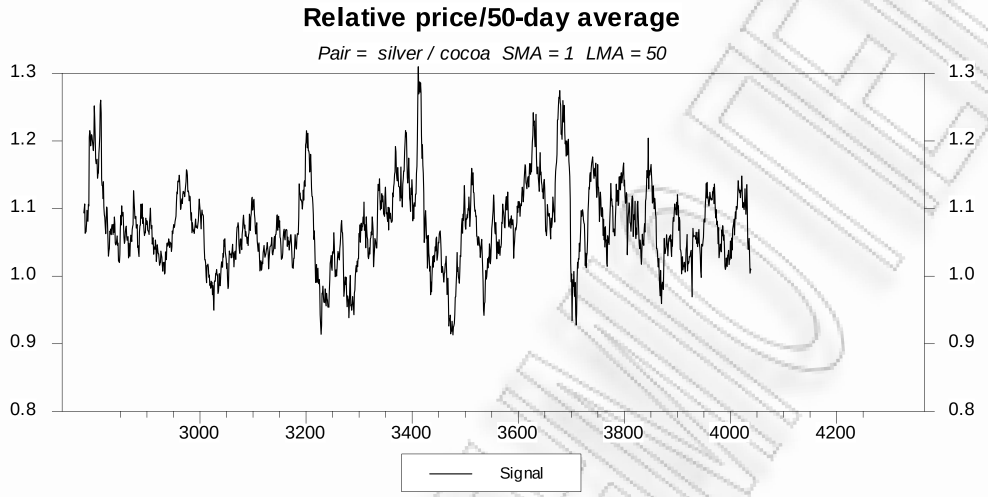
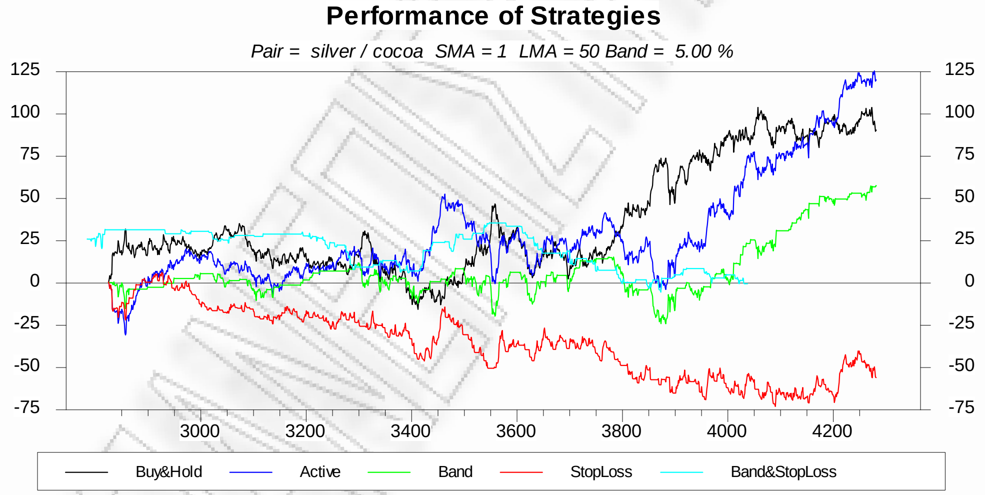




Pair = silver / cocoa
SMA ---> 1 LMA ---> 50
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 89.6554481680 119.3414069958 56.82712058563 -56.50381452104 -31.00689693627

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 89.6554481680 119.3414069958 56.82712058563 -56.50381452104 -31.00689693627

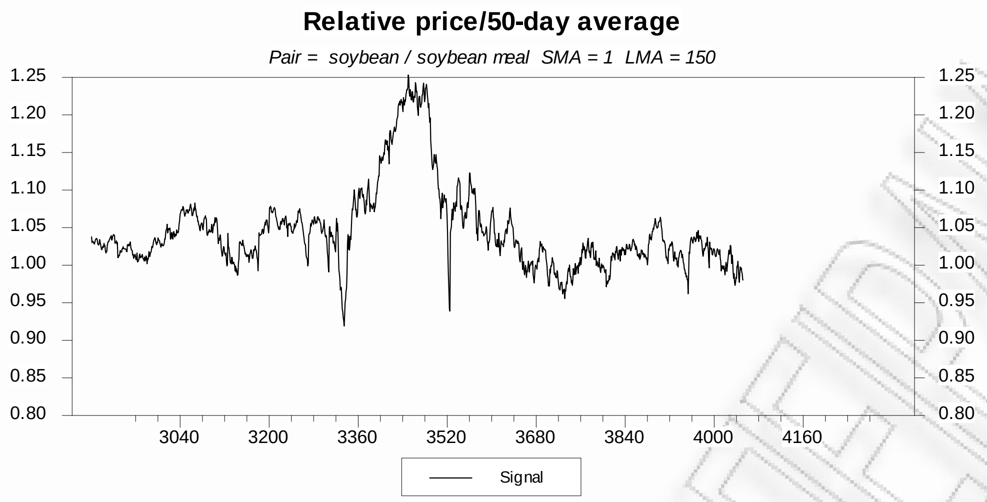
Nr.of Switches of Active_Performance = 132.0
Nr.of Switches of Band_Performance = 96.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 118.0

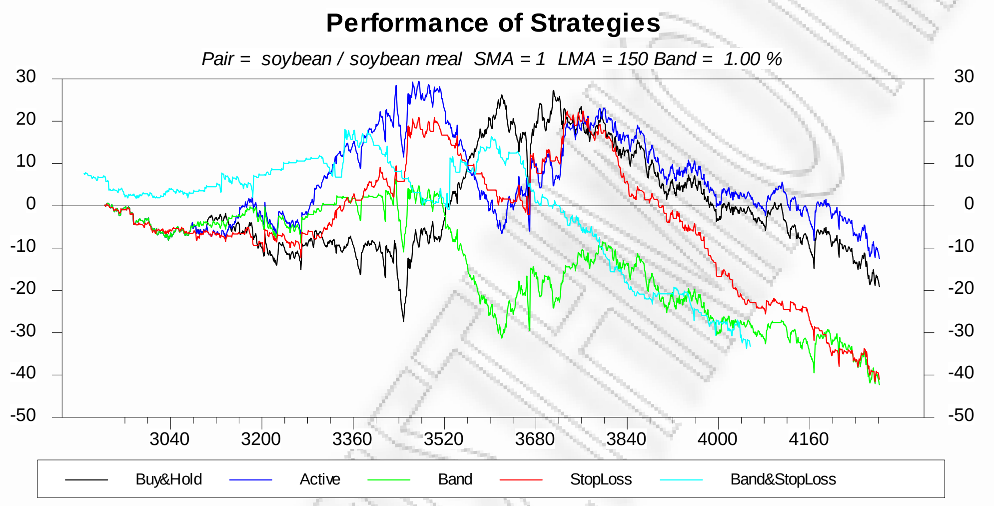
Net Performance of BuyHold_Performance = 89.66
Net Performance of Active_Performance = 79.74 %
Net Performance of Band_Performance = 28.03 %
Net Performance of StopLoss_Performance = -115.90 %
Net Performance of Band&StopLoss_Performance = -66.41 %
Nr.of Switches of Active_Performance = 132.0
Nr.of Switches of Band_Performance = 96.0
Nr.of Switches of StopLoss_Performance = 198.0
Nr.of Switches of Band&StopLoss_performance = 118.0

Net Performance of BuyHold_Performance = 89.66
Net Performance of Active_Performance = 79.74 %
Net Performance of Band_Performance = 28.03 %
Net Performance of StopLoss_Performance = -115.90 %
Net Performance of Band&StopLoss_Performance = -66.41 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 15.37 34.10 -3.22 48.42 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 20.46 34.09 -3.35 47.05 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 14.68 24.90 -2.46 20.85 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 0.45 25.76 -2.83 29.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 0.75 14.44 -1.05 7.96 %

1.3. 1-150,band 1%





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.38574364777 -12.77466167946 -42.59703233296 -41.30373802203 -47.66951549268

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.38574364777 -12.77466167946 -42.59703233296 -41.30373802203 -47.66951549268

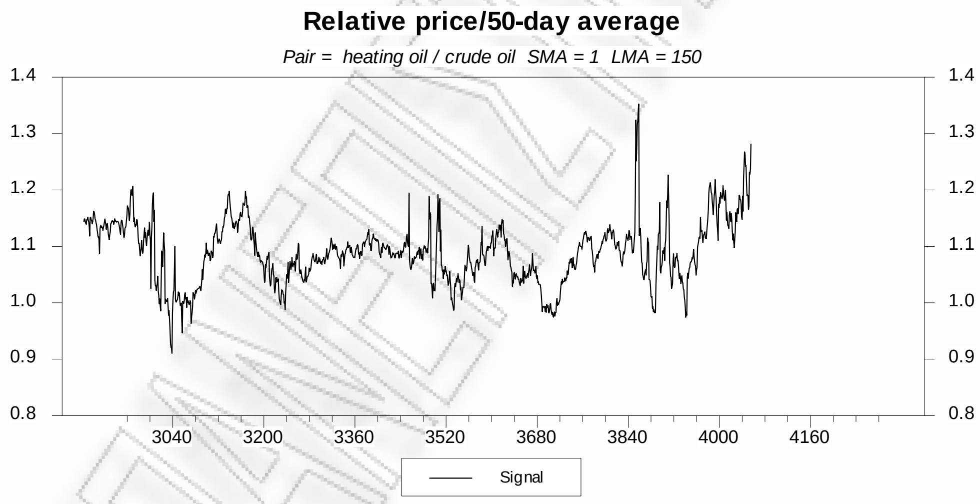
Nr.of Switches of Active_Performance = 61.0
Nr.of Switches of Band_Performance = 46.0
Nr.of Switches of StopLoss_Performance = 178.0
Nr.of Switches of Band&StopLoss_performance = 182.0

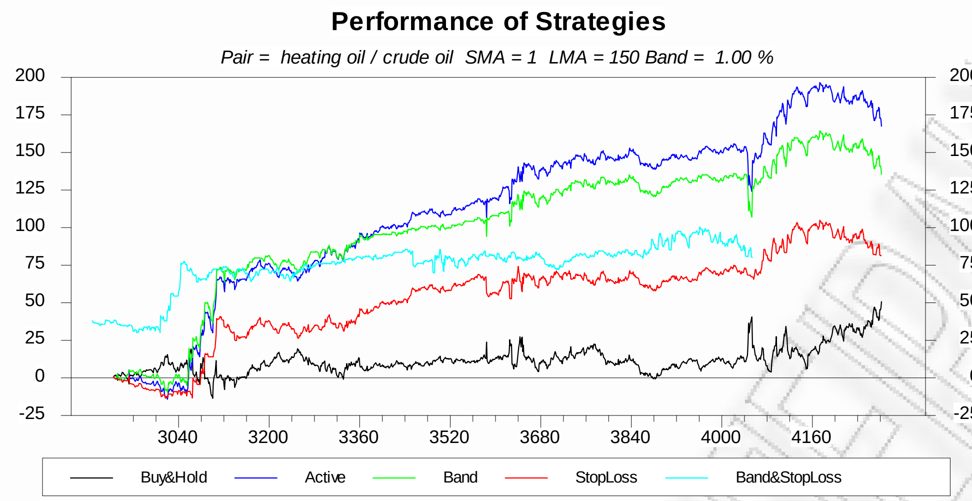
Net Performance of BuyHold_Performance = -19.39
Net Performance of Active_Performance = -31.07 %
Net Performance of Band_Performance = -56.40 %
Net Performance of StopLoss_Performance = -94.70 %
Net Performance of Band&StopLoss_Performance = -102.27 %
Nr.of Switches of Active_Performance = 61.0
Nr.of Switches of Band_Performance = 46.0
Nr.of Switches of StopLoss_Performance = 178.0
Nr.of Switches of Band&StopLoss_performance = 182.0

Net Performance of BuyHold_Performance = -19.39
Net Performance of Active_Performance = -31.07 %
Net Performance of Band_Performance = -56.40 %
Net Performance of StopLoss_Performance = -94.70 %
Net Performance of Band&StopLoss_Performance = -102.27 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.57 15.97 -1.48 53.61 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -2.35 15.97 -1.45 52.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -5.36 15.28 -1.40 46.76 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.17 12.59 -1.10 27.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 1.22 11.95 -0.99 22.75 %

-2-





Pair = heating oil / crude oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 50.30091581572 166.6024853320 134.5653060078 80.7297548354 49.31418433368

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 50.30091581572 166.6024853320 134.5653060078 80.7297548354 49.31418433368

Nr.of Switches of Active_Performance = 99.0
Nr.of Switches of Band_Performance = 75.0
Nr.of Switches of StopLoss_Performance = 68.0
Nr.of Switches of Band&StopLoss_performance = 135.0

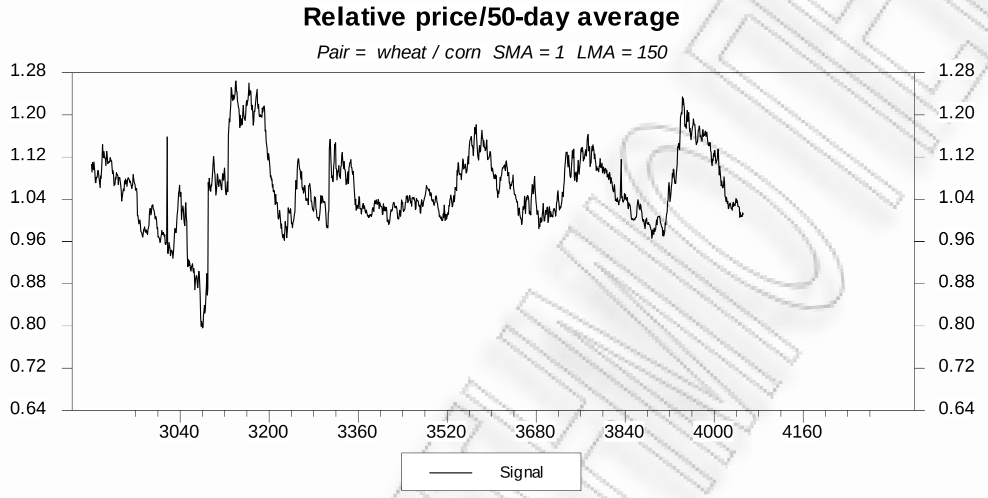
Net Performance of BuyHold_Performance = 50.30
Net Performance of Active_Performance = 136.90 %
Net Performance of Band_Performance = 112.07 %
Net Performance of StopLoss_Performance = 60.33 %
Net Performance of Band&StopLoss_Performance = 8.81 %
Nr.of Switches of Active_Performance = 99.0
Nr.of Switches of Band_Performance = 75.0
Nr.of Switches of StopLoss_Performance = 68.0
Nr.of Switches of Band&StopLoss_performance = 135.0

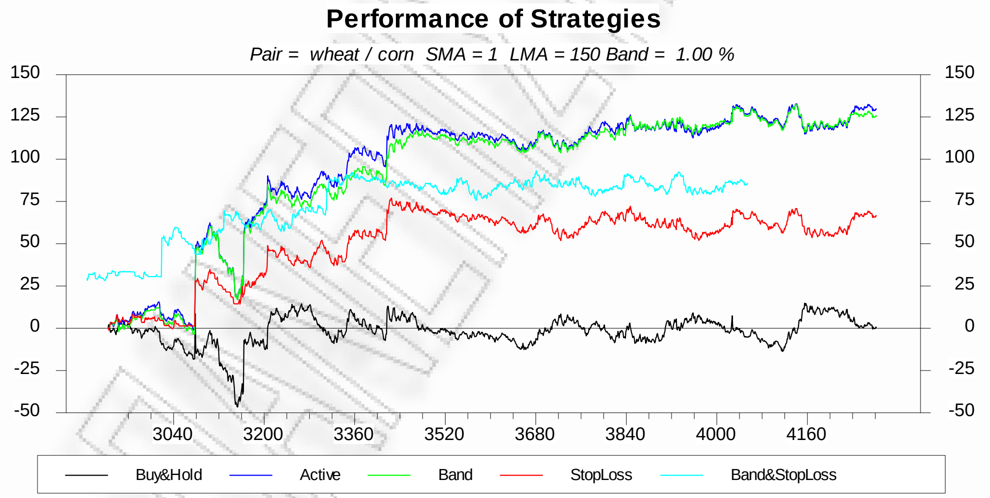
Net Performance of BuyHold_Performance = 50.30
Net Performance of Active_Performance = 136.90 %
Net Performance of Band_Performance = 112.07 %
Net Performance of StopLoss_Performance = 60.33 %
Net Performance of Band&StopLoss_Performance = 8.81 %

Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 9.26 31.01 -2.20 47.57 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 30.67 30.96 -2.16 49.04 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 28.86 30.06 -2.10 41.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 18.56 24.67 -1.87 43.52 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 16.48 23.54 -1.81 36.52 %

-5-





Pair = wheat / corn
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 -0.27313134374 128.7717175911 124.7687706123 65.65255601395 64.65633910472

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -0.27313134374 128.7717175911 124.7687706123 65.65255601395 64.65633910472

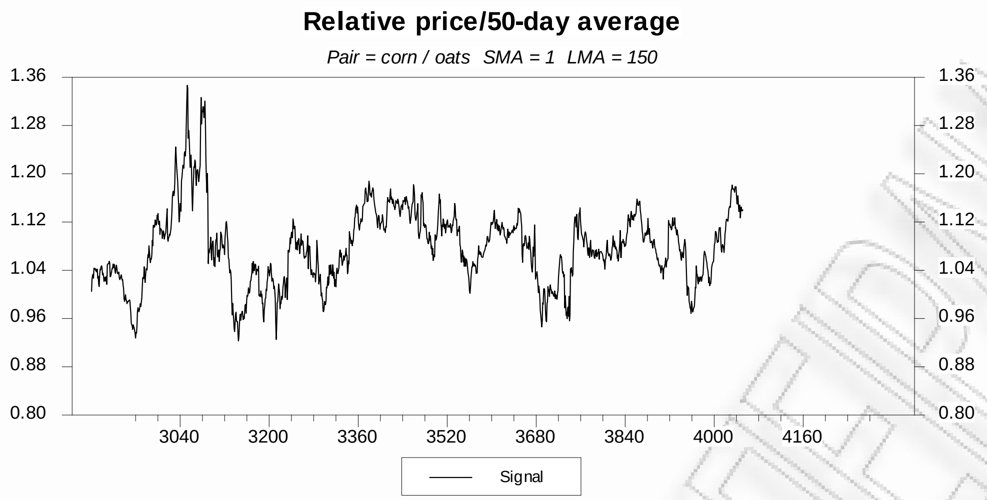
Nr.of Switches of Active_Performance = 68.0
Nr.of Switches of Band_Performance = 52.0
Nr.of Switches of StopLoss_Performance = 85.0
Nr.of Switches of Band&StopLoss_performance = 128.0

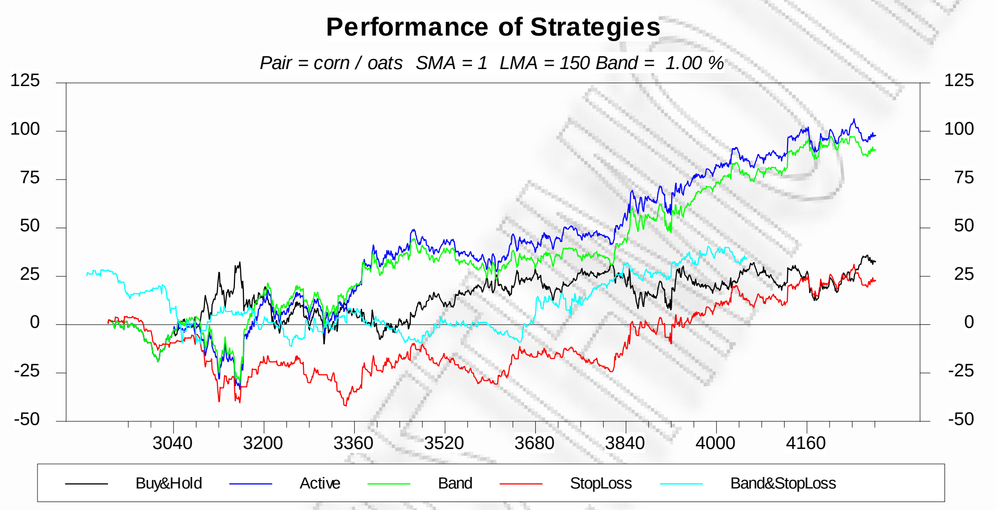
Net Performance of BuyHold_Performance = -0.27
Net Performance of Active_Performance = 108.37 %
Net Performance of Band_Performance = 109.17 %
Net Performance of StopLoss_Performance = 40.15 %
Net Performance of Band&StopLoss_Performance = 26.26 %
Nr.of Switches of Active_Performance = 68.0
Nr.of Switches of Band_Performance = 52.0
Nr.of Switches of StopLoss_Performance = 85.0
Nr.of Switches of Band&StopLoss_performance = 128.0

Net Performance of BuyHold_Performance = -0.27
Net Performance of Active_Performance = 108.37 %
Net Performance of Band_Performance = 109.17 %
Net Performance of StopLoss_Performance = 40.15 %
Net Performance of Band&StopLoss_Performance = 26.26 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.05 30.53 -2.12 51.25 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 23.71 30.50 -2.07 49.41 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 25.79 29.88 -2.00 45.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 16.73 23.67 -1.93 42.19 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 18.92 22.88 -1.80 38.07 %

-9-





Pair = corn / oats
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 32.17951033365 97.1886329214 89.77363645969 22.19300669508 10.65204681657

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 32.17951033365 97.1886329214 89.77363645969 22.19300669508 10.65204681657

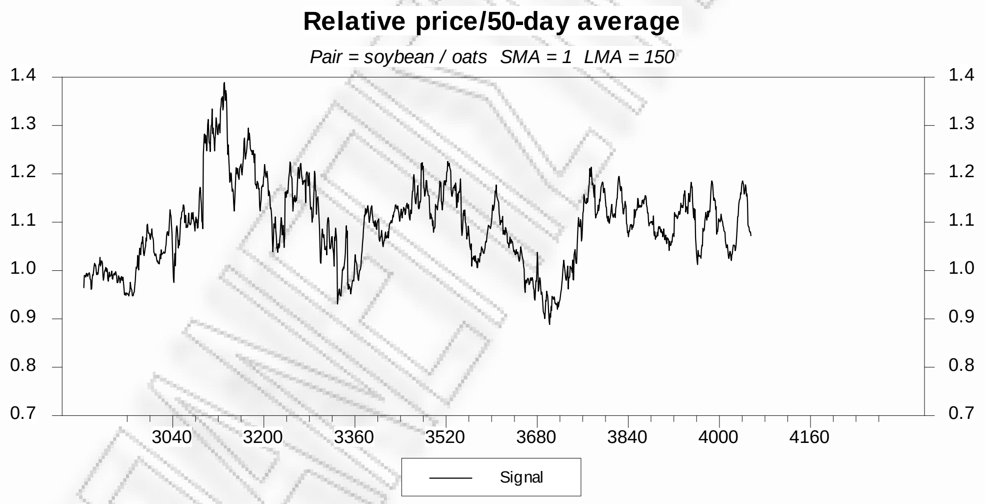
Nr.of Switches of Active_Performance = 72.0
Nr.of Switches of Band_Performance = 67.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 186.0

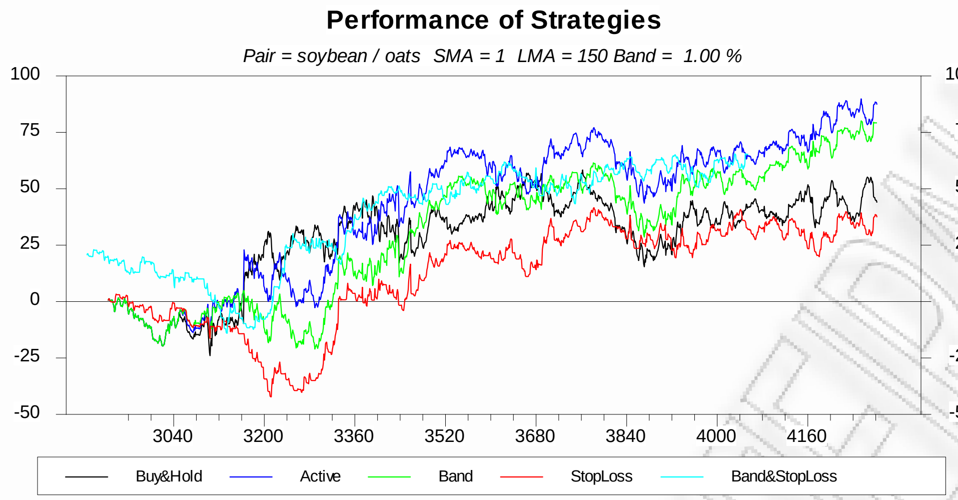
Net Performance of BuyHold_Performance = 32.18
Net Performance of Active_Performance = 75.59 %
Net Performance of Band_Performance = 69.67 %
Net Performance of StopLoss_Performance = -18.61 %
Net Performance of Band&StopLoss_Performance = -45.15 %
Nr.of Switches of Active_Performance = 72.0
Nr.of Switches of Band_Performance = 67.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 186.0

Net Performance of BuyHold_Performance = 32.18
Net Performance of Active_Performance = 75.59 %
Net Performance of Band_Performance = 69.67 %
Net Performance of StopLoss_Performance = -18.61 %
Net Performance of Band&StopLoss_Performance = -45.15 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 5.92 24.69 -2.18 48.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 17.89 24.67 -2.12 48.97 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 20.17 23.84 -2.06 43.15 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 11.54 20.23 -1.79 34.76 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 12.18 19.37 -1.65 29.60 %

-14-





Pair = soybean / oats
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 43.43754207640 86.82332297032 78.75431234438 36.92876835314 52.03944004733

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 43.43754207640 86.82332297032 78.75431234438 36.92876835314 52.03944004733

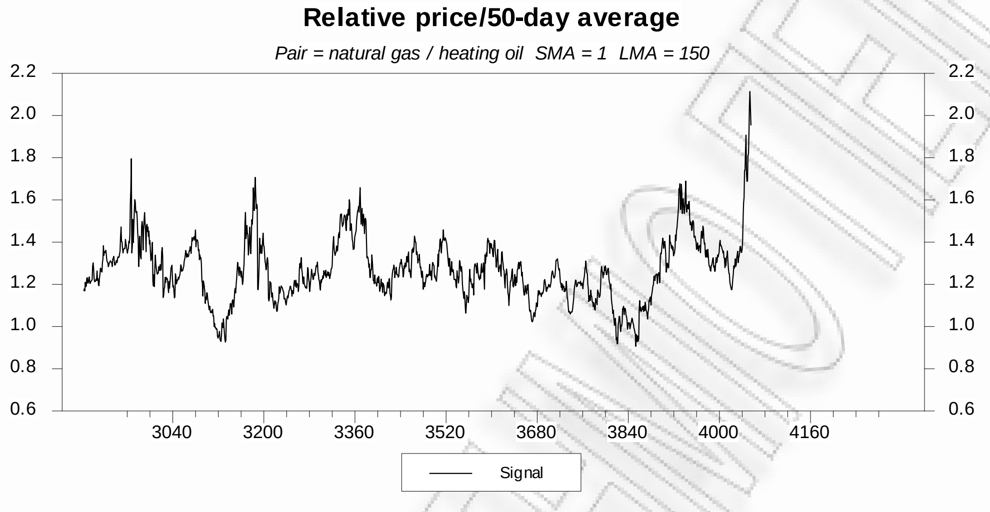
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 59.0
Nr.of Switches of StopLoss_Performance = 146.0
Nr.of Switches of Band&StopLoss_performance = 181.0

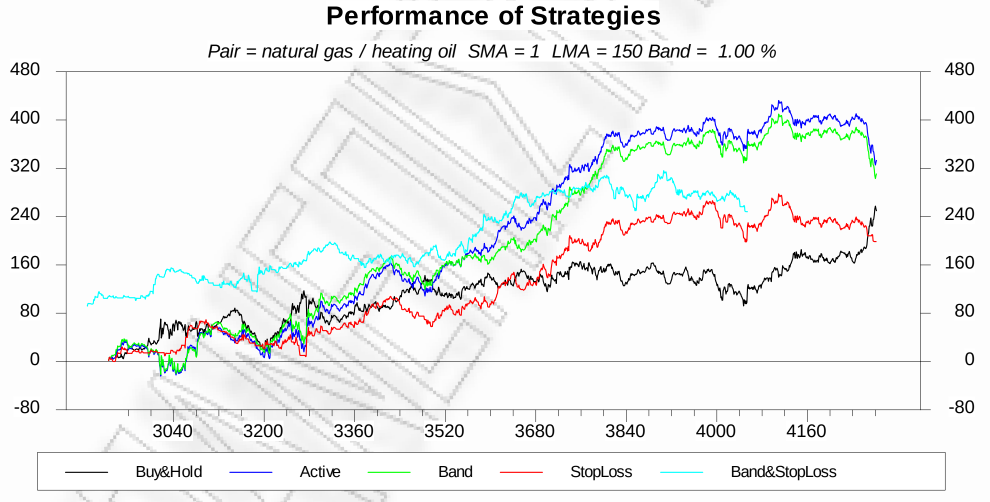
Net Performance of BuyHold_Performance = 43.44
Net Performance of Active_Performance = 67.92 %
Net Performance of Band_Performance = 61.05 %
Net Performance of StopLoss_Performance = -6.87 %
Net Performance of Band&StopLoss_Performance = -2.26 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 59.0
Nr.of Switches of StopLoss_Performance = 146.0
Nr.of Switches of Band&StopLoss_performance = 181.0

Net Performance of BuyHold_Performance = 43.44
Net Performance of Active_Performance = 67.92 %
Net Performance of Band_Performance = 61.05 %
Net Performance of StopLoss_Performance = -6.87 %
Net Performance of Band&StopLoss_Performance = -2.26 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 8.00 29.27 -2.68 49.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 15.98 29.25 -2.45 50.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 17.70 26.89 -2.41 45.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 14.81 22.66 -1.98 32.92 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 19.52 21.13 -1.89 29.31 %

-18-





Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 247.45569445834 332.1231519355 309.6595479681 197.0469386797 182.16017172891

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 247.45569445834 332.1231519355 309.6595479681 197.0469386797 182.16017172891

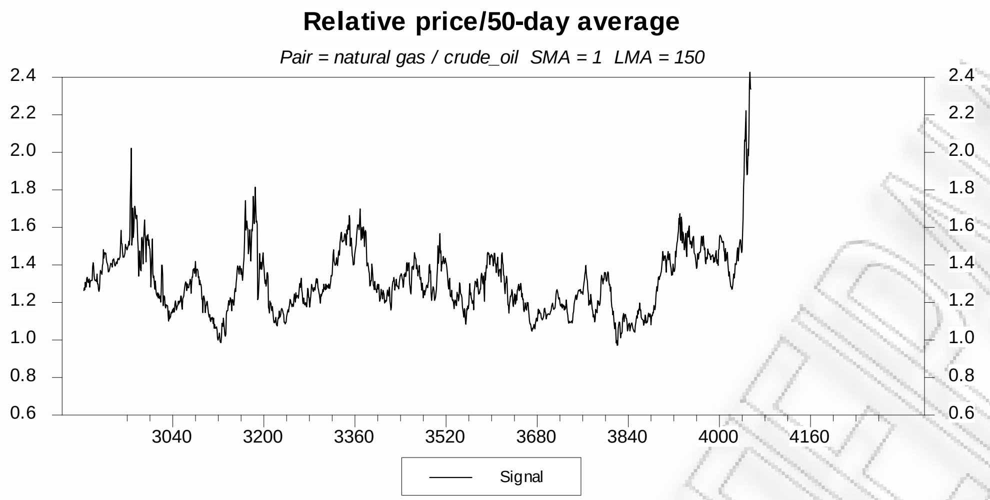
Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 60.0
Nr.of Switches of StopLoss_Performance = 108.0
Nr.of Switches of Band&StopLoss_performance = 163.0

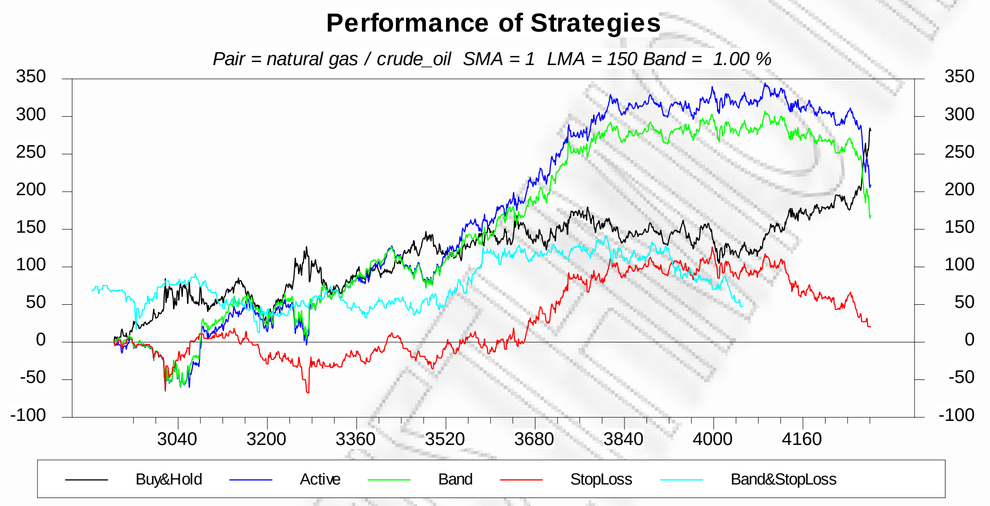
Net Performance of BuyHold_Performance = 247.46
Net Performance of Active_Performance = 299.12 %
Net Performance of Band_Performance = 291.66 %
Net Performance of StopLoss_Performance = 164.65 %
Net Performance of Band&StopLoss_Performance = 133.26 %
Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 60.0
Nr.of Switches of StopLoss_Performance = 108.0
Nr.of Switches of Band&StopLoss_performance = 163.0

Net Performance of BuyHold_Performance = 247.46
Net Performance of Active_Performance = 299.12 %
Net Performance of Band_Performance = 291.66 %
Net Performance of StopLoss_Performance = 164.65 %
Net Performance of Band&StopLoss_Performance = 133.26 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 45.56 66.93 -5.71 48.53 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 61.14 66.88 -5.68 48.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 60.27 65.65 -5.57 46.02 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 42.18 54.16 -5.08 38.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 42.48 52.69 -4.95 36.16 %

-22-





Pair = natural gas / crude_oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 280.56614945871 206.8995663561 166.2653241304 19.2552380389 -24.84765189394

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 280.56614945871 206.8995663561 166.2653241304 19.2552380389 -24.84765189394

Nr.of Switches of Active_Performance = 93.0
Nr.of Switches of Band_Performance = 57.0
Nr.of Switches of StopLoss_Performance = 140.0
Nr.of Switches of Band&StopLoss_performance = 186.0

Net Performance of BuyHold_Performance = 280.57
Net Performance of Active_Performance = 179.00 %
Net Performance of Band_Performance = 149.17 %
Net Performance of StopLoss_Performance = -22.74 %
Net Performance of Band&StopLoss_Performance = -80.65 %
Nr.of Switches of Active_Performance = 93.0
Nr.of Switches of Band_Performance = 57.0
Nr.of Switches of StopLoss_Performance = 140.0
Nr.of Switches of Band&StopLoss_performance = 186.0

Net Performance of BuyHold_Performance = 280.57
Net Performance of Active_Performance = 179.00 %
Net Performance of Band_Performance = 149.17 %
Net Performance of StopLoss_Performance = -22.74 %
Net Performance of Band&StopLoss_Performance = -80.65 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 51.65 69.37 -6.23 47.79 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 38.09 69.40 -6.42 49.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 33.76 67.86 -6.32 46.76 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 11.22 56.32 -5.41 37.63 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 5.70 54.84 -5.37 35.20 %

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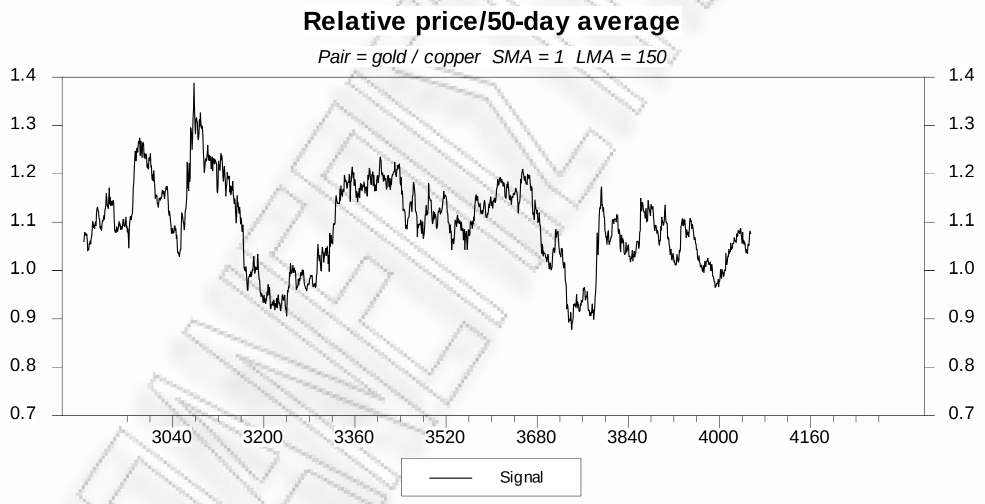

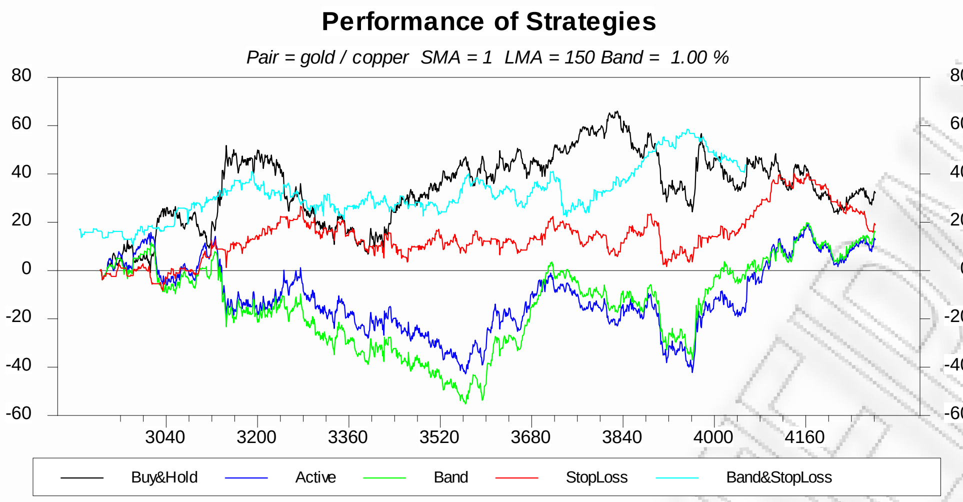

Pair = gold / copper
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 31.63023932684 12.26337275683 15.62554674227 18.37981189232 30.52687272700

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 31.63023932684 12.26337275683 15.62554674227 18.37981189232 30.52687272700

Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 58.0
Nr.of Switches of StopLoss_Performance = 192.0
Nr.of Switches of Band&StopLoss_performance = 198.0

Net Performance of BuyHold_Performance = 31.63
Net Performance of Active_Performance = -6.64 %
Net Performance of Band_Performance = -1.77 %
Net Performance of StopLoss_Performance = -39.22 %
Net Performance of Band&StopLoss_Performance = -28.87 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 58.0
Nr.of Switches of StopLoss_Performance = 192.0
Nr.of Switches of Band&StopLoss_performance = 198.0

Net Performance of BuyHold_Performance = 31.63
Net Performance of Active_Performance = -6.64 %
Net Performance of Band_Performance = -1.77 %
Net Performance of StopLoss_Performance = -39.22 %
Net Performance of Band&StopLoss_Performance = -28.87 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 5.82 27.02 -2.65 51.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 2.26 27.02 -2.63 47.79 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 6.02 25.80 -2.54 43.08 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 13.93 19.11 -1.96 25.92 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 16.50 18.42 -1.84 23.12 %

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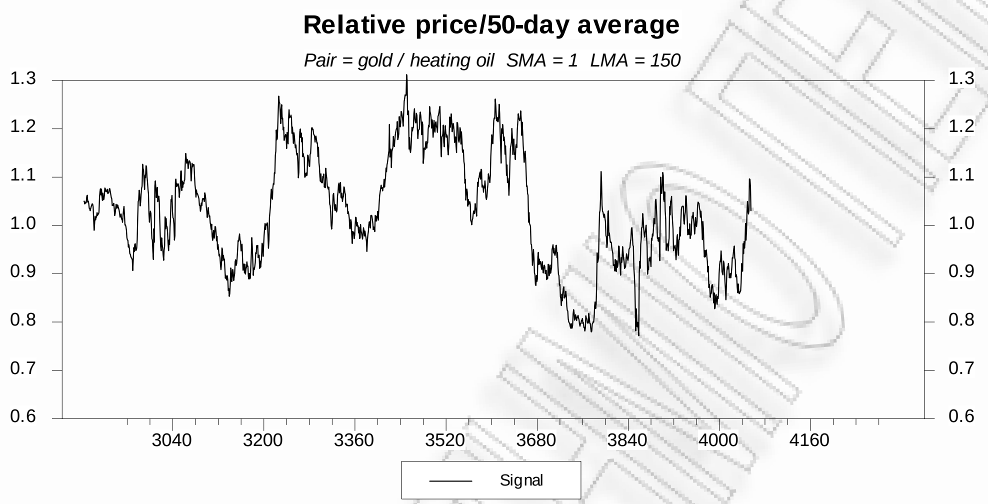
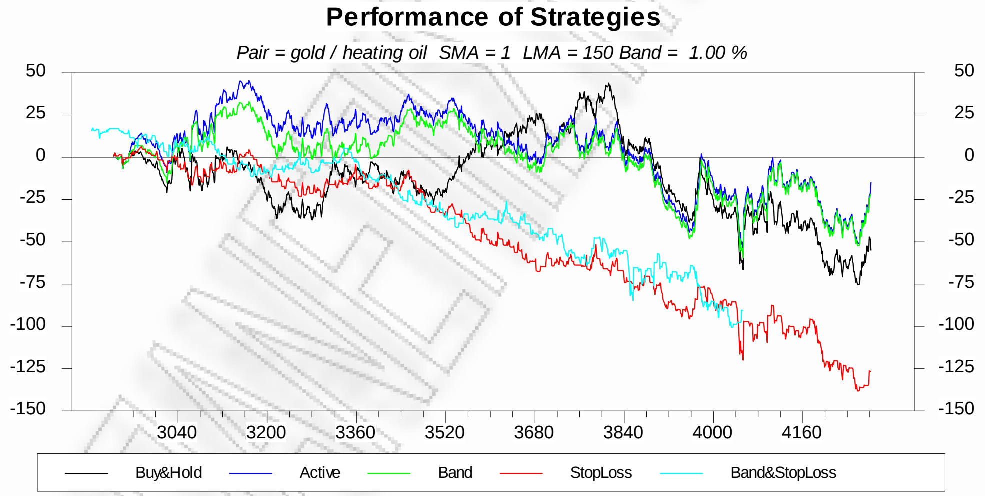




Pair = gold / heating oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 -55.67931525282 -15.31318819922 -22.95983842085 -127.1473850413 -123.5727050724

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -55.67931525282 -15.31318819922 -22.95983842085 -127.1473850413 -123.5727050724

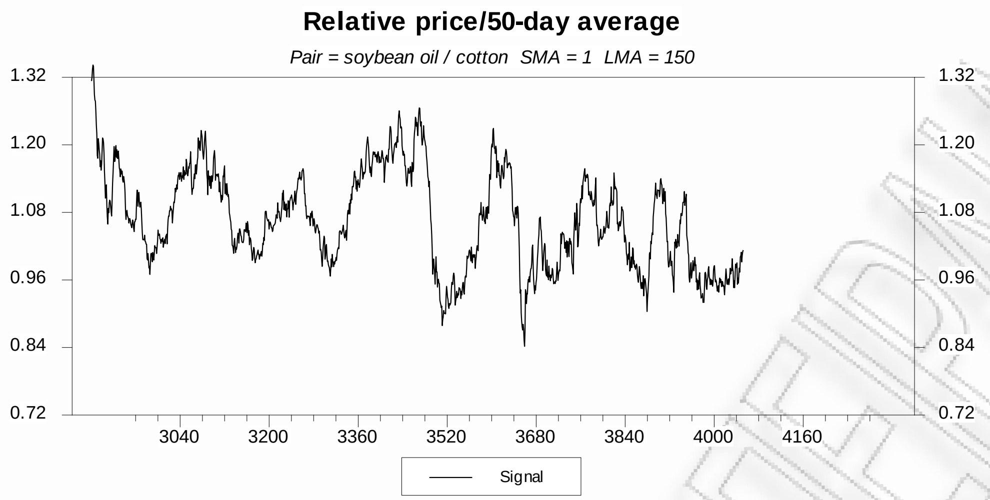
Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 43.0
Nr.of Switches of StopLoss_Performance = 173.0
Nr.of Switches of Band&StopLoss_performance = 195.0

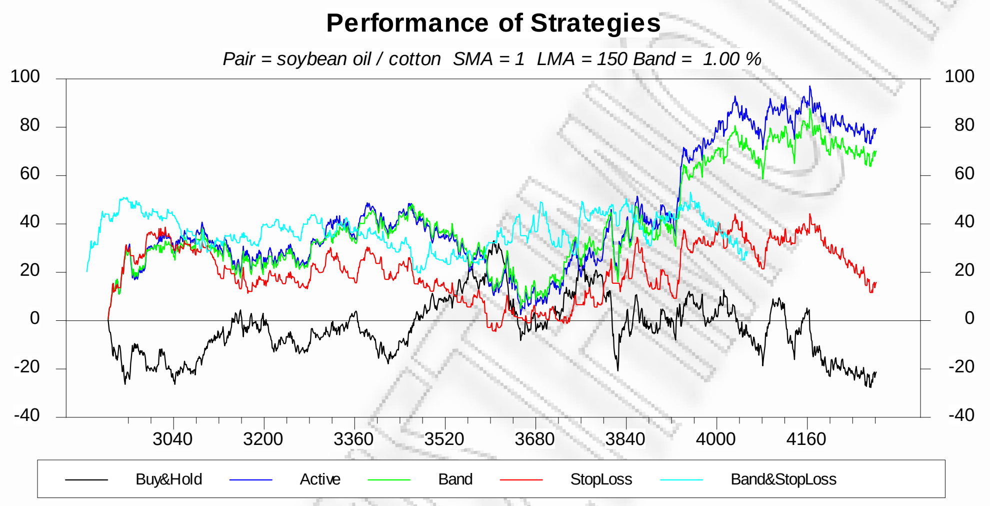
Net Performance of BuyHold_Performance = -55.68
Net Performance of Active_Performance = -32.71 %
Net Performance of Band_Performance = -35.86 %
Net Performance of StopLoss_Performance = -179.05 %
Net Performance of Band&StopLoss_Performance = -182.07 %
Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 43.0
Nr.of Switches of StopLoss_Performance = 173.0
Nr.of Switches of Band&StopLoss_performance = 195.0

Net Performance of BuyHold_Performance = -55.68
Net Performance of Active_Performance = -32.71 %
Net Performance of Band_Performance = -35.86 %
Net Performance of StopLoss_Performance = -179.05 %
Net Performance of Band&StopLoss_Performance = -182.07 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.25 39.48 -3.61 52.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -2.82 39.49 -3.61 51.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -1.91 38.89 -3.56 48.67 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -13.91 29.74 -3.14 28.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -12.03 29.14 -3.09 25.99 %

-26-





Pair = soybean oil / cotton
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -21.57800100423 79.196154033752 69.852523867169 15.50966818294 10.06603801636

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -21.57800100423 79.196154033752 69.852523867169 15.50966818294 10.06603801636

Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 49.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 190.0

Net Performance of BuyHold_Performance = -21.58
Net Performance of Active_Performance = 61.80 %
Net Performance of Band_Performance = 55.15 %
Net Performance of StopLoss_Performance = -30.99 %
Net Performance of Band&StopLoss_Performance = -46.93 %
Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 49.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 190.0

Net Performance of BuyHold_Performance = -21.58
Net Performance of Active_Performance = 61.80 %
Net Performance of Band_Performance = 55.15 %
Net Performance of StopLoss_Performance = -30.99 %
Net Performance of Band&StopLoss_Performance = -46.93 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.97 28.18 -2.81 50.37 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 14.58 28.17 -2.64 48.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.51 27.51 -2.60 45.29 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 11.36 22.39 -2.26 32.18 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 12.29 21.55 -2.17 28.65 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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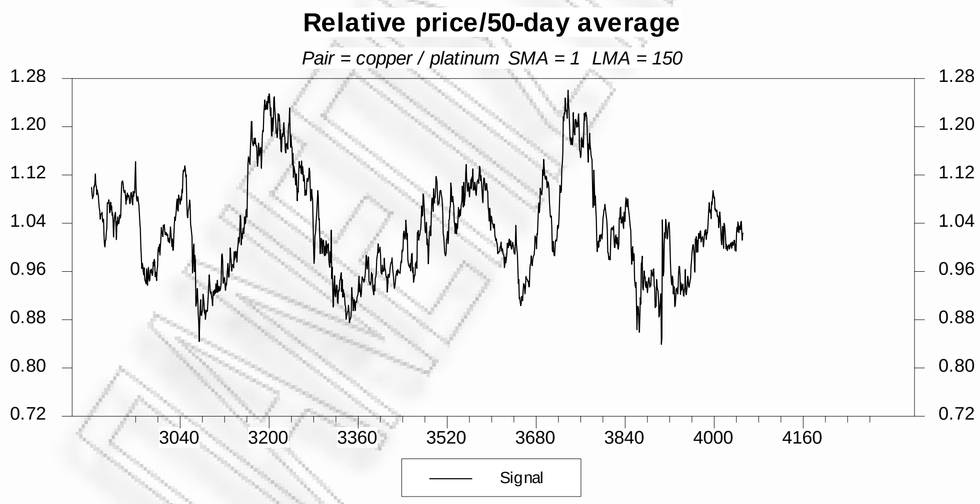
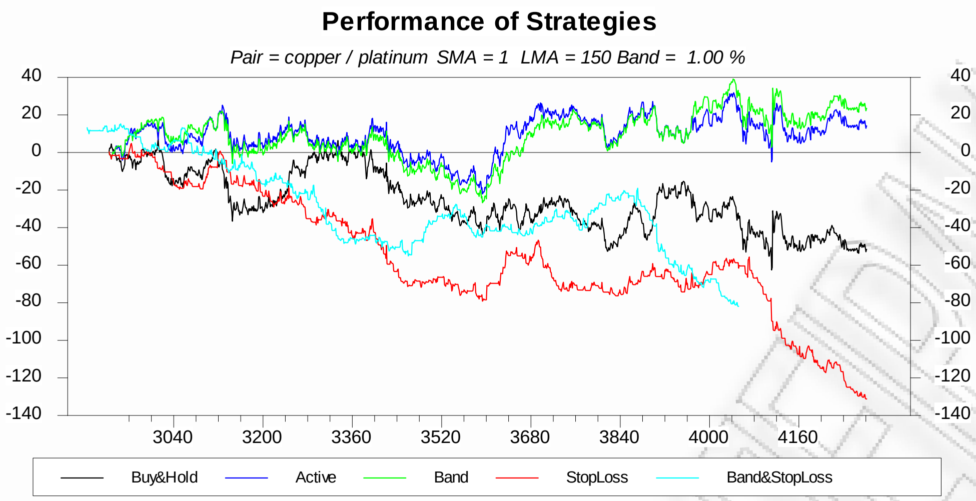




Pair = copper / platinum
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -52.03661793330 13.72524111653 23.02246186045 -131.7408788832 -110.9222499663

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -52.03661793330 13.72524111653 23.02246186045 -131.7408788832 -110.9222499663

Nr.of Switches of Active_Performance = 54.0
Nr.of Switches of Band_Performance = 50.0
Nr.of Switches of StopLoss_Performance = 195.0
Nr.of Switches of Band&StopLoss_performance = 221.0

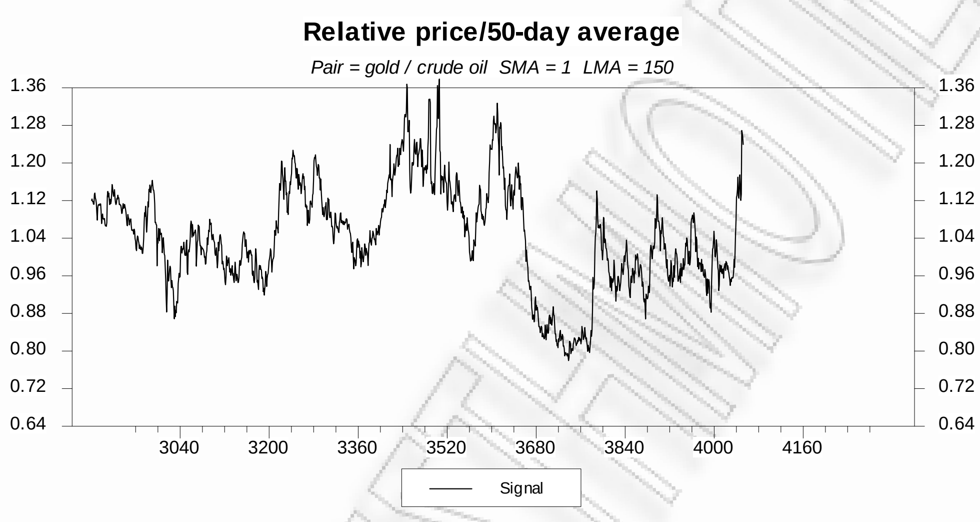
Net Performance of BuyHold_Performance = -52.04
Net Performance of Active_Performance = -2.47 %
Net Performance of Band_Performance = 8.02 %
Net Performance of StopLoss_Performance = -190.24 %
Net Performance of Band&StopLoss_Performance = -177.22 %
Nr.of Switches of Active_Performance = 54.0
Nr.of Switches of Band_Performance = 50.0
Nr.of Switches of StopLoss_Performance = 195.0
Nr.of Switches of Band&StopLoss_performance = 221.0

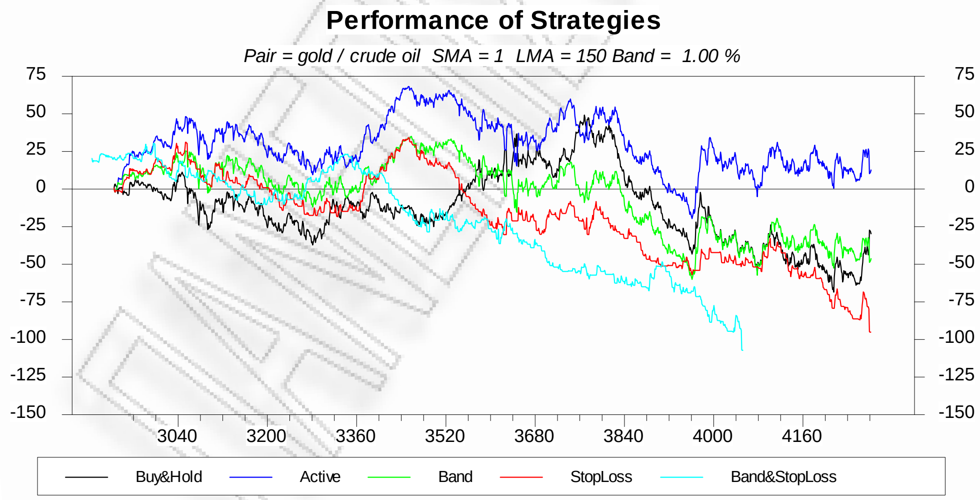
Net Performance of BuyHold_Performance = -52.04
Net Performance of Active_Performance = -2.47 %
Net Performance of Band_Performance = 8.02 %
Net Performance of StopLoss_Performance = -190.24 %
Net Performance of Band&StopLoss_Performance = -177.22 %

Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -9.58 34.10 -3.40 51.91 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 2.53 34.10 -3.39 47.13 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 6.94 33.26 -3.25 43.96 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -13.54 22.45 -2.44 26.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -8.27 21.29 -2.29 23.86 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-29-





Pair = gold / crude oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -30.67935636052 12.27146618320 -46.66945348627 -95.78178701097 -148.3153790728

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -30.67935636052 12.27146618320 -46.66945348627 -95.78178701097 -148.3153790728

Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 49.0
Nr.of Switches of StopLoss_Performance = 181.0
Nr.of Switches of Band&StopLoss_performance = 218.0

Net Performance of BuyHold_Performance = -30.68
Net Performance of Active_Performance = -6.63 %
Net Performance of Band_Performance = -61.37 %
Net Performance of StopLoss_Performance = -150.08 %
Net Performance of Band&StopLoss_Performance = -213.72 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 49.0
Nr.of Switches of StopLoss_Performance = 181.0
Nr.of Switches of Band&StopLoss_performance = 218.0

Net Performance of BuyHold_Performance = -30.68
Net Performance of Active_Performance = -6.63 %
Net Performance of Band_Performance = -61.37 %
Net Performance of StopLoss_Performance = -150.08 %
Net Performance of Band&StopLoss_Performance = -213.72 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -5.65 39.80 -3.82 52.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 2.26 39.80 -3.83 51.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -5.94 38.85 -3.83 48.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -7.69 27.96 -2.83 28.50 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -15.32 26.61 -2.83 26.29 %

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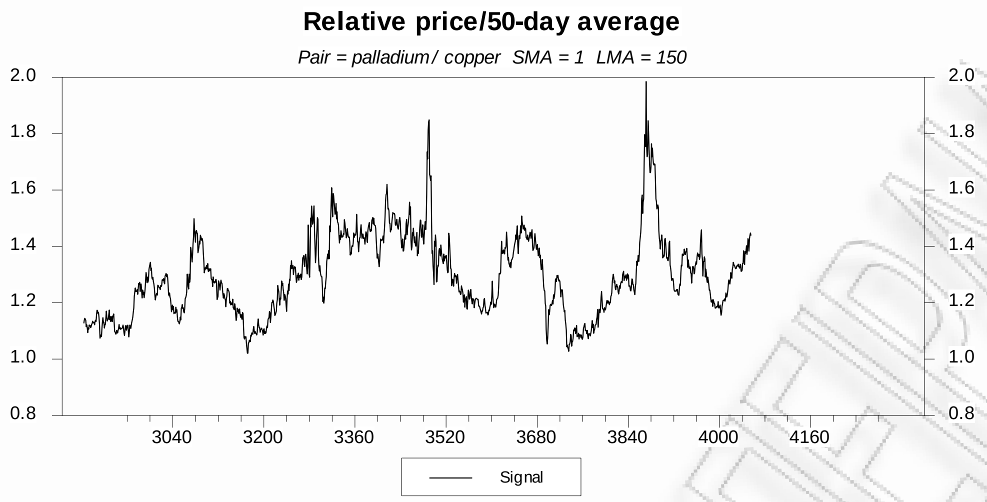
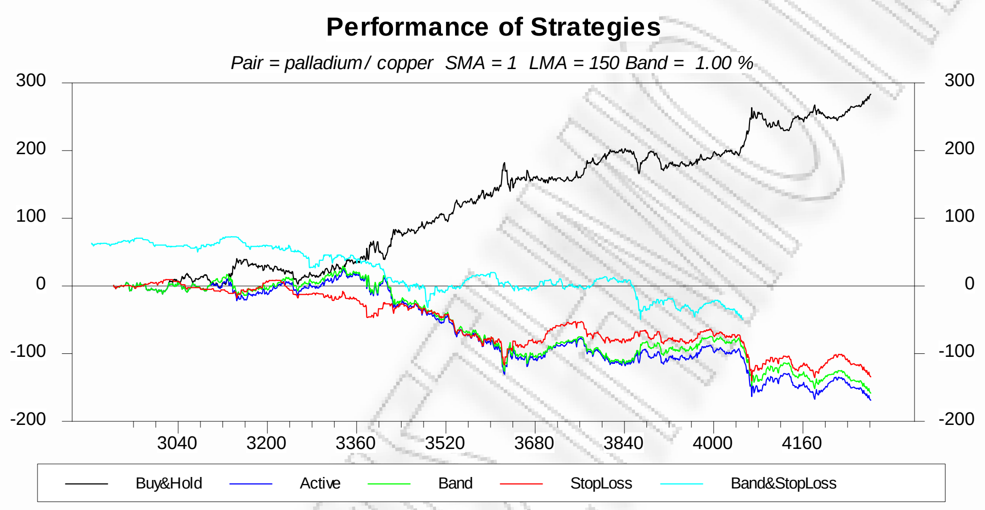




Pair = palladium / copper
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 281.2017081613 -169.8051952904 -159.2695989936 -135.2120372766 -131.4537649060

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 281.2017081613 -169.8051952904 -159.2695989936 -135.2120372766 -131.4537649060

Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 39.0
Nr.of Switches of StopLoss_Performance = 167.0

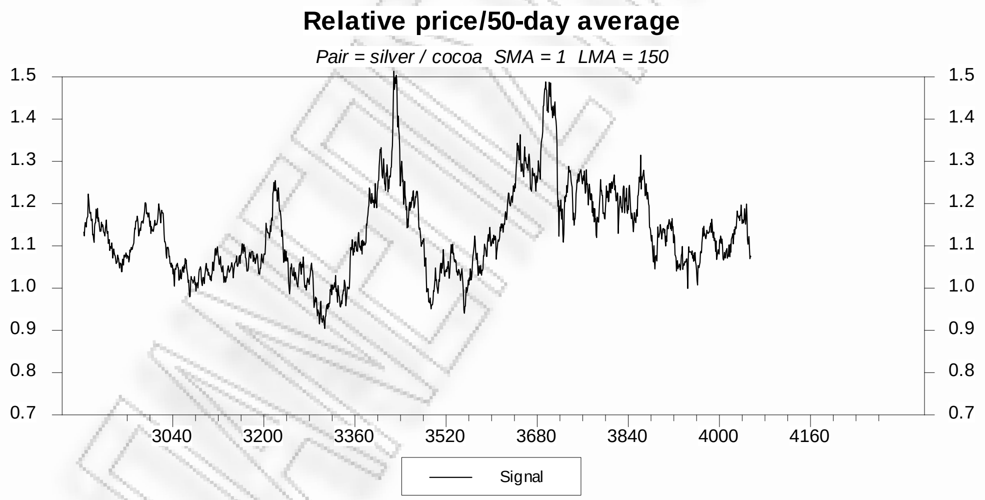
Nr.of Switches of Band&StopLoss_performance = 171.0

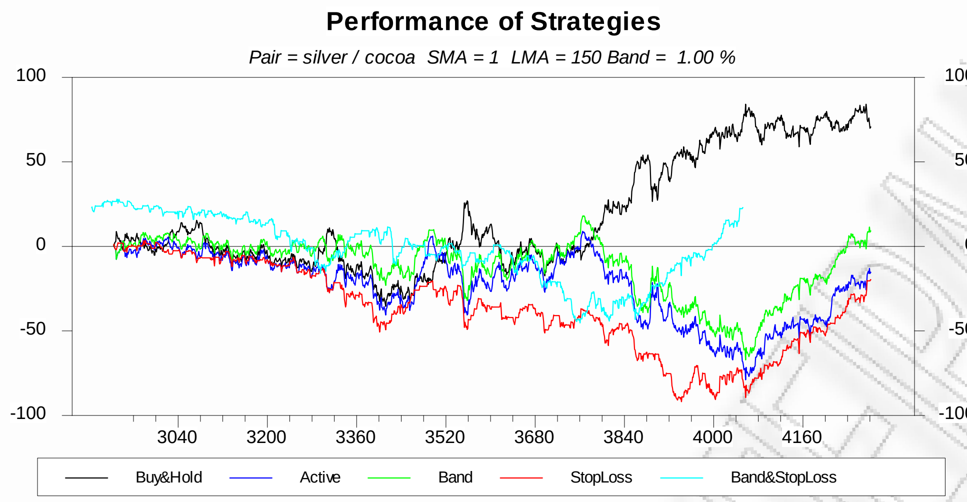
Net Performance of BuyHold_Performance = 281.20
Net Performance of Active_Performance = -184.21 %
Net Performance of Band_Performance = -170.97 %
Net Performance of StopLoss_Performance = -185.31 %
Net Performance of Band&StopLoss_Performance = -182.75 %
Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 39.0
Nr.of Switches of StopLoss_Performance = 167.0
Nr.of Switches of Band&StopLoss_performance = 171.0

Net Performance of BuyHold_Performance = 281.20
Net Performance of Active_Performance = -184.21 %
Net Performance of Band_Performance = -170.97 %
Net Performance of StopLoss_Performance = -185.31 %
Net Performance of Band&StopLoss_Performance = -182.75 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 51.77 43.16 -3.52 45.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -31.26 43.24 -4.23 50.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -27.22 42.63 -4.21 48.09 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -15.72 33.88 -3.40 32.55 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -14.81 33.50 -3.29 31.37 %

-31-





Pair = silver / cocoa
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 69.85158208165 -16.12059475948 8.35755128955 -20.49885968171 0.01752556528

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 69.85158208165 -16.12059475948 8.35755128955 -20.49885968171 0.01752556528

Nr.of Switches of Active_Performance = 52.0
Nr.of Switches of Band_Performance = 50.0
Nr.of Switches of StopLoss_Performance = 195.0
Nr.of Switches of Band&StopLoss_performance = 196.0

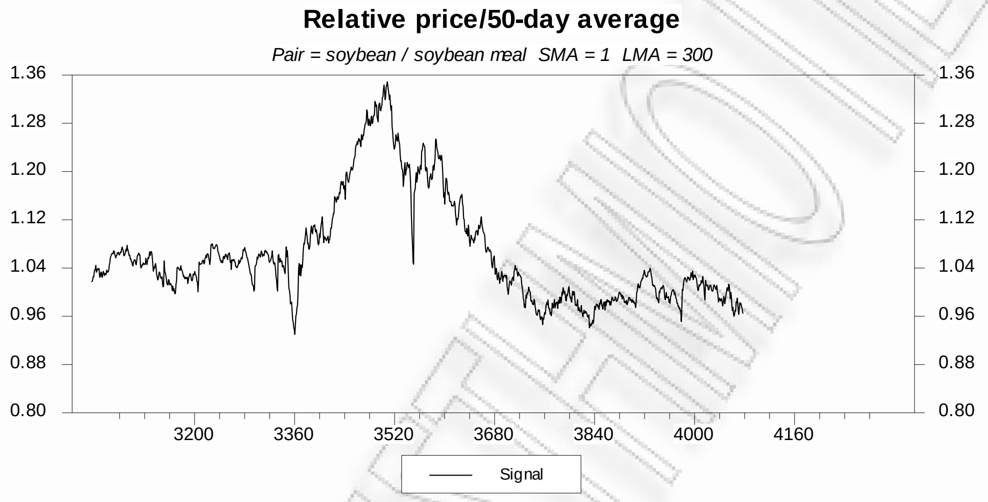
Net Performance of BuyHold_Performance = 69.85
Net Performance of Active_Performance = -31.72 %
Net Performance of Band_Performance = -6.64 %
Net Performance of StopLoss_Performance = -79.00 %
Net Performance of Band&StopLoss_Performance = -58.78 %
Nr.of Switches of Active_Performance = 52.0
Nr.of Switches of Band_Performance = 50.0
Nr.of Switches of StopLoss_Performance = 195.0
Nr.of Switches of Band&StopLoss_performance = 196.0

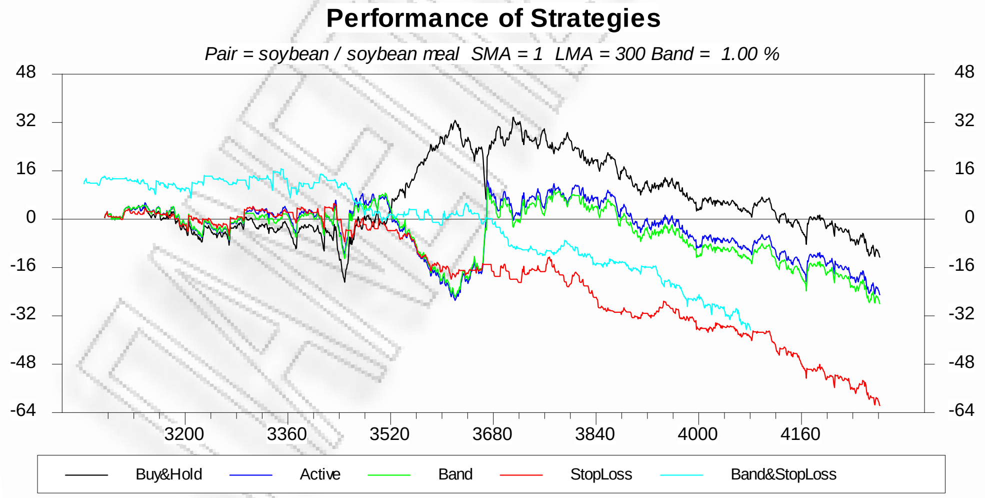
Net Performance of BuyHold_Performance = 69.85
Net Performance of Active_Performance = -31.72 %
Net Performance of Band_Performance = -6.64 %
Net Performance of StopLoss_Performance = -79.00 %
Net Performance of Band&StopLoss_Performance = -58.78 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 12.86 33.84 -3.23 48.45 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -2.97 33.85 -3.35 49.41 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 4.24 32.77 -3.21 46.02 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 6.94 25.35 -2.71 26.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 10.77 25.03 -2.64 25.63 %

1.4. **1-300, 1%**

-1-





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -13.00148254878 -25.42172612109 -28.40696336561 -62.10474836090 -56.28881350484

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -13.00148254878 -25.42172612109 -28.40696336561 -62.10474836090 -56.28881350484

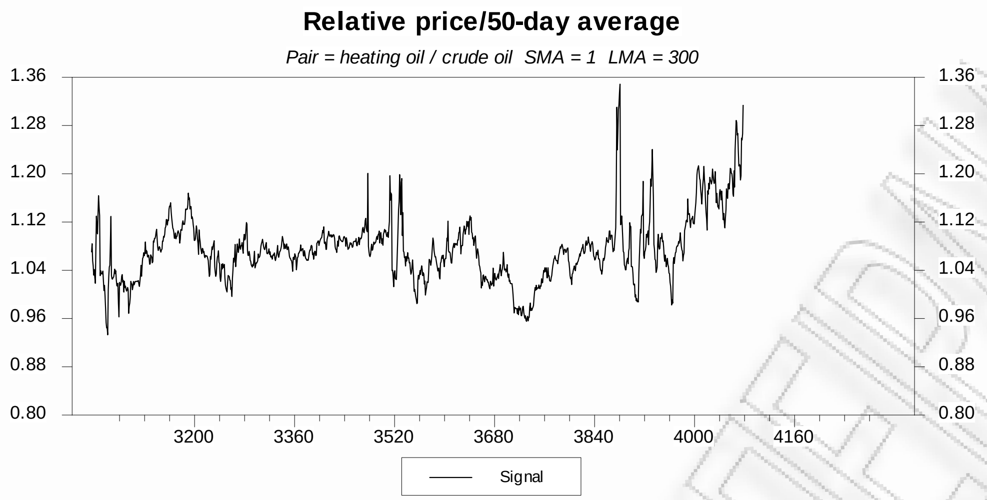
Nr.of Switches of Active_Performance = 17.0
Nr.of Switches of Band_Performance = 25.0
Nr.of Switches of StopLoss_Performance = 151.0
Nr.of Switches of Band&StopLoss_performance = 158.0

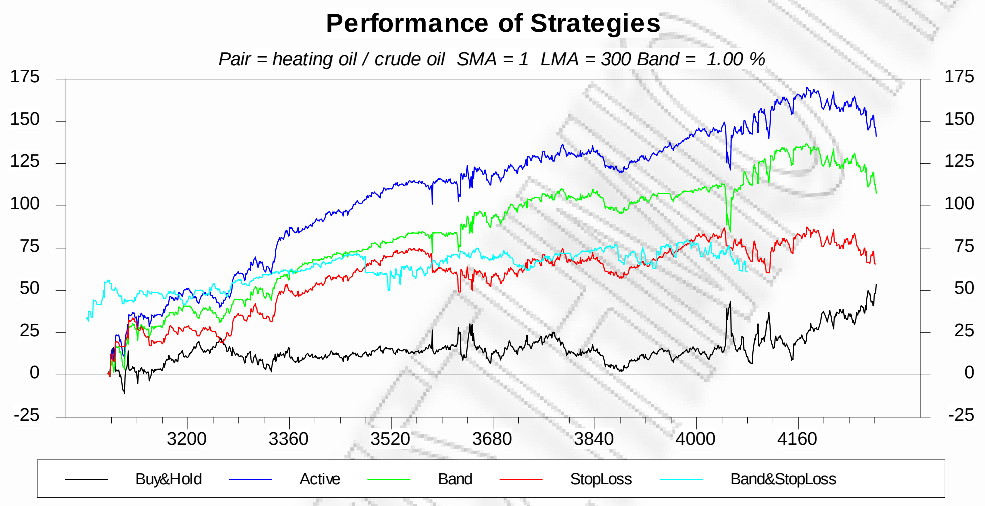
Net Performance of BuyHold_Performance = -13.00
Net Performance of Active_Performance = -30.52 %
Net Performance of Band_Performance = -35.91 %
Net Performance of StopLoss_Performance = -107.40 %
Net Performance of Band&StopLoss_Performance = -103.69 %
Nr.of Switches of Active_Performance = 17.0
Nr.of Switches of Band_Performance = 25.0
Nr.of Switches of StopLoss_Performance = 151.0
Nr.of Switches of Band&StopLoss_performance = 158.0

Net Performance of BuyHold_Performance = -13.00
Net Performance of Active_Performance = -30.52 %
Net Performance of Band_Performance = -35.91 %
Net Performance of StopLoss_Performance = -107.40 %
Net Performance of Band&StopLoss_Performance = -103.69 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.69 16.73 -1.52 53.81 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -5.26 16.73 -1.50 54.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -4.39 16.46 -1.48 51.08 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -3.54 11.40 -1.11 30.38 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -1.90 11.14 -1.04 27.40 %

-2-





Pair = heating oil / crude oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 53.12459997992 140.3338738144 106.6502442115 65.06331765170 32.27968804879

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 53.12459997992 140.3338738144 106.6502442115 65.06331765170 32.27968804879

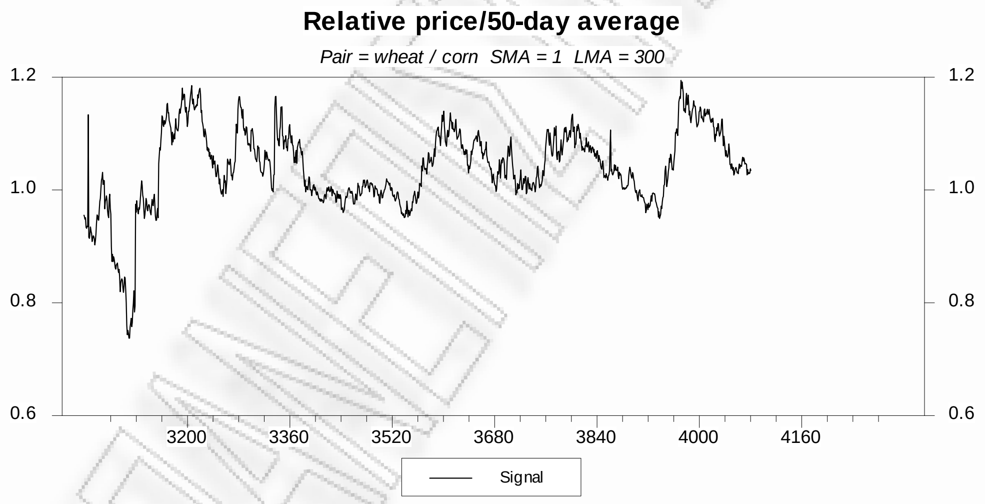
Nr.of Switches of Active_Performance = 100.0
Nr.of Switches of Band_Performance = 84.0
Nr.of Switches of StopLoss_Performance = 58.0
Nr.of Switches of Band&StopLoss_performance = 138.0

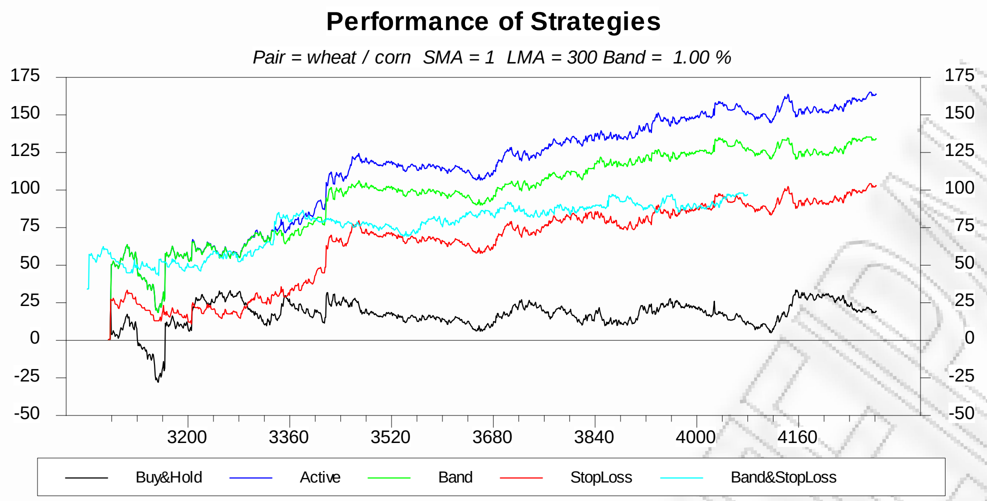
Net Performance of BuyHold_Performance = 53.12
Net Performance of Active_Performance = 110.33 %
Net Performance of Band_Performance = 81.45 %
Net Performance of StopLoss_Performance = 47.66 %
Net Performance of Band&StopLoss_Performance = -9.12 %
Nr.of Switches of Active_Performance = 100.0
Nr.of Switches of Band_Performance = 84.0
Nr.of Switches of StopLoss_Performance = 58.0
Nr.of Switches of Band&StopLoss_performance = 138.0

Net Performance of BuyHold_Performance = 53.12
Net Performance of Active_Performance = 110.33 %
Net Performance of Band_Performance = 81.45 %
Net Performance of StopLoss_Performance = 47.66 %
Net Performance of Band&StopLoss_Performance = -9.12 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 10.99 30.71 -2.20 47.60 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 29.04 30.67 -2.20 47.93 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 27.22 29.48 -2.06 39.16 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 17.00 24.73 -1.86 43.05 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 15.19 23.24 -1.79 34.27 %

-5-





Pair = wheat / corn
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 18.32335142956 162.8191933514 133.1372973251 101.9376804503 72.55578442394

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 18.32335142956 162.8191933514 133.1372973251 101.9376804503 72.55578442394

Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 48.0
Nr.of Switches of StopLoss_Performance = 60.0
Nr.of Switches of Band&StopLoss_performance = 106.0

Net Performance of BuyHold_Performance = 18.32
Net Performance of Active_Performance = 143.92 %
Net Performance of Band_Performance = 118.74 %
Net Performance of StopLoss_Performance = 83.94 %
Net Performance of Band&StopLoss_Performance = 40.76 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 48.0
Nr.of Switches of StopLoss_Performance = 60.0
Nr.of Switches of Band&StopLoss_performance = 106.0

Net Performance of BuyHold_Performance = 18.32
Net Performance of Active_Performance = 143.92 %
Net Performance of Band_Performance = 118.74 %
Net Performance of StopLoss_Performance = 83.94 %
Net Performance of Band&StopLoss_Performance = 40.76 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 3.79 31.76 -2.15 50.66 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 33.70 31.68 -2.12 48.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 30.47 31.09 -2.06 44.62 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 24.76 24.78 -1.95 43.29 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 21.53 24.01 -1.89 39.65 %

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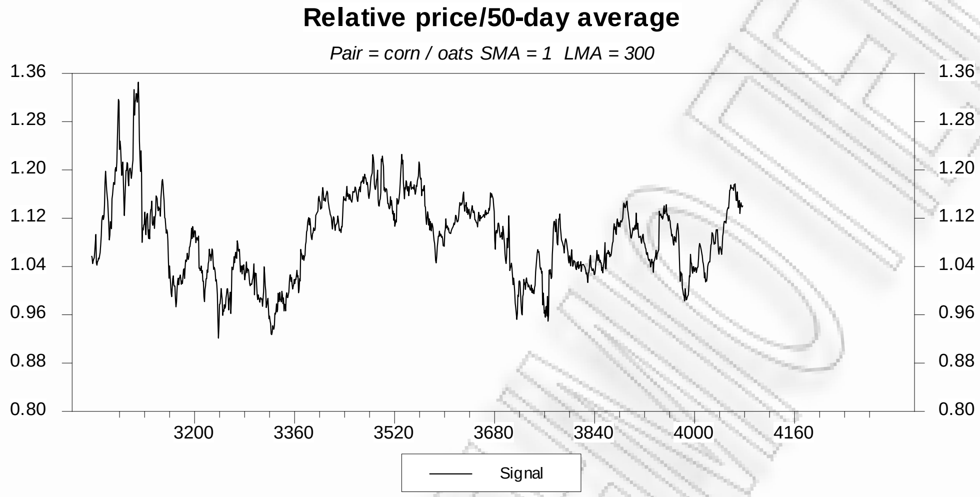

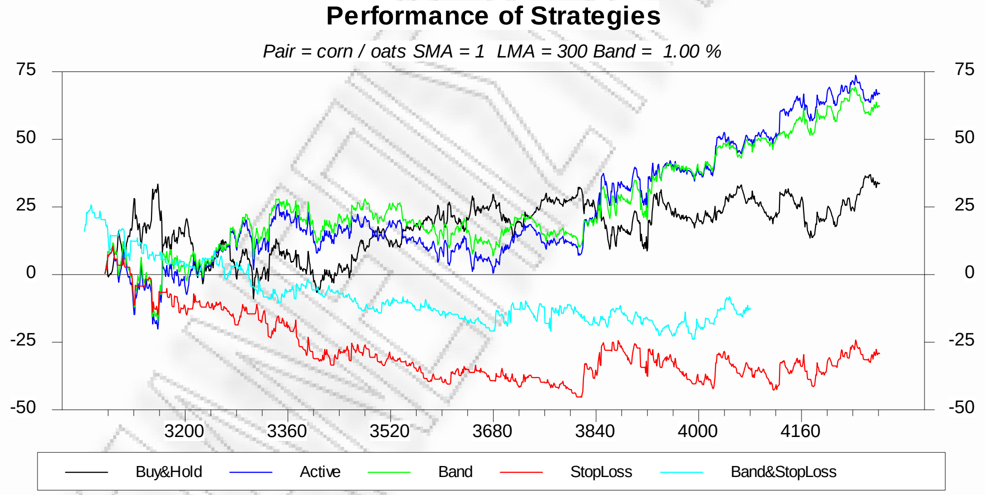

Pair = corn / oats
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 33.37117169989 66.50824836020 61.84622537989 -29.56991832461 -33.34586518051

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 33.37117169989 66.50824836020 61.84622537989 -29.56991832461 -33.34586518051

Nr.of Switches of Active_Performance = 36.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 186.0

Net Performance of BuyHold_Performance = 33.37
Net Performance of Active_Performance = 55.71 %
Net Performance of Band_Performance = 48.65 %
Net Performance of StopLoss_Performance = -76.07 %
Net Performance of Band&StopLoss_Performance = -89.15 %
Nr.of Switches of Active_Performance = 36.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 186.0

Net Performance of BuyHold_Performance = 33.37
Net Performance of Active_Performance = 55.71 %
Net Performance of Band_Performance = 48.65 %
Net Performance of StopLoss_Performance = -76.07 %
Net Performance of Band&StopLoss_Performance = -89.15 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 6.91 25.43 -2.28 48.34 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 13.76 25.42 -2.28 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.47 24.49 -2.24 44.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 3.44 19.54 -1.86 30.22 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.58 18.36 -1.59 26.66 %

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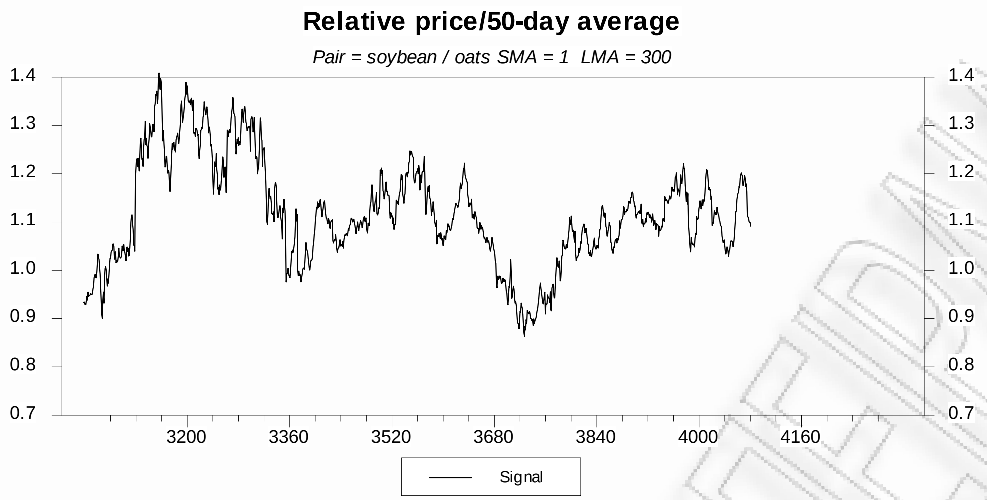

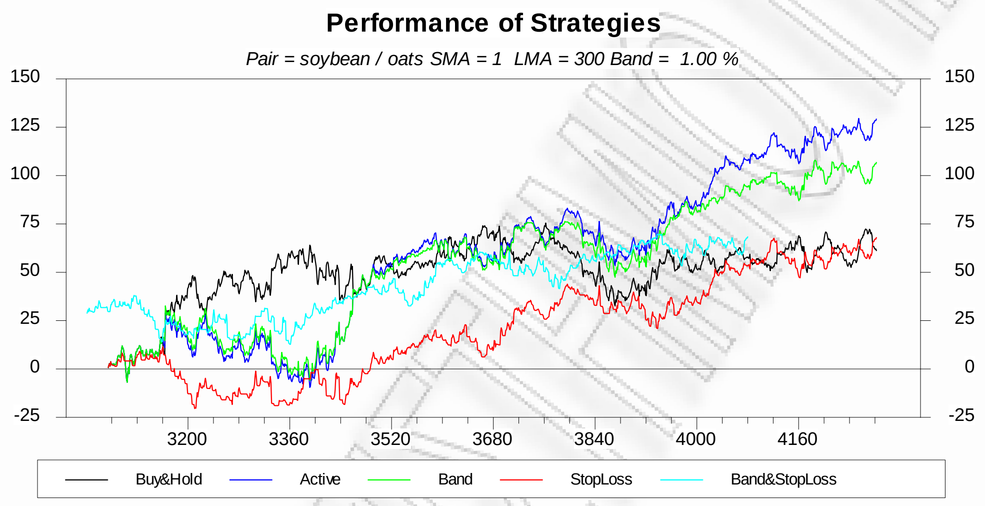

Pair = soybean / oats
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 60.52088431679 128.9095481135 106.4818989202 67.64079612730 46.41314693397

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 60.52088431679 128.9095481135 106.4818989202 67.64079612730 46.41314693397

Nr.of Switches of Active_Performance = 50.0
Nr.of Switches of Band_Performance = 42.0
Nr.of Switches of StopLoss_Performance = 119.0
Nr.of Switches of Band&StopLoss_performance = 156.0

Net Performance of BuyHold_Performance = 60.52
Net Performance of Active_Performance = 113.91 %
Net Performance of Band_Performance = 93.88 %
Net Performance of StopLoss_Performance = 31.94 %
Net Performance of Band&StopLoss_Performance = -0.39 %
Nr.of Switches of Active_Performance = 50.0
Nr.of Switches of Band_Performance = 42.0
Nr.of Switches of StopLoss_Performance = 119.0
Nr.of Switches of Band&StopLoss_performance = 156.0

Net Performance of BuyHold_Performance = 60.52
Net Performance of Active_Performance = 113.91 %
Net Performance of Band_Performance = 93.88 %
Net Performance of StopLoss_Performance = 31.94 %
Net Performance of Band&StopLoss_Performance = -0.39 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 12.53 30.28 -2.80 48.76 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 26.68 30.24 -2.49 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 24.58 29.62 -2.45 45.28 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.32 23.46 -1.99 33.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 19.23 22.65 -1.91 30.13 %

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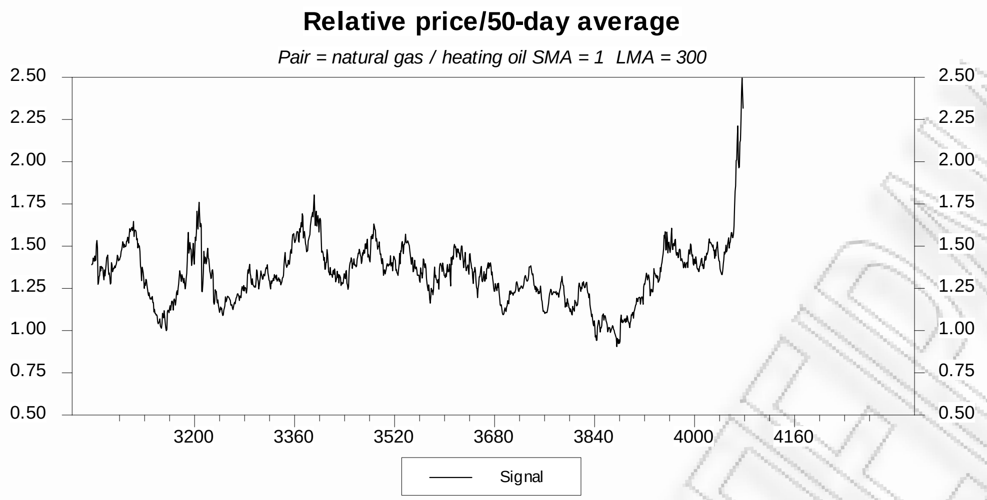
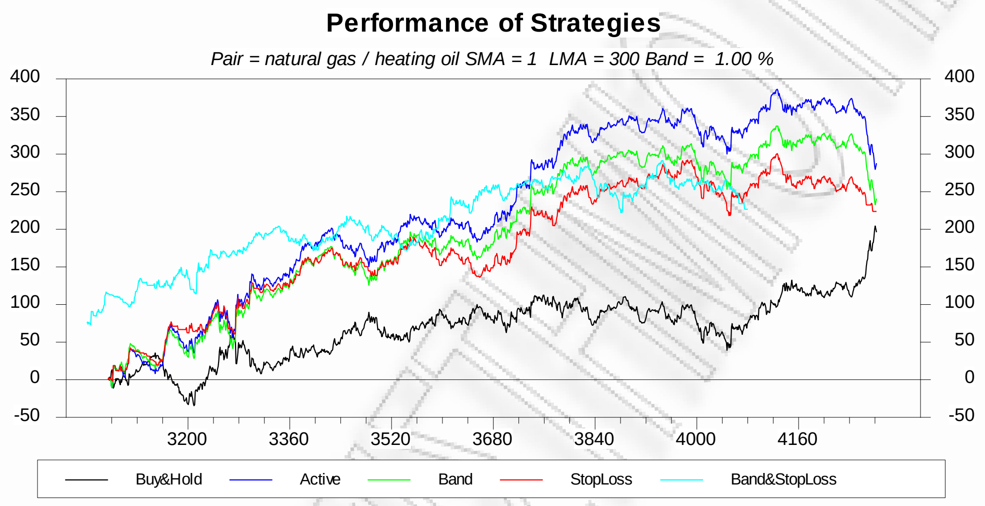




Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 194.8745123624 286.5705448141 239.5426381794 222.4717374655 175.7438308308

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 194.8745123624 286.5705448141 239.5426381794 222.4717374655 175.7438308308

Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 33.0
Nr.of Switches of StopLoss_Performance = 90.0
Nr.of Switches of Band&StopLoss_performance = 121.0

Net Performance of BuyHold_Performance = 194.87
Net Performance of Active_Performance = 264.07 %
Net Performance of Band_Performance = 229.64 %
Net Performance of StopLoss_Performance = 195.47 %
Net Performance of Band&StopLoss_Performance = 139.44 %
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 33.0
Nr.of Switches of StopLoss_Performance = 90.0
Nr.of Switches of Band&StopLoss_performance = 121.0

Net Performance of BuyHold_Performance = 194.87
Net Performance of Active_Performance = 264.07 %
Net Performance of Band_Performance = 229.64 %
Net Performance of StopLoss_Performance = 195.47 %
Net Performance of Band&StopLoss_Performance = 139.44 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 40.33 64.31 -5.65 49.09 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 59.31 64.25 -5.56 48.68 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 51.56 63.45 -5.53 47.19 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 51.57 57.67 -5.21 40.23 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 43.82 56.78 -5.14 38.74 %
I2. Expected Instruction Here
>>>>#<<<<

Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 194.8745123624 286.5705448141 239.5426381794 222.4717374655 175.7438308308

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 194.8745123624 286.5705448141 239.5426381794 222.4717374655 175.7438308308

Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 33.0
Nr.of Switches of StopLoss_Performance = 90.0
Nr.of Switches of Band&StopLoss_performance = 121.0

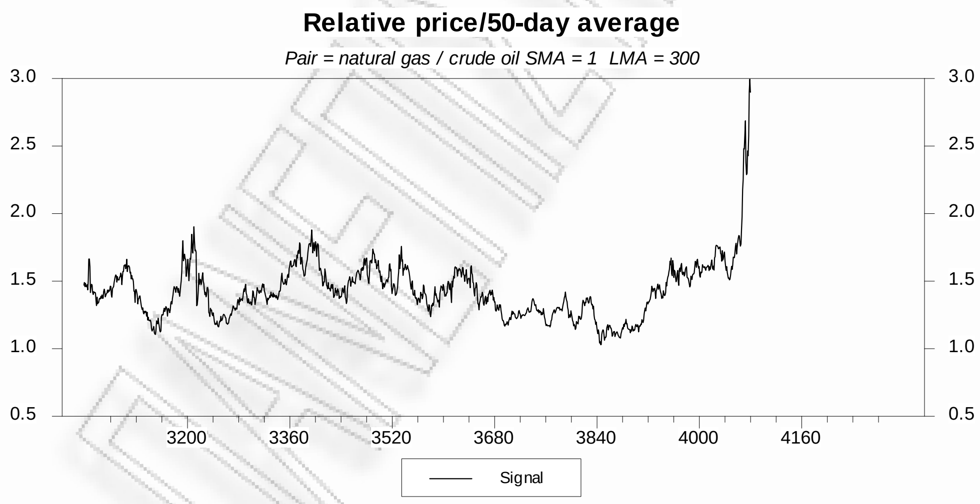
Net Performance of BuyHold_Performance = 194.87

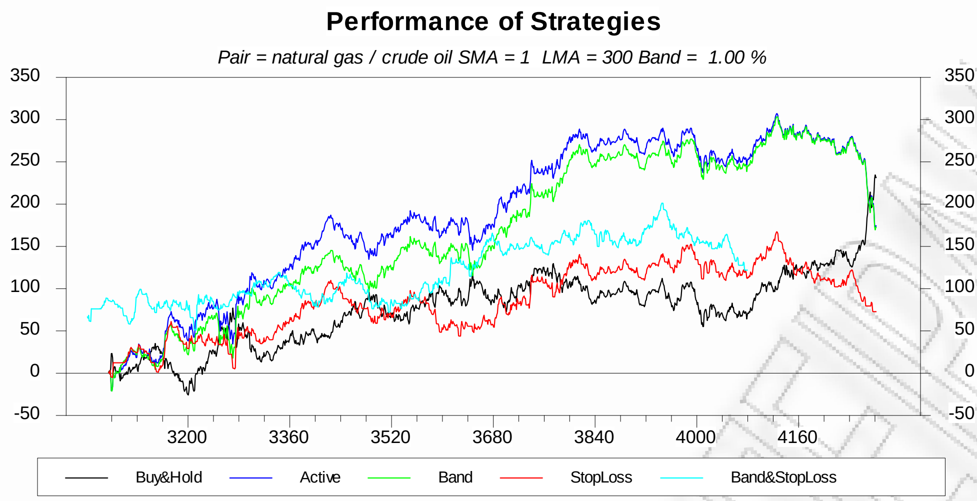
Net Performance of Active_Performance = 264.07 %
Net Performance of Band_Performance = 229.64 %
Net Performance of StopLoss_Performance = 195.47 %
Net Performance of Band&StopLoss_Performance = 139.44 %
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 33.0
Nr.of Switches of StopLoss_Performance = 90.0
Nr.of Switches of Band&StopLoss_performance = 121.0

Net Performance of BuyHold_Performance = 194.87
Net Performance of Active_Performance = 264.07 %
Net Performance of Band_Performance = 229.64 %
Net Performance of StopLoss_Performance = 195.47 %
Net Performance of Band&StopLoss_Performance = 139.44 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 40.33 64.31 -5.65 49.09 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 59.31 64.25 -5.56 48.68 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 51.56 63.45 -5.53 47.19 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 51.57 57.67 -5.21 40.23 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 43.82 56.78 -5.14 38.74 %

-22-





Pair = natural gas / crude oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 230.7452038544 172.7053844010 171.0595047345 71.6734892144 64.5210779133

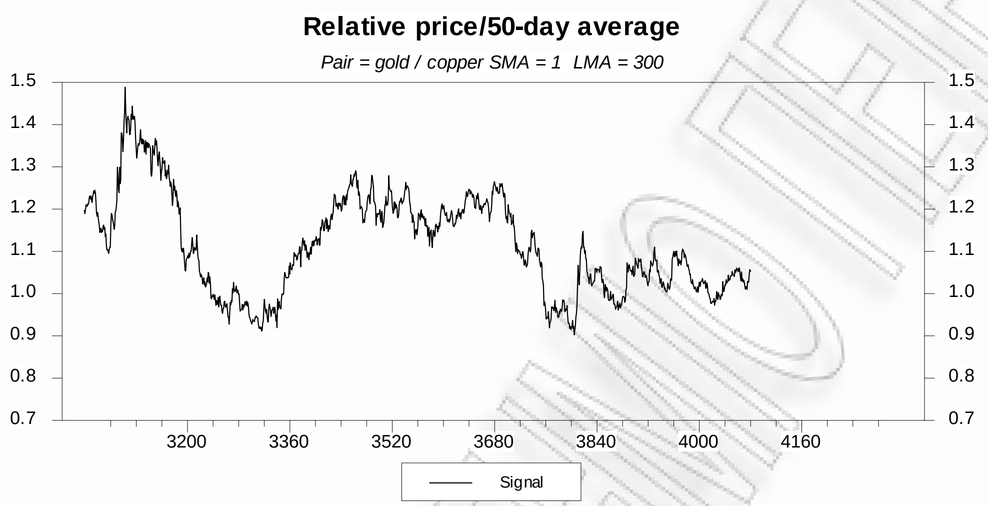
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 230.7452038544 172.7053844010 171.0595047345 71.6734892144 64.5210779133

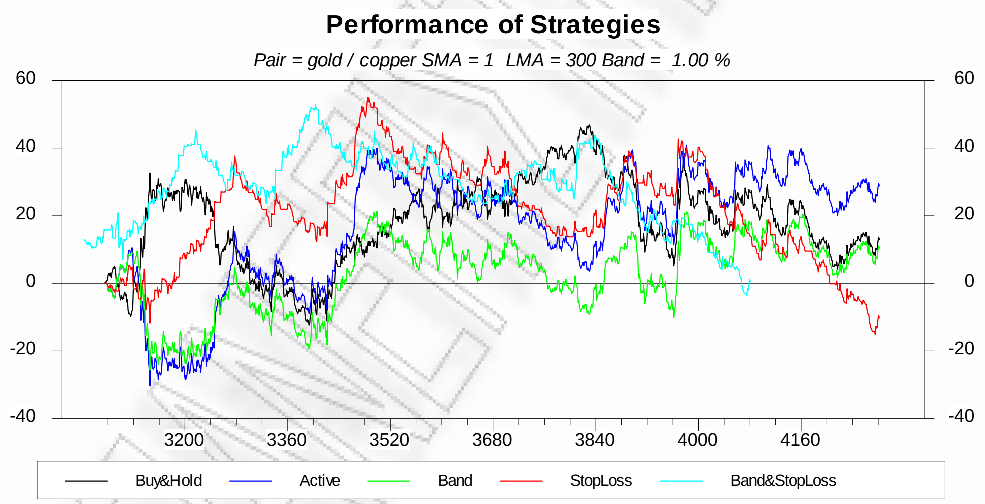
Nr.of Switches of Active_Performance = 71.0
Nr.of Switches of Band_Performance = 45.0
Nr.of Switches of StopLoss_Performance = 109.0
Nr.of Switches of Band&StopLoss_performance = 152.0

Net Performance of BuyHold_Performance = 230.75
Net Performance of Active_Performance = 151.41 %
Net Performance of Band_Performance = 157.56 %
Net Performance of StopLoss_Performance = 38.97 %
Net Performance of Band&StopLoss_Performance = 18.92 %
Nr.of Switches of Active_Performance = 71.0
Nr.of Switches of Band_Performance = 45.0
Nr.of Switches of StopLoss_Performance = 109.0
Nr.of Switches of Band&StopLoss_performance = 152.0

Net Performance of BuyHold_Performance = 230.75
Net Performance of Active_Performance = 151.41 %
Net Performance of Band_Performance = 157.56 %
Net Performance of StopLoss_Performance = 38.97 %
Net Performance of Band&StopLoss_Performance = 18.92 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 47.75 66.06 -6.18 48.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 35.74 66.09 -6.00 49.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 38.13 64.84 -5.86 46.85 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.54 55.62 -5.36 39.32 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 22.73 54.21 -5.27 36.67 %
-24-





Pair = gold / copper
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 12.59256267509 28.45310903268 10.02785965571 -10.56637687635 -14.29411186044

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 12.59256267509 28.45310903268 10.02785965571 -10.56637687635 -14.29411186044

Nr.of Switches of Active_Performance = 38.0
Nr.of Switches of Band_Performance = 34.0
Nr.of Switches of StopLoss_Performance = 179.0
Nr.of Switches of Band&StopLoss_performance = 194.0

Net Performance of BuyHold_Performance = 12.59
Net Performance of Active_Performance = 17.05 %
Net Performance of Band_Performance = -0.17 %
Net Performance of StopLoss_Performance = -64.27 %
Net Performance of Band&StopLoss_Performance = -72.49 %
Nr.of Switches of Active_Performance = 38.0
Nr.of Switches of Band_Performance = 34.0
Nr.of Switches of StopLoss_Performance = 179.0
Nr.of Switches of Band&StopLoss_performance = 194.0

Net Performance of BuyHold_Performance = 12.59
Net Performance of Active_Performance = 17.05 %
Net Performance of Band_Performance = -0.17 %
Net Performance of StopLoss_Performance = -64.27 %
Net Performance of Band&StopLoss_Performance = -72.49 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 2.61 27.40 -2.68 51.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 5.89 27.40 -2.61 50.08 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 4.12 26.48 -2.56 47.52 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 8.86 22.09 -2.19 29.14 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 9.02 21.01 -2.09 26.66 %

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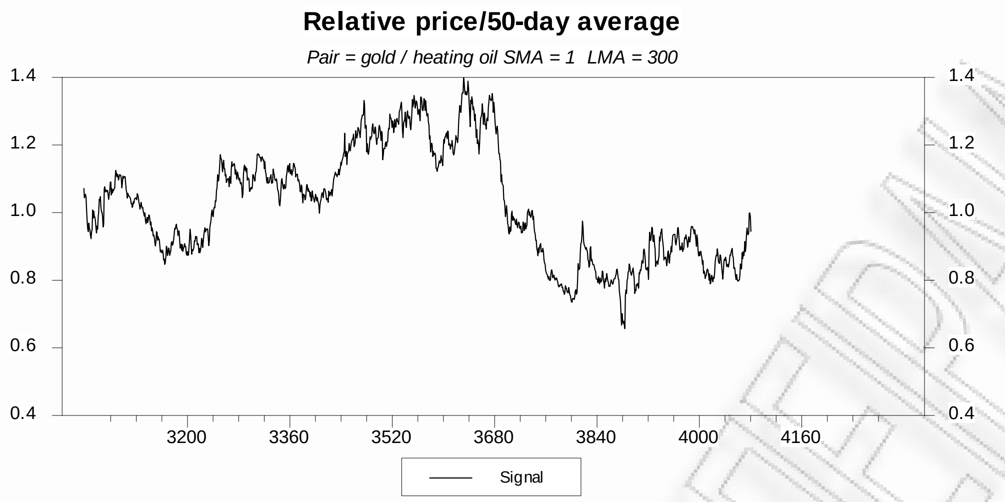

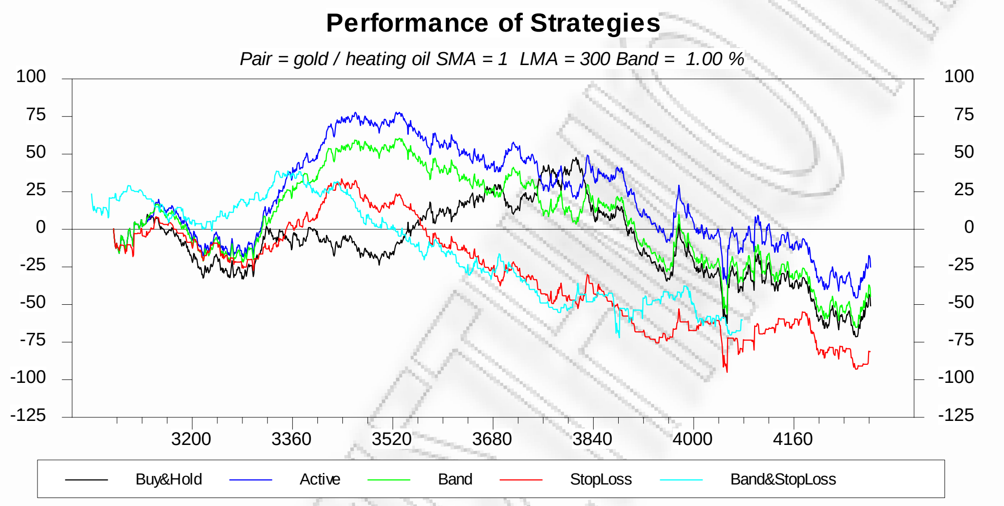

Pair = gold / heating oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -51.86494189381 -26.07289031083 -45.59112282910 -81.94914755036 -97.8015380409

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -51.86494189381 -26.07289031083 -45.59112282910 -81.94914755036 -97.8015380409

Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 25.0
Nr.of Switches of StopLoss_Performance = 161.0
Nr.of Switches of Band&StopLoss_performance = 178.0

Net Performance of BuyHold_Performance = -51.86
Net Performance of Active_Performance = -39.57 %
Net Performance of Band_Performance = -53.09 %
Net Performance of StopLoss_Performance = -130.25 %
Net Performance of Band&StopLoss_Performance = -151.20 %
Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 25.0
Nr.of Switches of StopLoss_Performance = 161.0
Nr.of Switches of Band&StopLoss_performance = 178.0

Net Performance of BuyHold_Performance = -51.86
Net Performance of Active_Performance = -39.57 %
Net Performance of Band_Performance = -53.09 %
Net Performance of StopLoss_Performance = -130.25 %
Net Performance of Band&StopLoss_Performance = -151.20 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.73 39.98 -3.66 52.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -5.40 39.98 -3.65 52.40 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -7.95 39.71 -3.64 50.66 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -7.03 31.65 -3.14 29.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -9.25 31.32 -3.13 27.81 %

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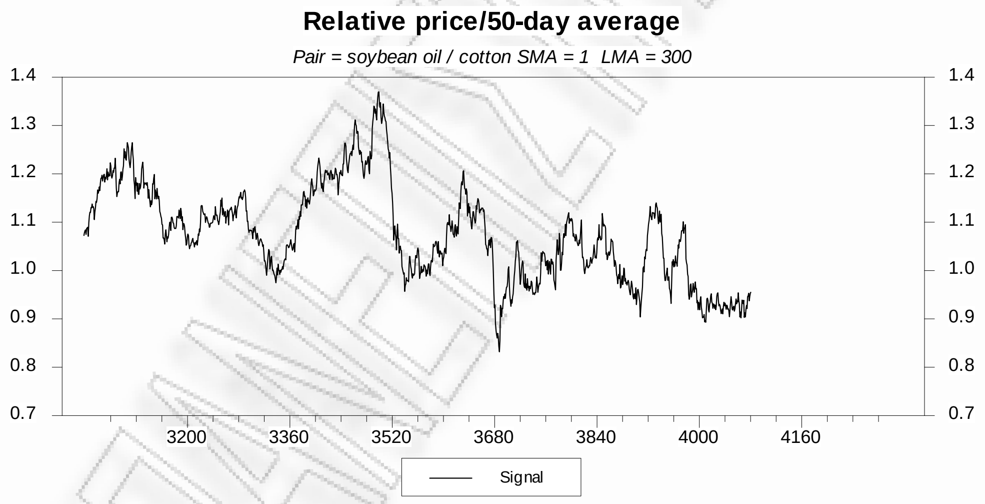
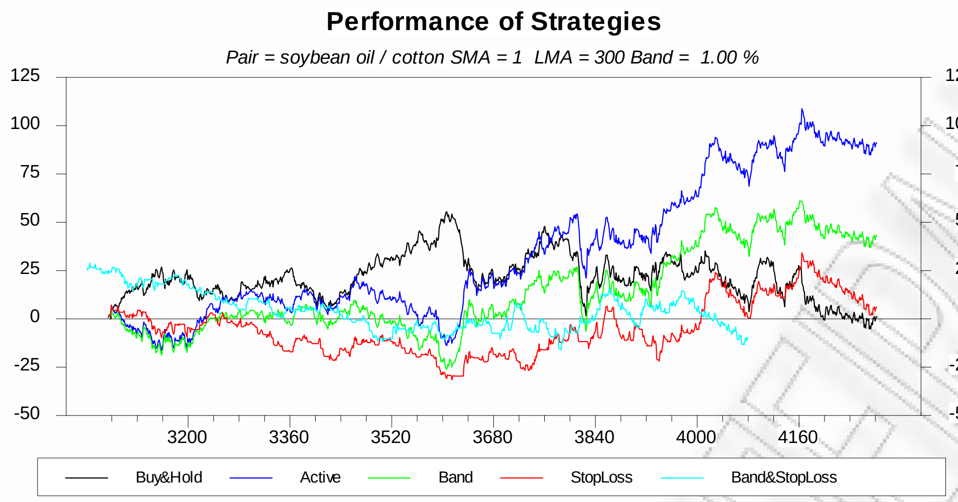




Pair = soybean oil / cotton
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.70774479706 90.8117108917 42.83168832587 5.77859431217 -40.41107251455

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.70774479706 90.8117108917 42.83168832587 5.77859431217 -40.41107251455

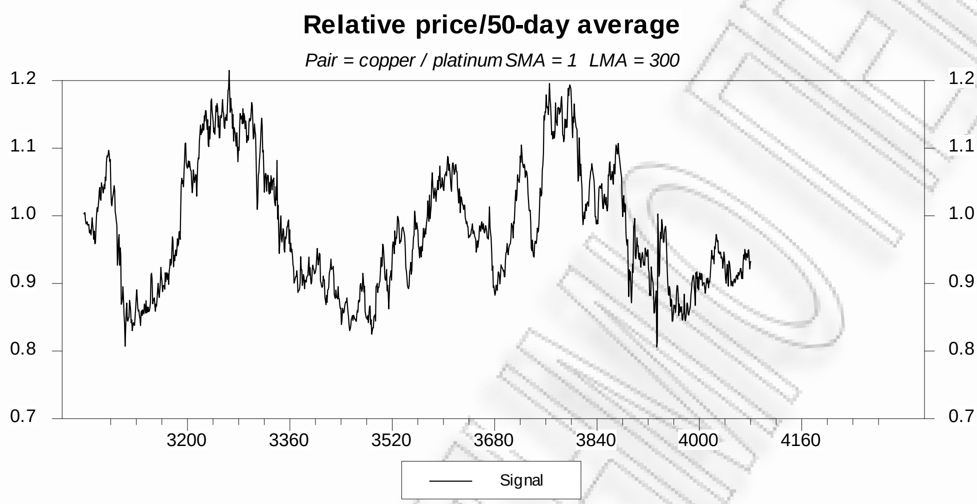
Nr.of Switches of Active_Performance = 55.0
Nr.of Switches of Band_Performance = 31.0
Nr.of Switches of StopLoss_Performance = 144.0
Nr.of Switches of Band&StopLoss_performance = 162.0

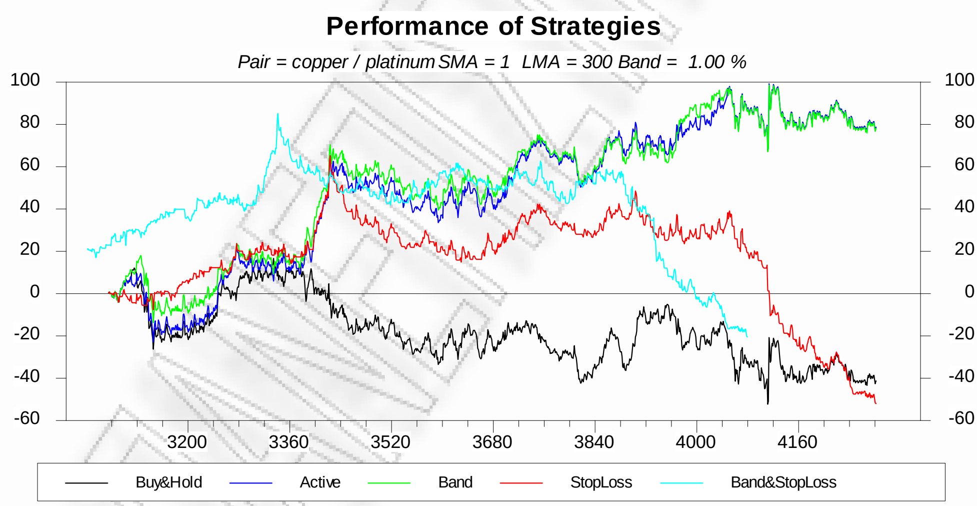
Net Performance of BuyHold_Performance = 0.71
Net Performance of Active_Performance = 74.31 %
Net Performance of Band_Performance = 33.53 %
Net Performance of StopLoss_Performance = -37.42 %
Net Performance of Band&StopLoss_Performance = -89.01 %
Nr.of Switches of Active_Performance = 55.0
Nr.of Switches of Band_Performance = 31.0
Nr.of Switches of StopLoss_Performance = 144.0
Nr.of Switches of Band&StopLoss_performance = 162.0

Net Performance of BuyHold_Performance = 0.71
Net Performance of Active_Performance = 74.31 %
Net Performance of Band_Performance = 33.53 %
Net Performance of StopLoss_Performance = -37.42 %
Net Performance of Band&StopLoss_Performance = -89.01 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.15 28.52 -2.84 49.50 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 18.79 28.50 -2.59 48.92 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 10.73 27.59 -2.58 46.77 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 10.07 22.29 -2.25 31.04 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 1.63 21.19 -2.20 29.14 %

-27-





Pair = copper / platinum
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.68935102960 78.26613686181 77.65402300225 -52.41236156624 -48.15697656435

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.68935102960 78.26613686181 77.65402300225 -52.41236156624 -48.15697656435

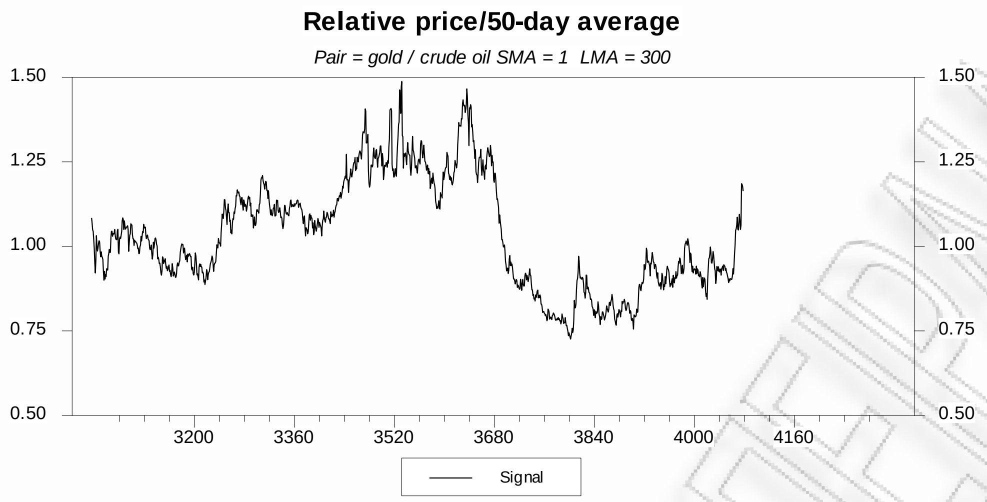
Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 38.0
Nr.of Switches of StopLoss_Performance = 147.0
Nr.of Switches of Band&StopLoss_performance = 176.0

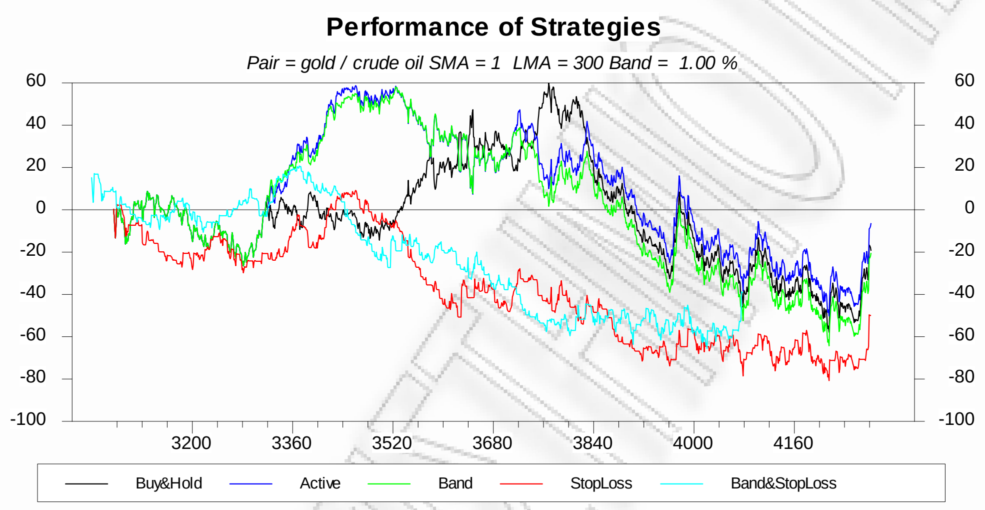
Net Performance of BuyHold_Performance = -41.69
Net Performance of Active_Performance = 62.97 %
Net Performance of Band_Performance = 66.25 %
Net Performance of StopLoss_Performance = -96.51 %
Net Performance of Band&StopLoss_Performance = -100.96 %
Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 38.0
Nr.of Switches of StopLoss_Performance = 147.0
Nr.of Switches of Band&StopLoss_performance = 176.0

Net Performance of BuyHold_Performance = -41.69
Net Performance of Active_Performance = 62.97 %
Net Performance of Band_Performance = 66.25 %
Net Performance of StopLoss_Performance = -96.51 %
Net Performance of Band&StopLoss_Performance = -100.96 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -8.63 35.03 -3.51 51.57 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 16.20 35.02 -3.32 47.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 18.37 34.32 -3.17 44.45 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -1.78 25.87 -2.58 33.28 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 0.90 24.93 -2.48 30.63 %

-29-





Pair = gold / crude oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.84526558957 -6.74784331210 -20.84932305075 -50.39225199277 -63.27035188349

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.84526558957 -6.74784331210 -20.84932305075 -50.39225199277 -63.27035188349

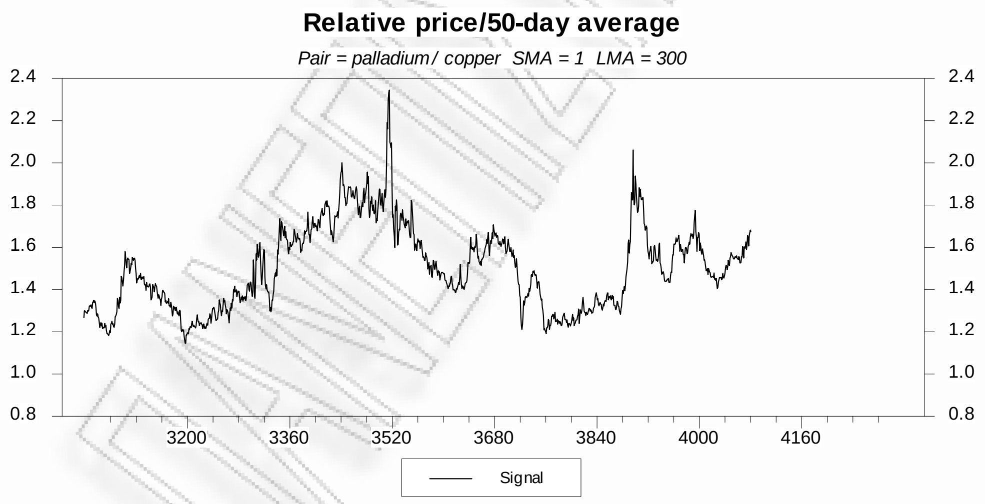
Nr.of Switches of Active_Performance = 32.0
Nr.of Switches of Band_Performance = 26.0
Nr.of Switches of StopLoss_Performance = 159.0
Nr.of Switches of Band&StopLoss_performance = 177.0

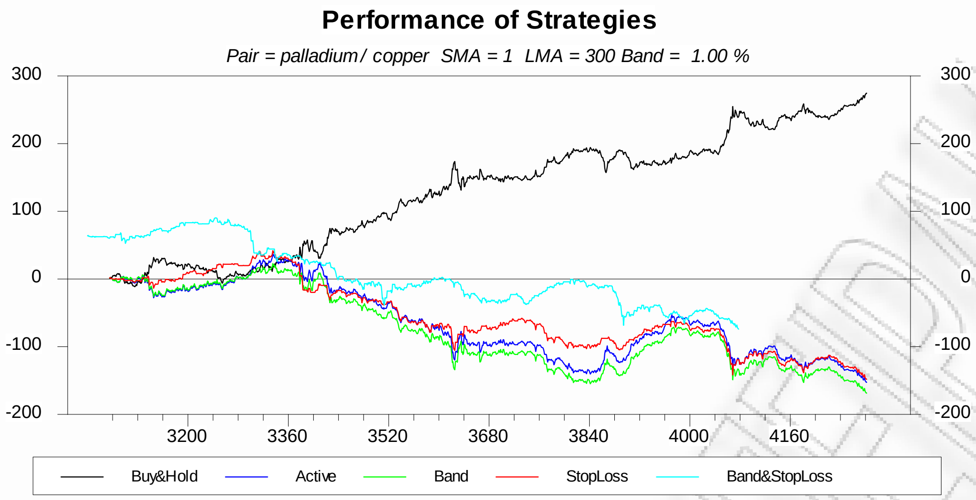
Net Performance of BuyHold_Performance = -19.85
Net Performance of Active_Performance = -16.35 %
Net Performance of Band_Performance = -28.65 %
Net Performance of StopLoss_Performance = -98.09 %
Net Performance of Band&StopLoss_Performance = -116.37 %
Nr.of Switches of Active_Performance = 32.0
Nr.of Switches of Band_Performance = 26.0
Nr.of Switches of StopLoss_Performance = 159.0
Nr.of Switches of Band&StopLoss_performance = 177.0

Net Performance of BuyHold_Performance = -19.85
Net Performance of Active_Performance = -16.35 %
Net Performance of Band_Performance = -28.65 %
Net Performance of StopLoss_Performance = -98.09 %
Net Performance of Band&StopLoss_Performance = -116.37 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -4.11 40.81 -3.85 52.32 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.40 40.81 -3.87 52.07 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -2.76 40.46 -3.87 50.33 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -0.62 30.94 -3.19 29.06 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -2.17 30.48 -3.18 27.40 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-30-





Pair = palladium / copper
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 272.5197669966 -153.6894018538 -169.6013092850 -149.1902336895 -159.8149403035

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 272.5197669966 -153.6894018538 -169.6013092850 -149.1902336895 -159.8149403035

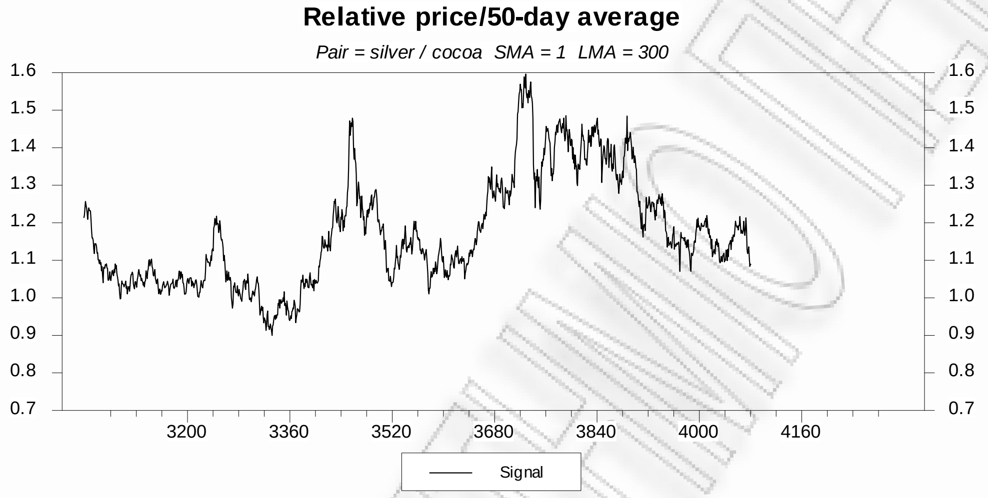
Nr.of Switches of Active_Performance = 29.0
Nr.of Switches of Band_Performance = 20.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 137.0

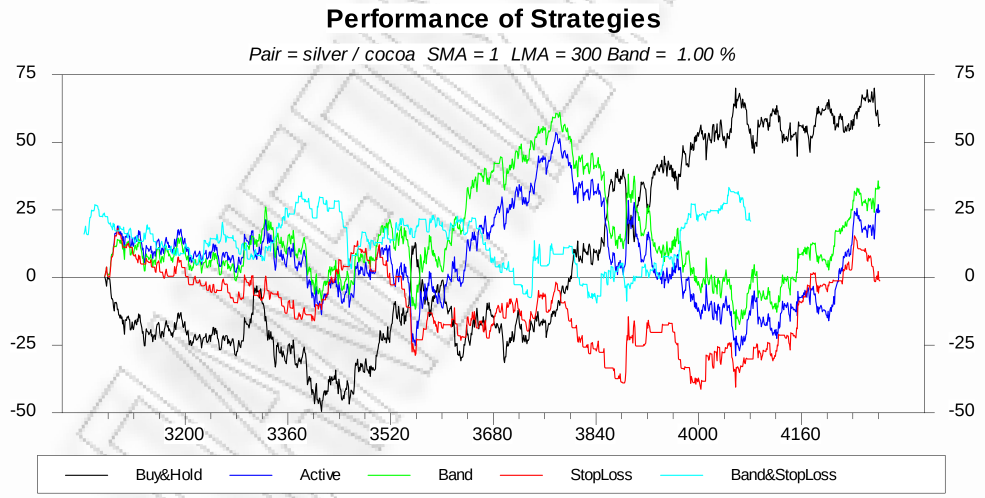
Net Performance of BuyHold_Performance = 272.52
Net Performance of Active_Performance = -162.39 %
Net Performance of Band_Performance = -175.60 %
Net Performance of StopLoss_Performance = -189.99 %
Net Performance of Band&StopLoss_Performance = -200.91 %
Nr.of Switches of Active_Performance = 29.0
Nr.of Switches of Band_Performance = 20.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 137.0

Net Performance of BuyHold_Performance = 272.52
Net Performance of Active_Performance = -162.39 %
Net Performance of Band_Performance = -175.60 %
Net Performance of StopLoss_Performance = -189.99 %
Net Performance of Band&StopLoss_Performance = -200.91 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 56.40 44.50 -3.64 46.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -31.81 44.60 -4.33 51.24 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -33.92 44.27 -4.32 50.17 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -22.49 36.38 -3.61 34.93 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -24.63 36.22 -3.61 34.69 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-31-





Pair = silver / cocoa
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 56.00002852671 24.08965803227 32.84845892734 -1.73044059667 5.57315225310

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 56.00002852671 24.08965803227 32.84845892734 -1.73044059667 5.57315225310

Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 36.0
Nr.of Switches of StopLoss_Performance = 183.0
Nr.of Switches of Band&StopLoss_performance = 194.0

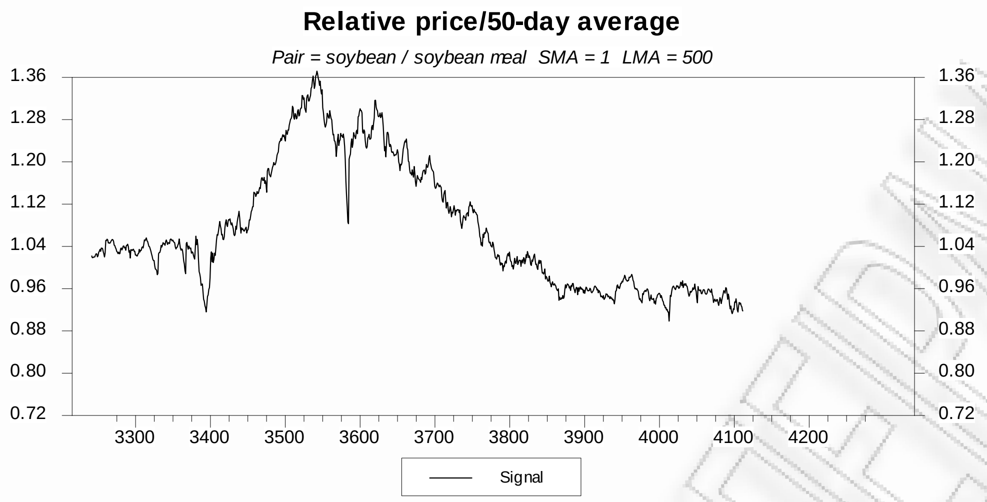
Net Performance of BuyHold_Performance = 56.00
Net Performance of Active_Performance = 9.69 %
Net Performance of Band_Performance = 22.05 %
Net Performance of StopLoss_Performance = -56.63 %
Net Performance of Band&StopLoss_Performance = -52.63 %
Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 36.0
Nr.of Switches of StopLoss_Performance = 183.0
Nr.of Switches of Band&StopLoss_performance = 194.0

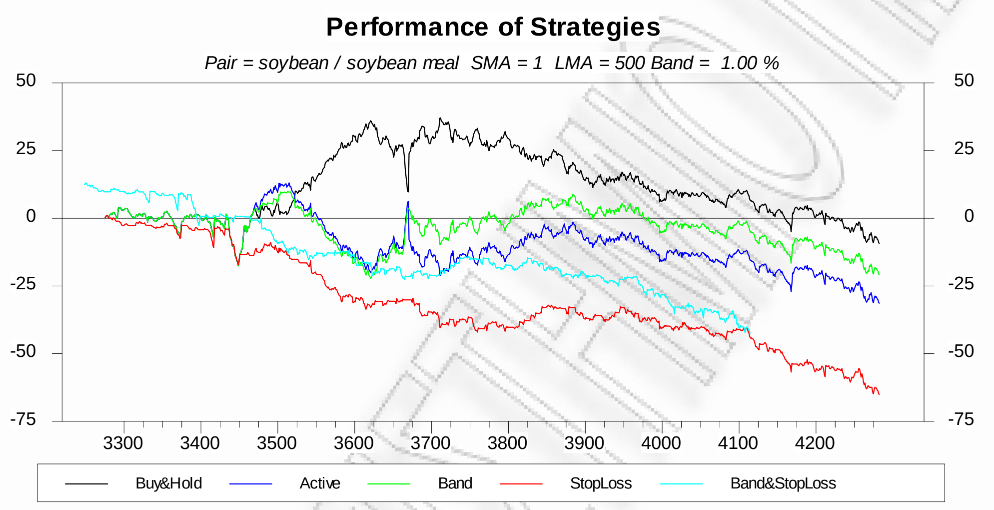
Net Performance of BuyHold_Performance = 56.00
Net Performance of Active_Performance = 9.69 %
Net Performance of Band_Performance = 22.05 %
Net Performance of StopLoss_Performance = -56.63 %
Net Performance of Band&StopLoss_Performance = -52.63 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 11.59 34.90 -3.29 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 4.99 34.91 -3.42 48.68 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 8.97 33.96 -3.30 46.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 10.94 25.75 -2.71 24.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 13.14 24.74 -2.62 22.10 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

1.5. **1-500, 1%**

-1-





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.72494159623 -31.84944015709 -21.29434127312 -65.51601753137 -63.90616708949

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.72494159623 -31.84944015709 -21.29434127312 -65.51601753137 -63.90616708949

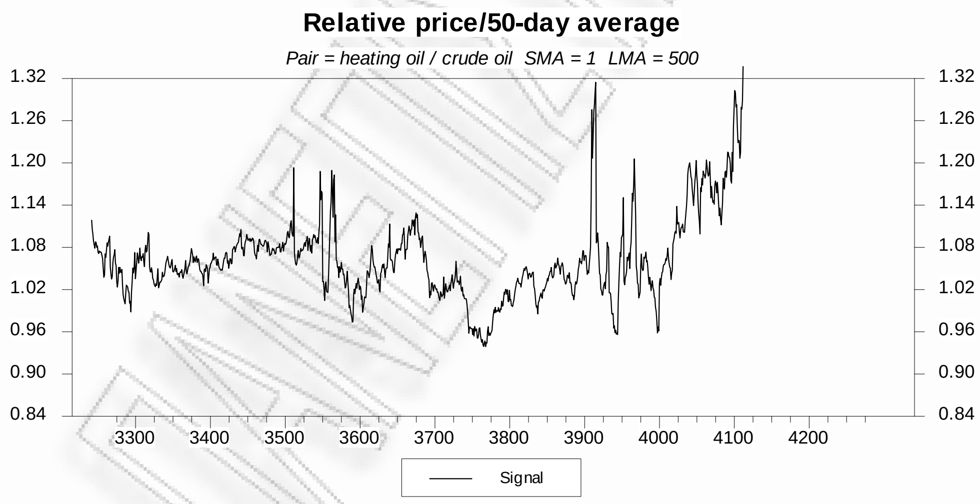
Nr.of Switches of Active_Performance = 13.0
Nr.of Switches of Band_Performance = 15.0
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 130.0

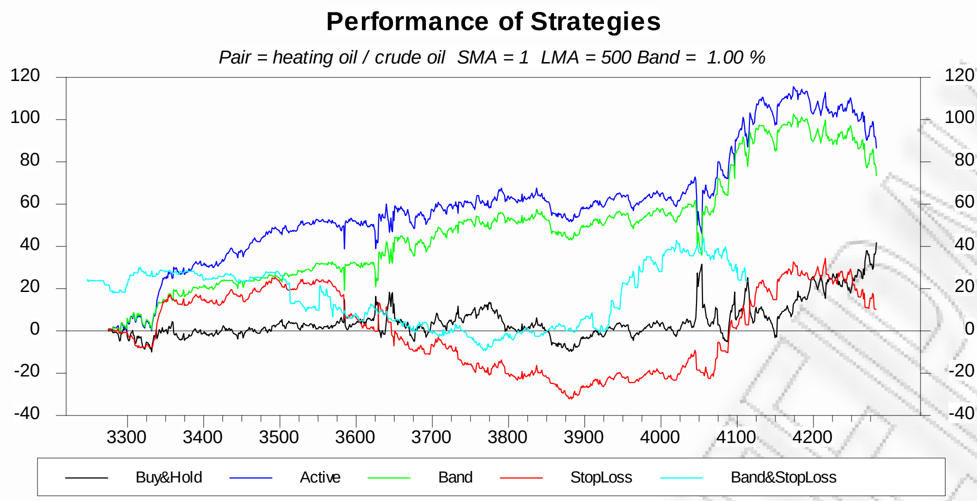
Net Performance of BuyHold_Performance = -9.72
Net Performance of Active_Performance = -35.75 %
Net Performance of Band_Performance = -25.79 %
Net Performance of StopLoss_Performance = -104.22 %
Net Performance of Band&StopLoss_Performance = -102.91 %
Nr.of Switches of Active_Performance = 13.0
Nr.of Switches of Band_Performance = 15.0
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 130.0

Net Performance of BuyHold_Performance = -9.72
Net Performance of Active_Performance = -35.75 %
Net Performance of Band_Performance = -25.79 %
Net Performance of StopLoss_Performance = -104.22 %
Net Performance of Band&StopLoss_Performance = -102.91 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.41 17.40 -1.54 53.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -7.90 17.39 -1.52 52.98 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -4.24 15.68 -1.50 51.39 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -6.73 11.71 -1.20 31.75 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -6.25 11.51 -1.07 30.65 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-2-





Pair = heating oil / crude oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 41.46333529641 85.8846131435 72.8171939938 9.78496777599 -0.34414547781

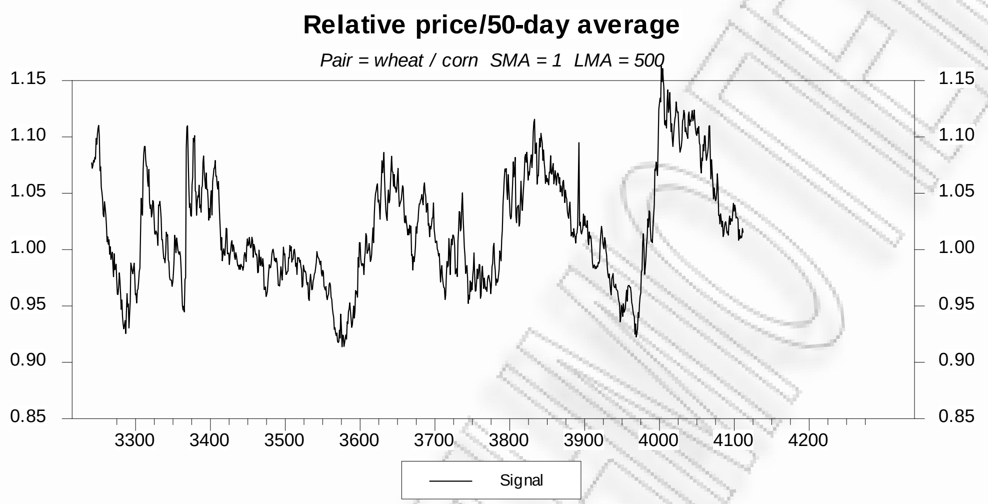
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 41.46333529641 85.8846131435 72.8171939938 9.78496777599 -0.34414547781

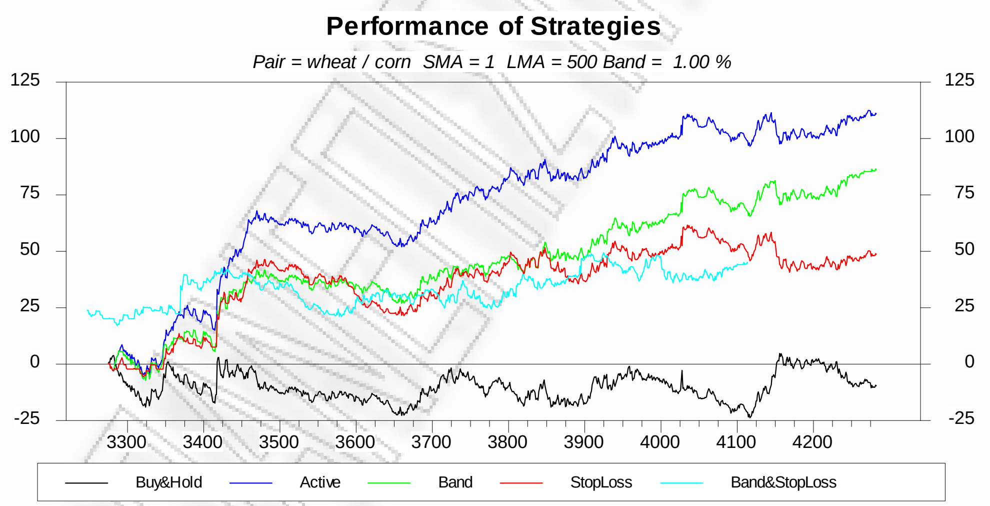
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 58.0
Nr.of Switches of StopLoss_Performance = 98.0
Nr.of Switches of Band&StopLoss_performance = 142.0

Net Performance of BuyHold_Performance = 41.46
Net Performance of Active_Performance = 63.38 %
Net Performance of Band_Performance = 55.42 %
Net Performance of StopLoss_Performance = -19.62 %
Net Performance of Band&StopLoss_Performance = -42.94 %
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 58.0
Nr.of Switches of StopLoss_Performance = 98.0
Nr.of Switches of Band&StopLoss_performance = 142.0

Net Performance of BuyHold_Performance = 41.46
Net Performance of Active_Performance = 63.38 %
Net Performance of Band_Performance = 55.42 %
Net Performance of StopLoss_Performance = -19.62 %
Net Performance of Band&StopLoss_Performance = -42.94 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 10.28 30.19 -2.23 47.52 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 21.30 30.16 -2.19 48.02 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 22.30 29.41 -2.02 41.27 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 9.64 21.87 -1.78 36.51 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 10.41 20.84 -1.68 29.96 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-5-





Pair = wheat / corn
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -10.20366015198 110.2885612336 85.64537419193 48.09526559041 24.05207854869

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -10.20366015198 110.2885612336 85.64537419193 48.09526559041 24.05207854869

Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 47.0
Nr.of Switches of StopLoss_Performance = 76.0
Nr.of Switches of Band&StopLoss_performance = 120.0

Net Performance of BuyHold_Performance = -10.20
Net Performance of Active_Performance = 92.29 %
Net Performance of Band_Performance = 71.55 %
Net Performance of StopLoss_Performance = 25.30 %
Net Performance of Band&StopLoss_Performance = -11.95 %
Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 47.0
Nr.of Switches of StopLoss_Performance = 76.0
Nr.of Switches of Band&StopLoss_performance = 120.0

Net Performance of BuyHold_Performance = -10.20
Net Performance of Active_Performance = 92.29 %
Net Performance of Band_Performance = 71.55 %
Net Performance of StopLoss_Performance = 25.30 %
Net Performance of Band&StopLoss_Performance = -11.95 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.53 21.68 -2.00 50.69 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 27.35 21.61 -1.83 49.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 24.66 20.50 -1.74 43.45 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 17.51 19.71 -1.72 41.67 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 14.82 18.48 -1.60 36.11 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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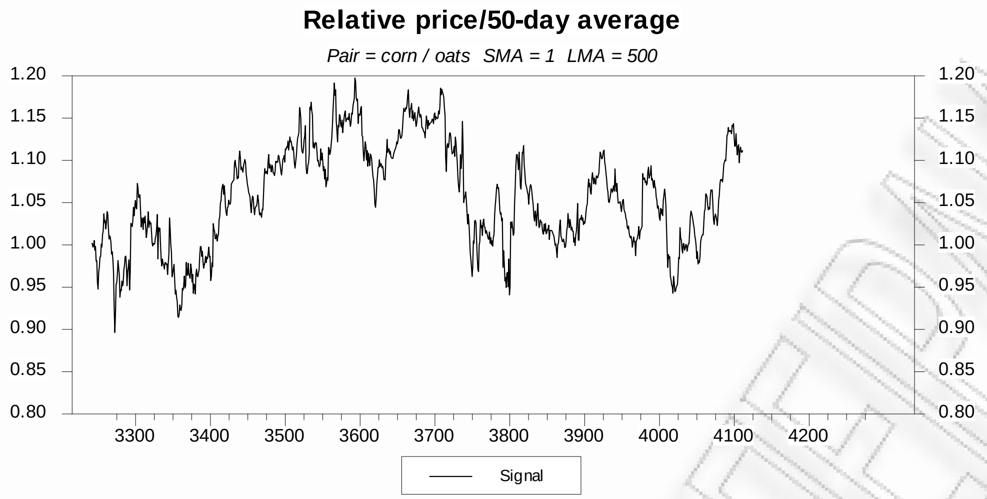

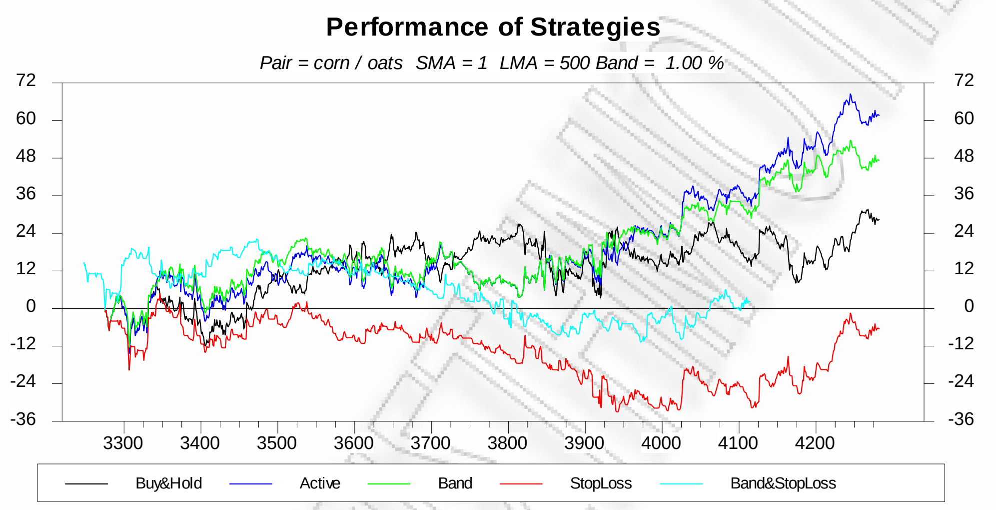

Pair = corn / oats
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 28.07217190956 61.35658273914 46.97129359000 -6.75695027155 -14.74825977229

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 28.07217190956 61.35658273914 46.97129359000 -6.75695027155 -14.74825977229

Nr.of Switches of Active_Performance = 40.0
Nr.of Switches of Band_Performance = 40.0
Nr.of Switches of StopLoss_Performance = 141.0
Nr.of Switches of Band&StopLoss_performance = 166.0

Net Performance of BuyHold_Performance = 28.07
Net Performance of Active_Performance = 49.36 %
Net Performance of Band_Performance = 34.97 %
Net Performance of StopLoss_Performance = -49.06 %
Net Performance of Band&StopLoss_Performance = -64.55 %
Nr.of Switches of Active_Performance = 40.0
Nr.of Switches of Band_Performance = 40.0
Nr.of Switches of StopLoss_Performance = 141.0
Nr.of Switches of Band&StopLoss_performance = 166.0

Net Performance of BuyHold_Performance = 28.07
Net Performance of Active_Performance = 49.36 %
Net Performance of Band_Performance = 34.97 %
Net Performance of StopLoss_Performance = -49.06 %
Net Performance of Band&StopLoss_Performance = -64.55 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 6.96 23.19 -2.00 49.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 15.22 23.17 -2.12 48.81 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 14.55 22.40 -2.00 43.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 8.74 18.85 -1.67 29.37 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 8.62 17.91 -1.54 24.50 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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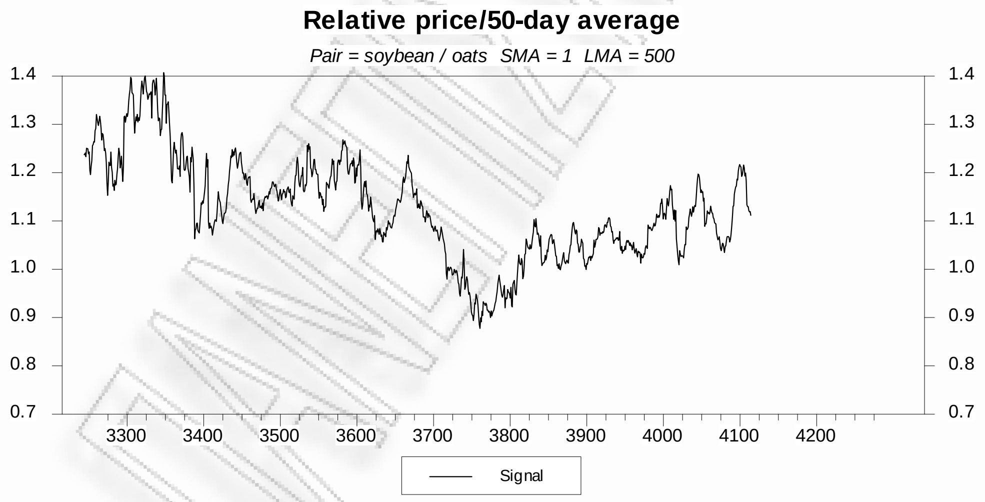
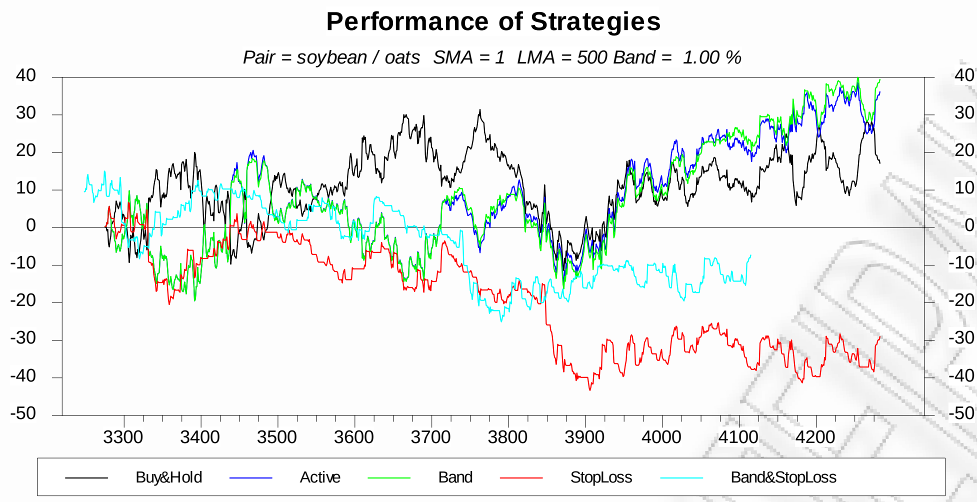




\ Pair = soybean / oats
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 16.76110955874 35.99924832731 39.30841296421 -29.15644954348 -19.45066915325

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 16.76110955874 35.99924832731 39.30841296421 -29.15644954348 -19.45066915325

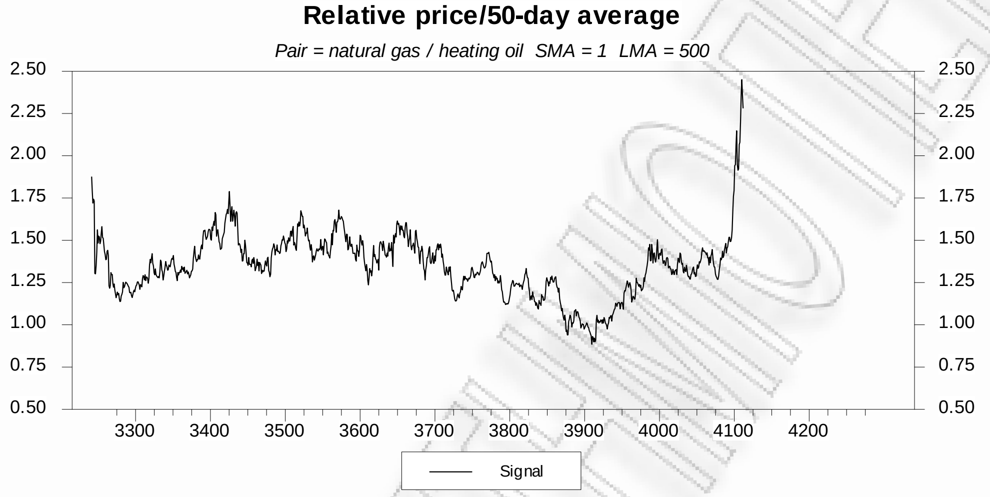
Nr.of Switches of Active_Performance = 37.0
Nr.of Switches of Band_Performance = 32.0
Nr.of Switches of StopLoss_Performance = 137.0
Nr.of Switches of Band&StopLoss_performance = 151.0

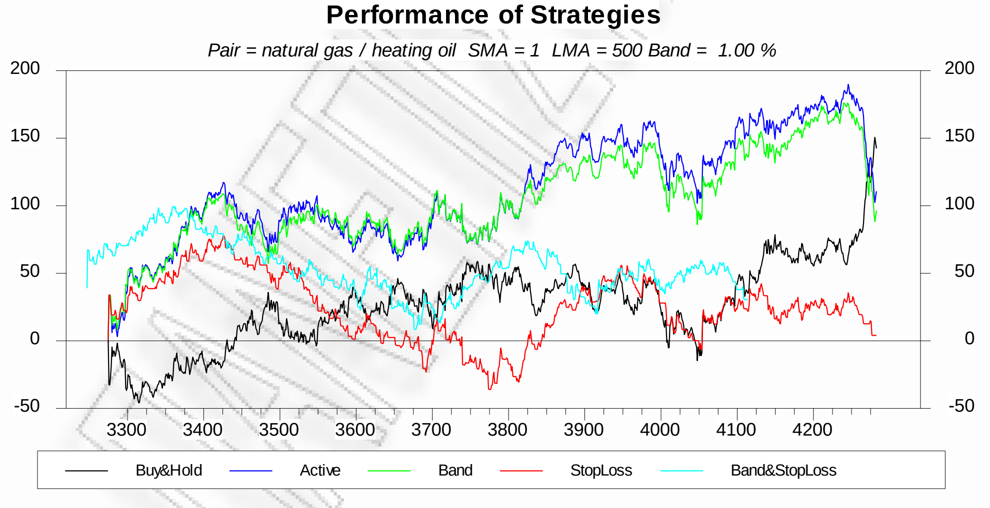
Net Performance of BuyHold_Performance = 16.76
Net Performance of Active_Performance = 24.90 %
Net Performance of Band_Performance = 29.71 %
Net Performance of StopLoss_Performance = -70.26 %
Net Performance of Band&StopLoss_Performance = -64.75 %
Nr.of Switches of Active_Performance = 37.0
Nr.of Switches of Band_Performance = 32.0
Nr.of Switches of StopLoss_Performance = 137.0
Nr.of Switches of Band&StopLoss_performance = 151.0

Net Performance of BuyHold_Performance = 16.76
Net Performance of Active_Performance = 24.90 %
Net Performance of Band_Performance = 29.71 %
Net Performance of StopLoss_Performance = -70.26 %
Net Performance of Band&StopLoss_Performance = -64.75 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 4.16 28.87 -2.74 49.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 8.93 28.86 -2.45 50.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 12.06 28.45 -2.43 46.33 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.89 19.55 -1.84 27.38 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 6.34 18.95 -1.73 23.71 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-18-





Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 141.6278590770 109.93097124495 95.68000184915 3.31002458635 -9.74094480945

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 141.6278590770 109.93097124495 95.68000184915 3.31002458635 -9.74094480945

Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 34.0
Nr.of Switches of StopLoss_Performance = 112.0
Nr.of Switches of Band&StopLoss_performance = 141.0

Net Performance of BuyHold_Performance = 141.63
Net Performance of Active_Performance = 94.63 %
Net Performance of Band_Performance = 85.48 %
Net Performance of StopLoss_Performance = -30.29 %
Net Performance of Band&StopLoss_Performance = -52.04 %
Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 34.0
Nr.of Switches of StopLoss_Performance = 112.0
Nr.of Switches of Band&StopLoss_performance = 141.0

Net Performance of BuyHold_Performance = 141.63
Net Performance of Active_Performance = 94.63 %
Net Performance of Band_Performance = 85.48 %
Net Performance of StopLoss_Performance = -30.29 %
Net Performance of Band&StopLoss_Performance = -52.04 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 35.13 62.80 -5.57 49.31 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 27.26 62.82 -5.56 48.31 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 26.19 61.81 -5.53 46.53 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 9.08 50.51 -4.92 33.93 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 8.00 49.24 -4.80 32.14 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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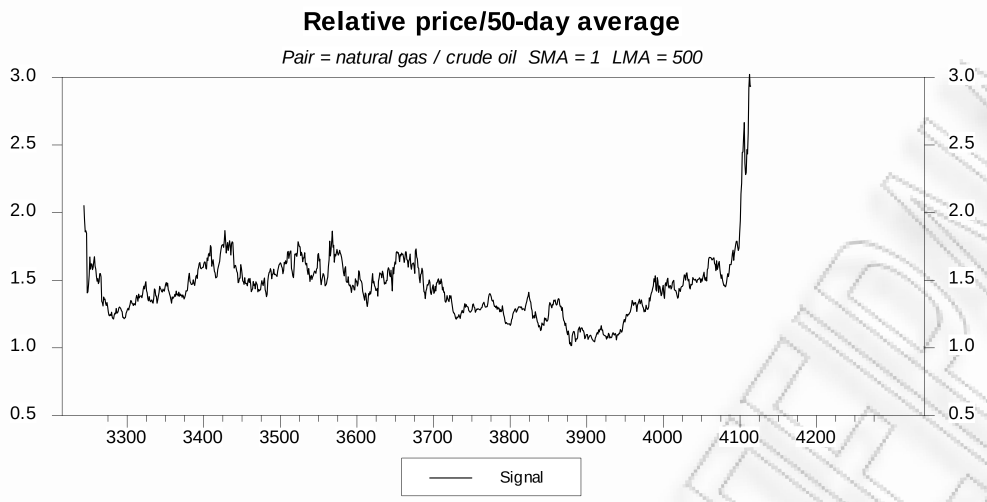

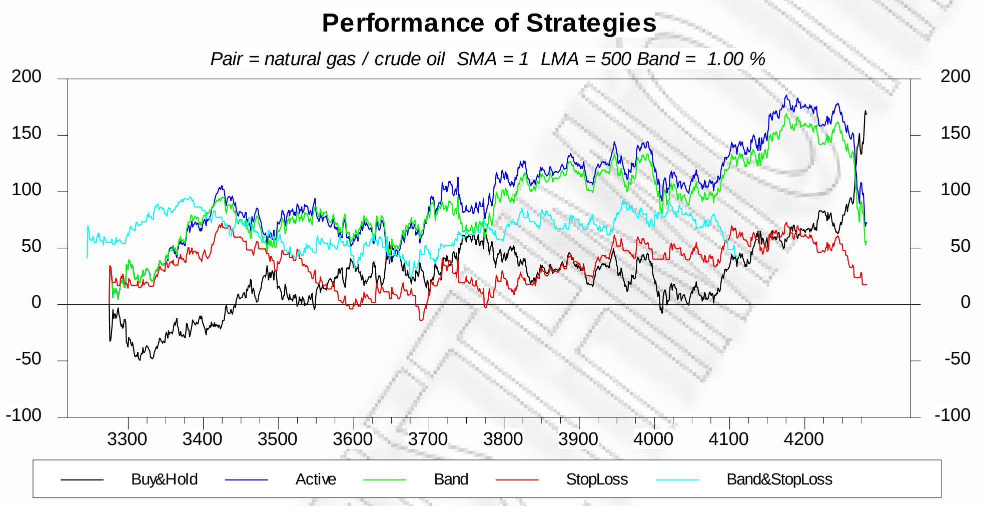

Pair = natural gas / crude oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 168.3299233872 71.17317679464 54.68988856381 16.57306850416 2.18978027333

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 168.3299233872 71.17317679464 54.68988856381 16.57306850416 2.18978027333

Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 31.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 139.0

Net Performance of BuyHold_Performance = 168.33
Net Performance of Active_Performance = 57.67 %
Net Performance of Band_Performance = 45.39 %
Net Performance of StopLoss_Performance = -18.23 %
Net Performance of Band&StopLoss_Performance = -39.51 %
Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 31.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 139.0

Net Performance of BuyHold_Performance = 168.33
Net Performance of Active_Performance = 57.67 %
Net Performance of Band_Performance = 45.39 %
Net Performance of StopLoss_Performance = -18.23 %
Net Performance of Band&StopLoss_Performance = -39.51 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 41.75 64.16 -5.86 48.61 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 17.65 64.20 -5.86 49.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.80 63.03 -5.80 48.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 12.67 49.37 -4.81 33.13 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 10.81 47.84 -4.59 31.55 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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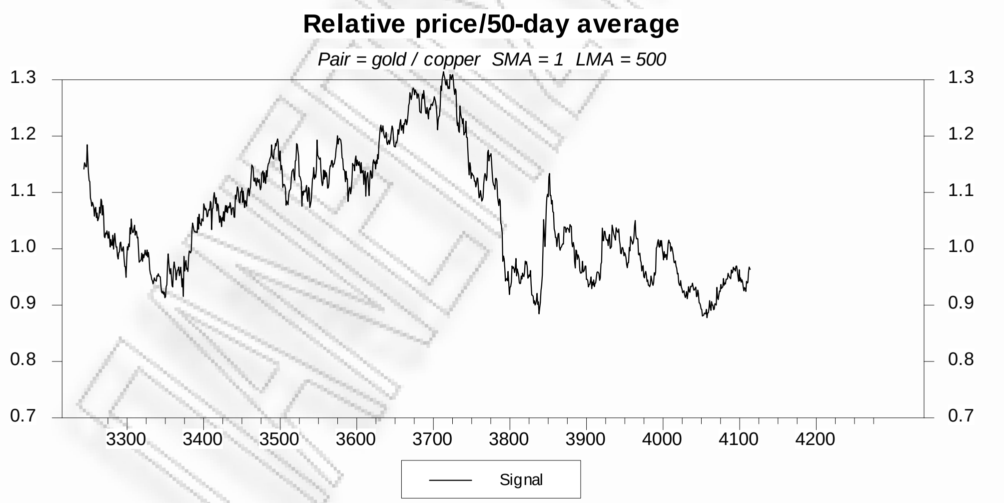

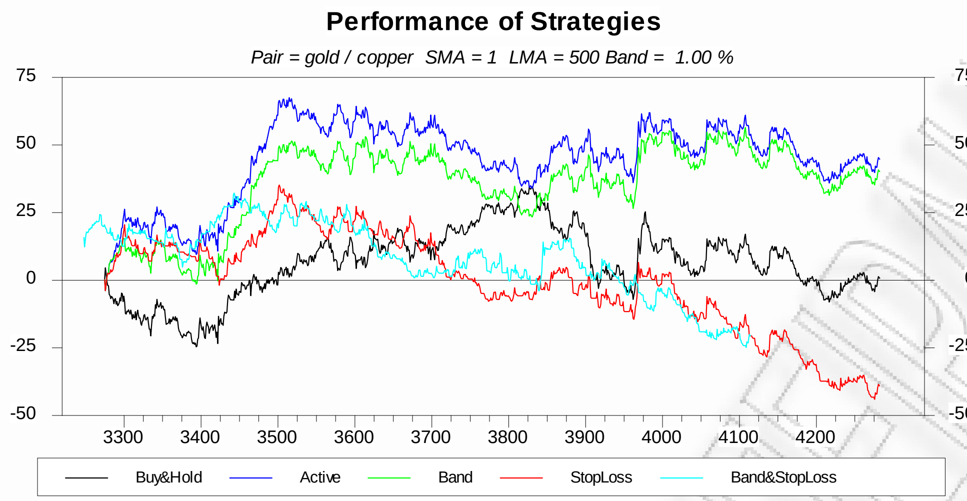

Pair = gold / copper
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.26121216532 44.27281405734 39.71626735551 -39.54856726425 -42.60511396608

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.26121216532 44.27281405734 39.71626735551 -39.54856726425 -42.60511396608

Nr.of Switches of Active_Performance = 30.0
Nr.of Switches of Band_Performance = 24.0
Nr.of Switches of StopLoss_Performance = 127.0
Nr.of Switches of Band&StopLoss_performance = 145.0

Net Performance of BuyHold_Performance = 0.26
Net Performance of Active_Performance = 35.27 %
Net Performance of Band_Performance = 32.52 %
Net Performance of StopLoss_Performance = -77.65 %
Net Performance of Band&StopLoss_Performance = -86.11 %
Nr.of Switches of Active_Performance = 30.0
Nr.of Switches of Band_Performance = 24.0
Nr.of Switches of StopLoss_Performance = 127.0
Nr.of Switches of Band&StopLoss_performance = 145.0

Net Performance of BuyHold_Performance = 0.26
Net Performance of Active_Performance = 35.27 %
Net Performance of Band_Performance = 32.52 %
Net Performance of StopLoss_Performance = -77.65 %
Net Performance of Band&StopLoss_Performance = -86.11 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.06 26.01 -2.60 52.18 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 10.98 26.00 -2.55 50.00 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 11.56 25.50 -2.53 47.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -0.43 21.92 -2.38 36.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 0.15 21.34 -2.35 34.03 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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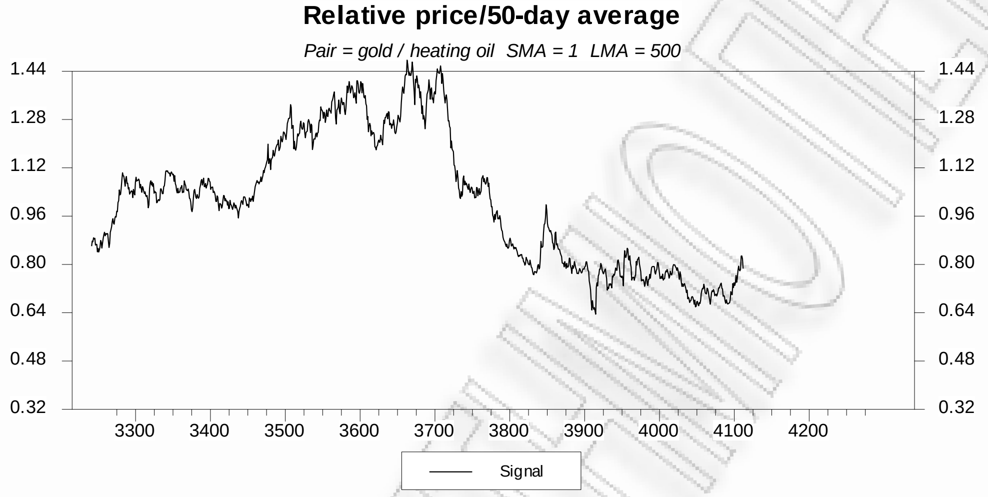
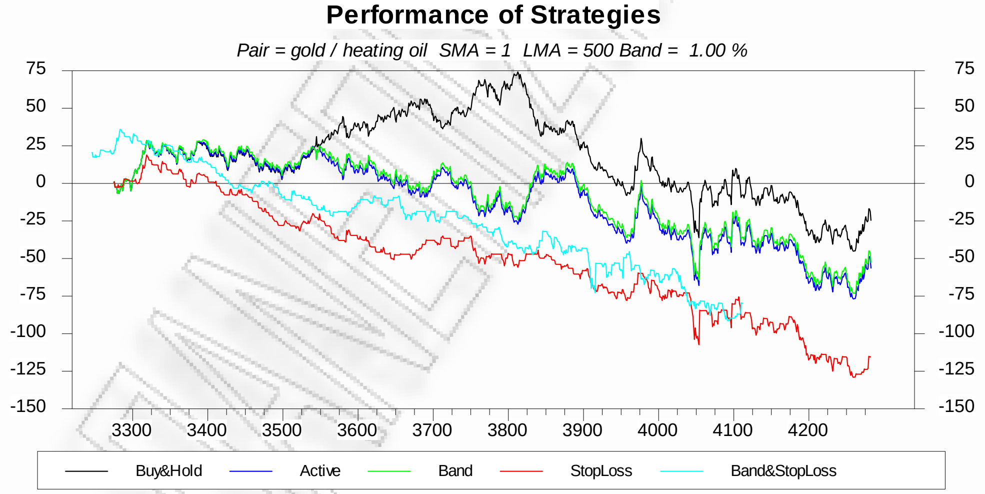




Pair = gold / heating oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 -25.48754304034 -57.24946660049 -53.51869674997 -116.0326246731 -116.2958197862

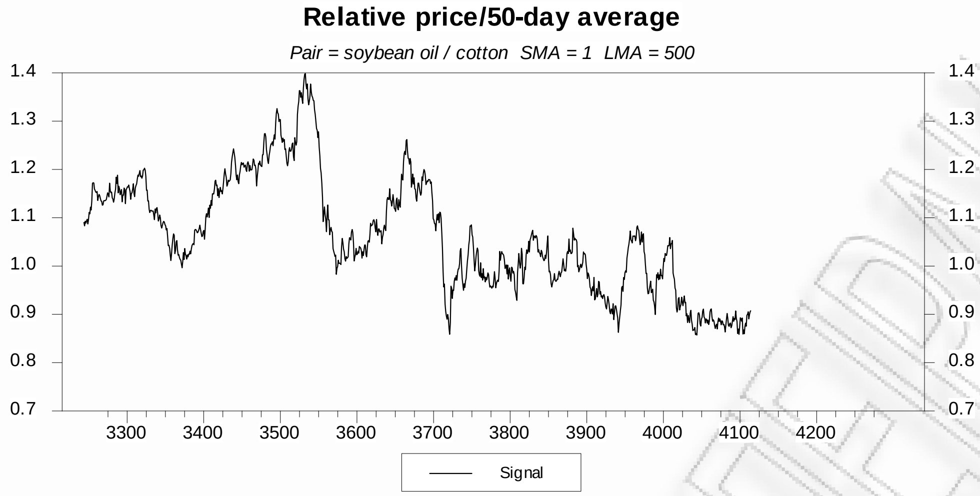
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -25.48754304034 -57.24946660049 -53.51869674997 -116.0326246731 -116.2958197862

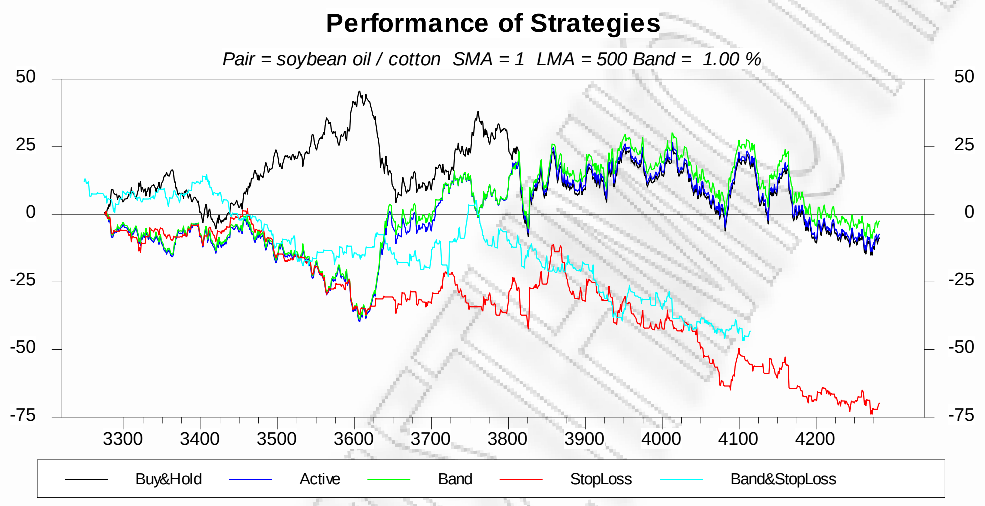
Nr.of Switches of Active_Performance = 9.0
Nr.of Switches of Band_Performance = 8.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 138.0

Net Performance of BuyHold_Performance = -25.49
Net Performance of Active_Performance = -59.95 %
Net Performance of Band_Performance = -55.92 %
Net Performance of StopLoss_Performance = -156.53 %
Net Performance of Band&StopLoss_Performance = -157.70 %
Nr.of Switches of Active_Performance = 9.0
Nr.of Switches of Band_Performance = 8.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 138.0

Net Performance of BuyHold_Performance = -25.49
Net Performance of Active_Performance = -59.95 %
Net Performance of Band_Performance = -55.92 %
Net Performance of StopLoss_Performance = -156.53 %
Net Performance of Band&StopLoss_Performance = -157.70 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -6.32 40.56 -3.69 52.38 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -14.20 40.55 -3.68 53.27 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -12.75 40.42 -3.65 52.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -18.81 30.18 -3.06 28.57 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -18.65 30.07 -3.05 27.98 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-26-





Pair = soybean oil / cotton
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.02064510719 -7.63746979944 -2.78058270219 -70.10071347515 -64.58133422872

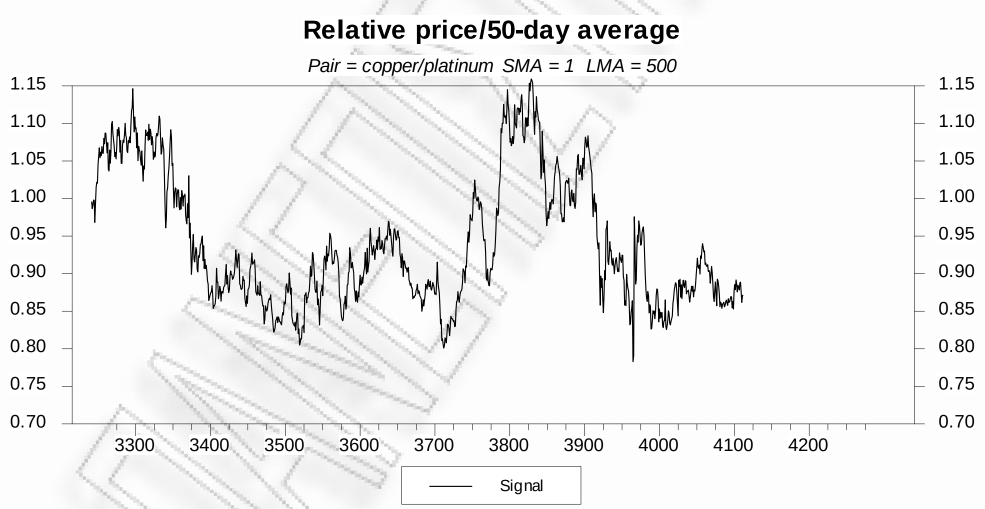
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.02064510719 -7.63746979944 -2.78058270219 -70.10071347515 -64.58133422872

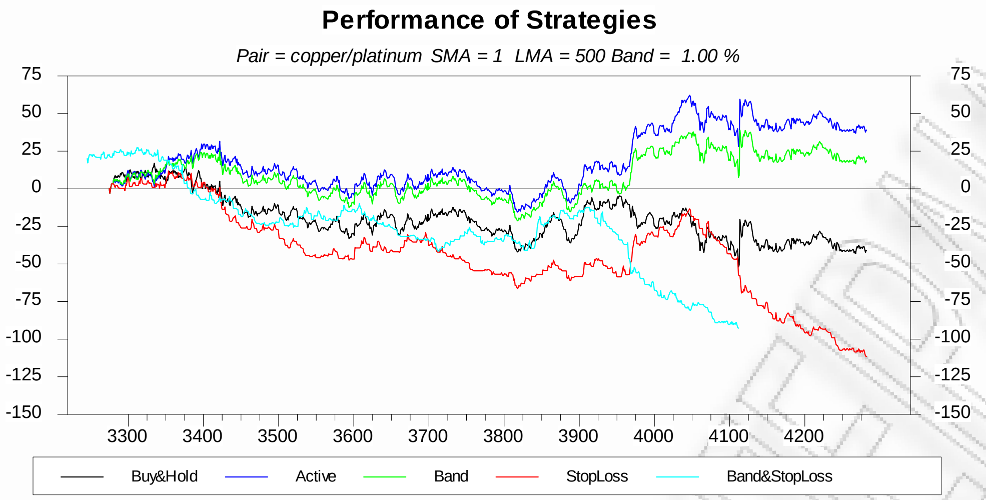
Nr.of Switches of Active_Performance = 18.0
Nr.of Switches of Band_Performance = 16.0
Nr.of Switches of StopLoss_Performance = 139.0
Nr.of Switches of Band&StopLoss_performance = 142.0

Net Performance of BuyHold_Performance = -9.02
Net Performance of Active_Performance = -13.04 %
Net Performance of Band_Performance = -7.58 %
Net Performance of StopLoss_Performance = -111.80 %
Net Performance of Band&StopLoss_Performance = -107.18 %
Nr.of Switches of Active_Performance = 18.0
Nr.of Switches of Band_Performance = 16.0
Nr.of Switches of StopLoss_Performance = 139.0
Nr.of Switches of Band&StopLoss_performance = 142.0

Net Performance of BuyHold_Performance = -9.02
Net Performance of Active_Performance = -13.04 %
Net Performance of Band_Performance = -7.58 %
Net Performance of StopLoss_Performance = -111.80 %
Net Performance of Band&StopLoss_Performance = -107.18 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.24 29.30 -2.92 49.60 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.89 29.30 -2.91 49.60 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 0.50 29.14 -2.91 47.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -7.12 21.49 -2.11 27.78 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -5.45 21.33 -2.06 26.69 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-27-





Pair = copper/platinum
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.55894242057 38.38927667575 17.93203418719 -112.1020438257 -131.3592863143

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.55894242057 38.38927667575 17.93203418719 -112.1020438257 -131.3592863143

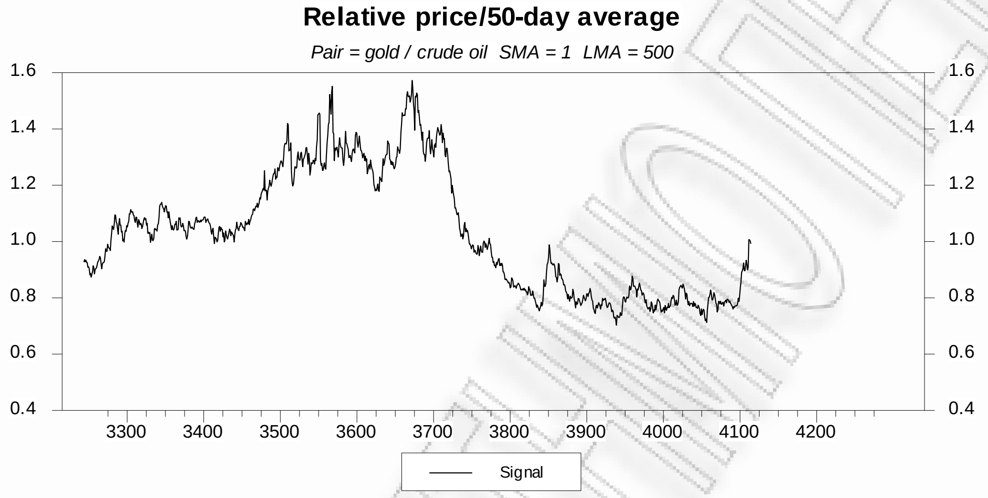
Nr.of Switches of Active_Performance = 27.0
Nr.of Switches of Band_Performance = 18.0
Nr.of Switches of StopLoss_Performance = 158.0
Nr.of Switches of Band&StopLoss_performance = 171.0

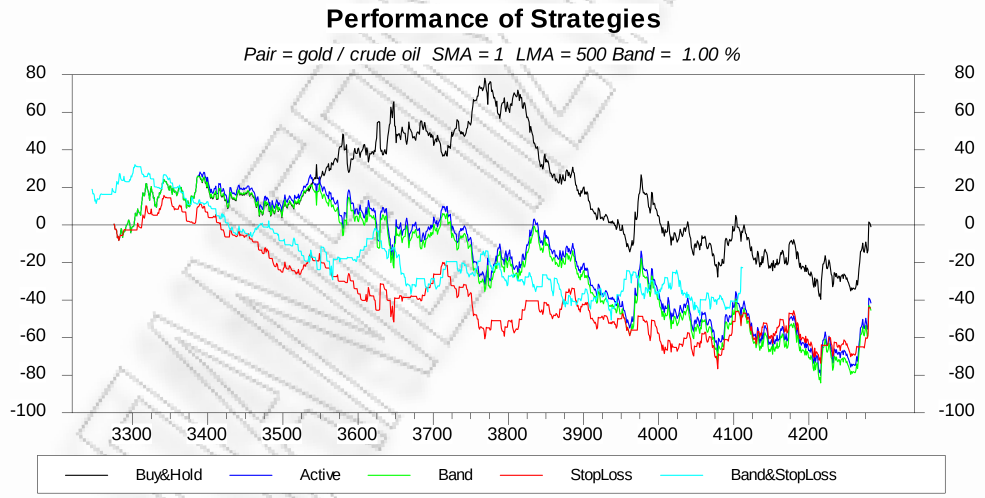
Net Performance of BuyHold_Performance = -41.56
Net Performance of Active_Performance = 30.29 %
Net Performance of Band_Performance = 12.53 %
Net Performance of StopLoss_Performance = -159.50 %
Net Performance of Band&StopLoss_Performance = -182.66 %
Nr.of Switches of Active_Performance = 27.0
Nr.of Switches of Band_Performance = 18.0
Nr.of Switches of StopLoss_Performance = 158.0
Nr.of Switches of Band&StopLoss_performance = 171.0

Net Performance of BuyHold_Performance = -41.56
Net Performance of Active_Performance = 30.29 %
Net Performance of Band_Performance = 12.53 %
Net Performance of StopLoss_Performance = -159.50 %
Net Performance of Band&StopLoss_Performance = -182.66 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.31 35.41 -3.51 52.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 9.52 35.41 -3.39 49.11 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 5.71 34.89 -3.38 47.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -16.12 24.95 -2.58 27.98 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -19.93 24.19 -2.53 26.69 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-29-





Pair = gold / crude oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 -1.66904204224 -42.23410828139 -46.13360697511 -44.68455293150 -48.58405162521

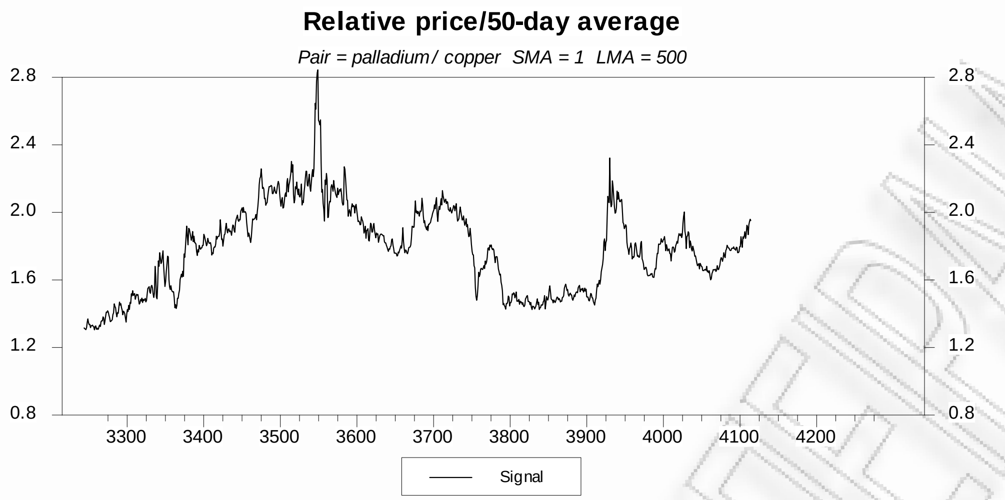
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -1.66904204224 -42.23410828139 -46.13360697511 -44.68455293150 -48.58405162521

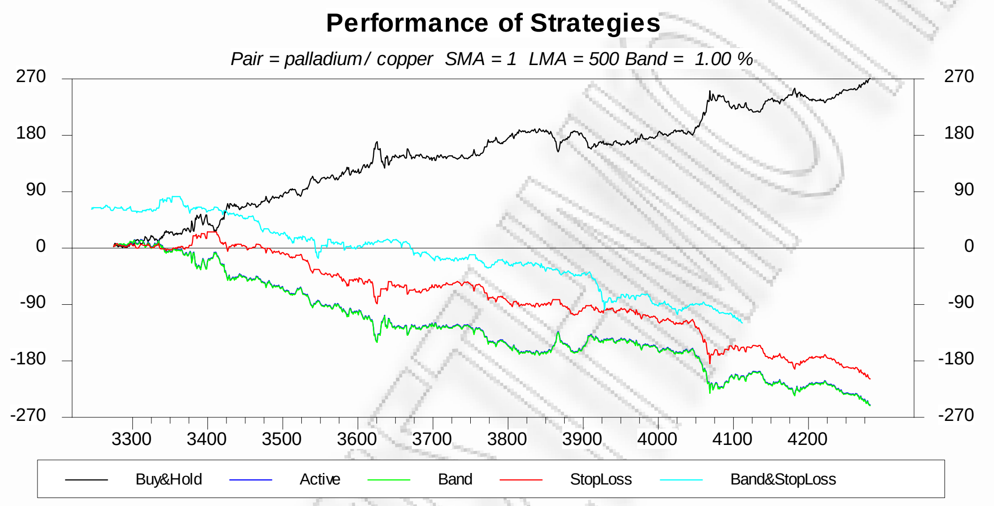
Nr.of Switches of Active_Performance = 7.0
Nr.of Switches of Band_Performance = 4.0
Nr.of Switches of StopLoss_Performance = 133.0
Nr.of Switches of Band&StopLoss_performance = 136.0

Net Performance of BuyHold_Performance = -1.67
Net Performance of Active_Performance = -44.33 %
Net Performance of Band_Performance = -47.33 %
Net Performance of StopLoss_Performance = -84.58 %
Net Performance of Band&StopLoss_Performance = -89.38 %
Nr.of Switches of Active_Performance = 7.0
Nr.of Switches of Band_Performance = 4.0
Nr.of Switches of StopLoss_Performance = 133.0
Nr.of Switches of Band&StopLoss_performance = 136.0

Net Performance of BuyHold_Performance = -1.67
Net Performance of Active_Performance = -44.33 %
Net Performance of Band_Performance = -47.33 %
Net Performance of StopLoss_Performance = -84.58 %
Net Performance of Band&StopLoss_Performance = -89.38 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.41 41.00 -3.85 52.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -10.47 41.00 -3.91 53.37 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -11.22 40.96 -3.91 53.17 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -1.26 31.23 -3.19 29.86 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -2.00 31.19 -3.19 29.66 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-30-





Pair = gold / crude oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -1.66904204224 -42.23410828139 -46.13360697511 -44.68455293150 -48.58405162521

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -1.66904204224 -42.23410828139 -46.13360697511 -44.68455293150 -48.58405162521

Nr.of Switches of Active_Performance = 7.0
Nr.of Switches of Band_Performance = 4.0
Nr.of Switches of StopLoss_Performance = 133.0
Nr.of Switches of Band&StopLoss_performance = 136.0

Net Performance of BuyHold_Performance = -1.67
Net Performance of Active_Performance = -44.33 %
Net Performance of Band_Performance = -47.33 %
Net Performance of StopLoss_Performance = -84.58 %
Net Performance of Band&StopLoss_Performance = -89.38 %
Nr.of Switches of Active_Performance = 7.0
Nr.of Switches of Band_Performance = 4.0
Nr.of Switches of StopLoss_Performance = 133.0
Nr.of Switches of Band&StopLoss_performance = 136.0

Net Performance of BuyHold_Performance = -1.67
Net Performance of Active_Performance = -44.33 %
Net Performance of Band_Performance = -47.33 %
Net Performance of StopLoss_Performance = -84.58 %
Net Performance of Band&StopLoss_Performance = -89.38 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.41 41.00 -3.85 52.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -10.47 41.00 -3.91 53.37 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -11.22 40.96 -3.91 53.17 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -1.26 31.23 -3.19 29.86 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -2.00 31.19 -3.19 29.66 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

Pair = palladium / copper
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 268.7306599406 -251.4400131507 -252.5303194573 -209.8862591292 -209.7765654357

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 268.7306599406 -251.4400131507 -252.5303194573 -209.8862591292 -209.7765654357

Nr.of Switches of Active_Performance = 6.0
Nr.of Switches of Band_Performance = 5.0
Nr.of Switches of StopLoss_Performance = 77.0
Nr.of Switches of Band&StopLoss_performance = 77.0

Net Performance of BuyHold_Performance = 268.73
Net Performance of Active_Performance = -253.24 %
Net Performance of Band_Performance = -254.03 %
Net Performance of StopLoss_Performance = -232.99 %

Net Performance of Band&StopLoss_Performance = -232.88 %
Nr.of Switches of Active_Performance = 6.0
Nr.of Switches of Band_Performance = 5.0
Nr.of Switches of StopLoss_Performance = 77.0
Nr.of Switches of Band&StopLoss_performance = 77.0

Net Performance of BuyHold_Performance = 268.73
Net Performance of Active_Performance = -253.24 %
Net Performance of Band_Performance = -254.03 %
Net Performance of StopLoss_Performance = -232.99 %
Net Performance of Band&StopLoss_Performance = -232.88 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 66.65 45.89 -3.80 44.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -62.36 45.91 -4.55 53.97 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -62.33 45.87 -4.55 53.67 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -46.40 39.09 -3.94 44.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -46.37 39.04 -3.94 44.15 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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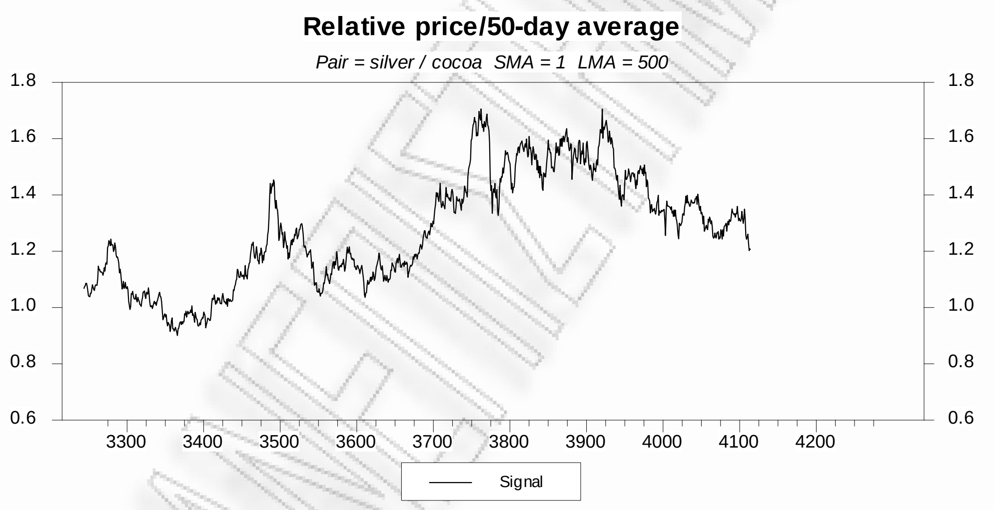
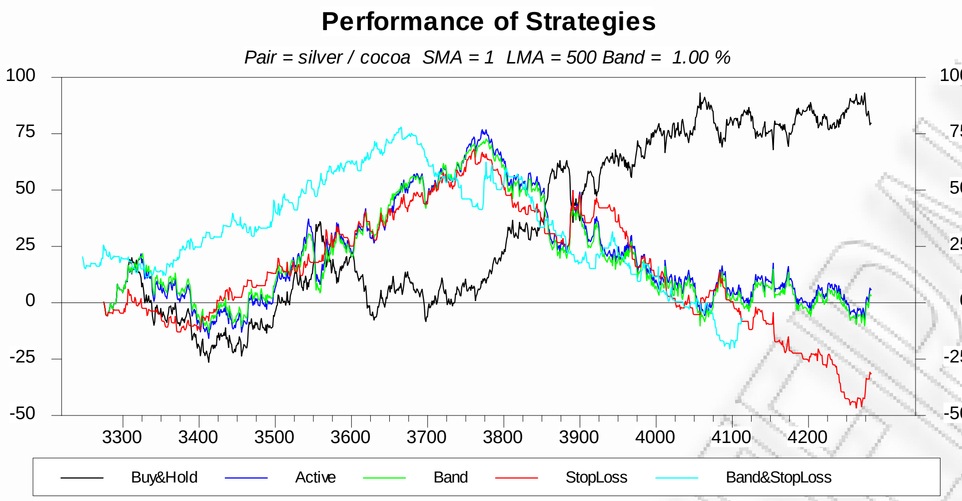




Pair = silver / cocoa
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 79.01208550553 5.56789982603 2.92523793400 -31.73118674214 -32.27384863417

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 79.01208550553 5.56789982603 2.92523793400 -31.73118674214 -32.27384863417

Nr.of Switches of Active_Performance = 24.0
Nr.of Switches of Band_Performance = 28.0
Nr.of Switches of StopLoss_Performance = 148.0
Nr.of Switches of Band&StopLoss_performance = 168.0

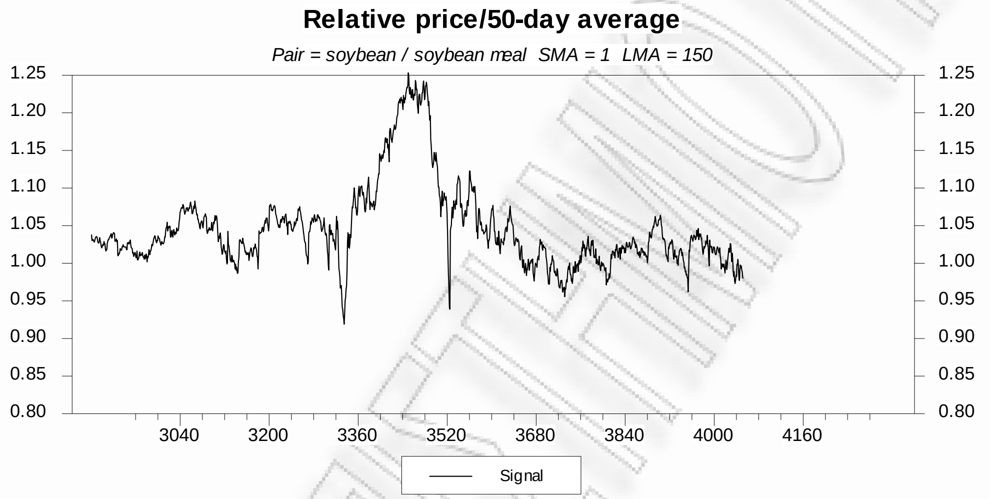
Net Performance of BuyHold_Performance = 79.01
Net Performance of Active_Performance = -1.63 %
Net Performance of Band_Performance = -5.47 %
Net Performance of StopLoss_Performance = -76.13 %
Net Performance of Band&StopLoss_Performance = -82.67 %
Nr.of Switches of Active_Performance = 24.0
Nr.of Switches of Band_Performance = 28.0
Nr.of Switches of StopLoss_Performance = 148.0
Nr.of Switches of Band&StopLoss_performance = 168.0

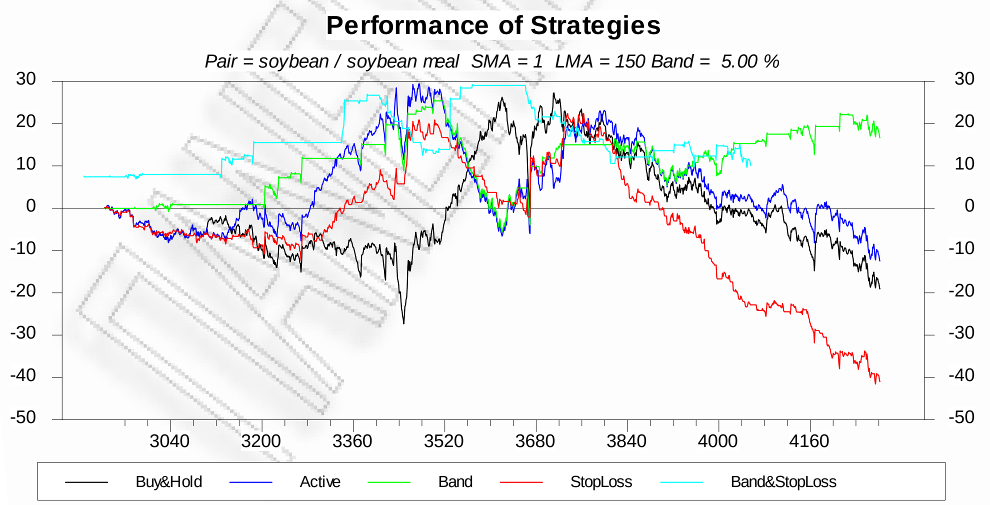
Net Performance of BuyHold_Performance = 79.01
Net Performance of Active_Performance = -1.63 %
Net Performance of Band_Performance = -5.47 %
Net Performance of StopLoss_Performance = -76.13 %
Net Performance of Band&StopLoss_Performance = -82.67 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 19.60 36.55 -3.64 49.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 1.38 36.57 -3.65 50.00 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 2.73 35.98 -3.64 48.12 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 3.07 27.24 -2.91 25.79 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.42 26.45 -2.82 23.91 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

1.6. **1-150, 5%**

-1-





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.38574364777 -12.77466167946 16.34209721132 -41.30373802203 2.73623744317

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.38574364777 -12.77466167946 16.34209721132 -41.30373802203 2.73623744317

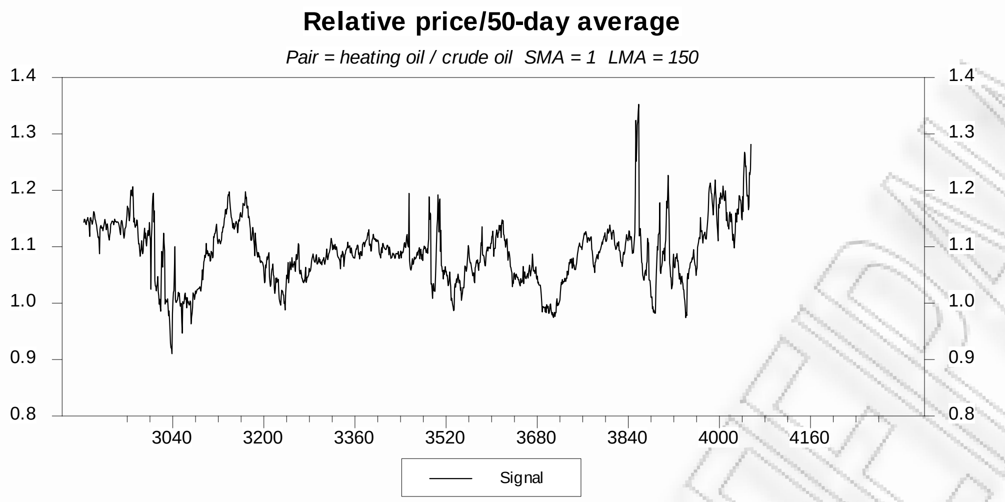
Nr.of Switches of Active_Performance = 61.0
Nr.of Switches of Band_Performance = 56.0
Nr.of Switches of StopLoss_Performance = 178.0
Nr.of Switches of Band&StopLoss_performance = 80.0

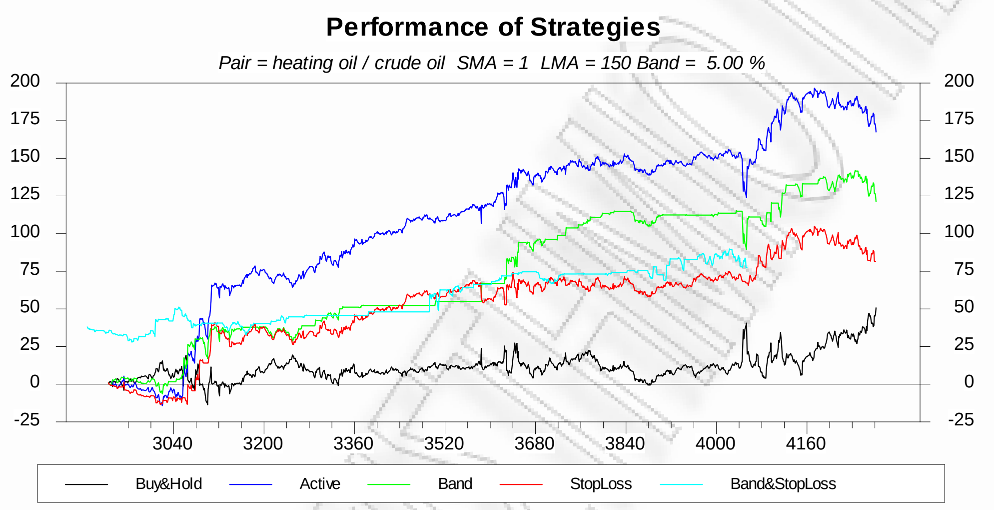
Net Performance of BuyHold_Performance = -19.39
Net Performance of Active_Performance = -31.07 %
Net Performance of Band_Performance = -0.46 %
Net Performance of StopLoss_Performance = -94.70 %
Net Performance of Band&StopLoss_Performance = -21.26 %
Nr.of Switches of Active_Performance = 61.0
Nr.of Switches of Band_Performance = 56.0
Nr.of Switches of StopLoss_Performance = 178.0
Nr.of Switches of Band&StopLoss_performance = 80.0

Net Performance of BuyHold_Performance = -19.39
Net Performance of Active_Performance = -31.07 %
Net Performance of Band_Performance = -0.46 %
Net Performance of StopLoss_Performance = -94.70 %
Net Performance of Band&StopLoss_Performance = -21.26 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.57 15.97 -1.48 53.61 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -2.35 15.97 -1.45 52.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 6.10 12.41 -0.89 18.34 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.17 12.59 -1.10 27.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.92 9.72 -0.56 8.25 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-2-





Pair = heating oil / crude oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY	BUYHOLD_PERFORMA	ACTIVE_PERFORMAN	BAND_PERFORMANCE	STOPLOSS_PERFORM	BAND_STOPLOSS_PE
4284	50.30091581572	166.6024853320	120.3228893421	80.7297548354	45.95134040143

ENTRY	BUYHOLD_PERFORMA	ACTIVE_PERFORMAN	BAND_PERFORMANCE	STOPLOSS_PERFORM	BAND_STOPLOSS_PE
4284	50.30091581572	166.6024853320	120.3228893421	80.7297548354	45.95134040143

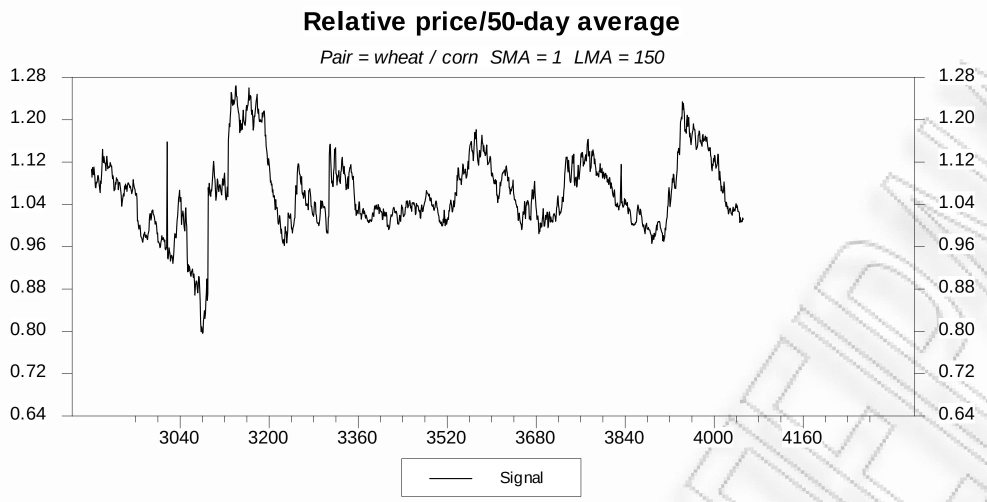
Nr.of Switches of Active_Performance = 99.0
Nr.of Switches of Band_Performance = 71.0
Nr.of Switches of StopLoss_Performance = 68.0
Nr.of Switches of Band&StopLoss_performance = 102.0

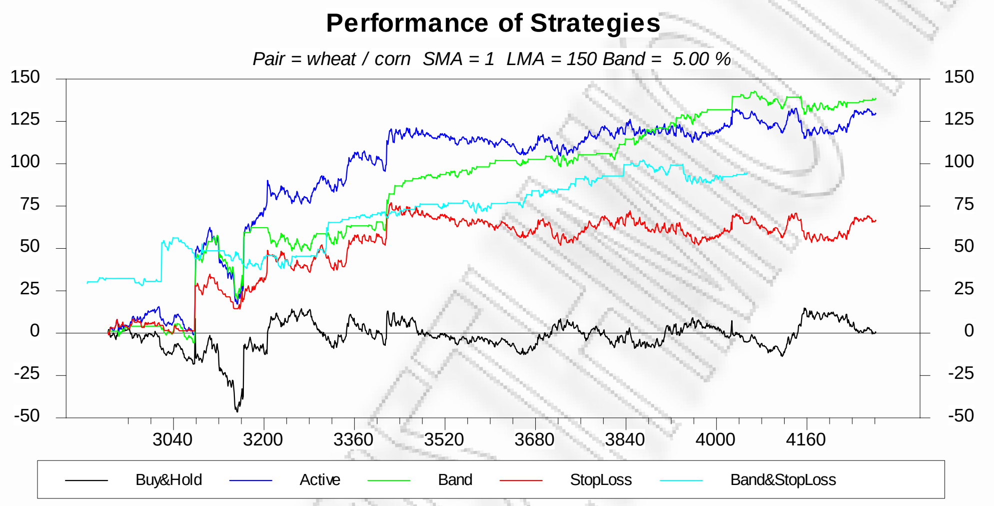
Net Performance of BuyHold_Performance = 50.30
Net Performance of Active_Performance = 136.90 %
Net Performance of Band_Performance = 99.02 %
Net Performance of StopLoss_Performance = 60.33 %
Net Performance of Band&StopLoss_Performance = 15.35 %
Nr.of Switches of Active_Performance = 99.0
Nr.of Switches of Band_Performance = 71.0
Nr.of Switches of StopLoss_Performance = 68.0
Nr.of Switches of Band&StopLoss_performance = 102.0

Net Performance of BuyHold_Performance = 50.30
Net Performance of Active_Performance = 136.90 %
Net Performance of Band_Performance = 99.02 %
Net Performance of StopLoss_Performance = 60.33 %
Net Performance of Band&StopLoss_Performance = 15.35 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 9.26 31.01 -2.20 47.57 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 30.67 30.96 -2.16 49.04 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 26.02 24.89 -1.68 19.15 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 18.56 24.67 -1.87 43.52 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 14.04 17.22 -1.10 14.80 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-5-





v Pair = wheat / corn
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -0.27313134374 128.7717175911 137.5931745638 65.65255601395 75.02657461920

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -0.27313134374 128.7717175911 137.5931745638 65.65255601395 75.02657461920

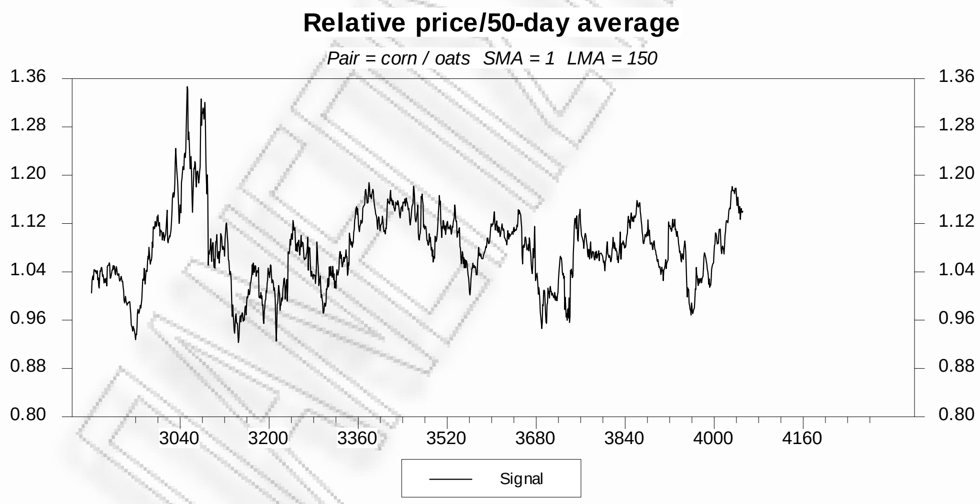
Nr.of Switches of Active_Performance = 68.0
Nr.of Switches of Band_Performance = 71.0
Nr.of Switches of StopLoss_Performance = 85.0
Nr.of Switches of Band&StopLoss_performance = 109.0

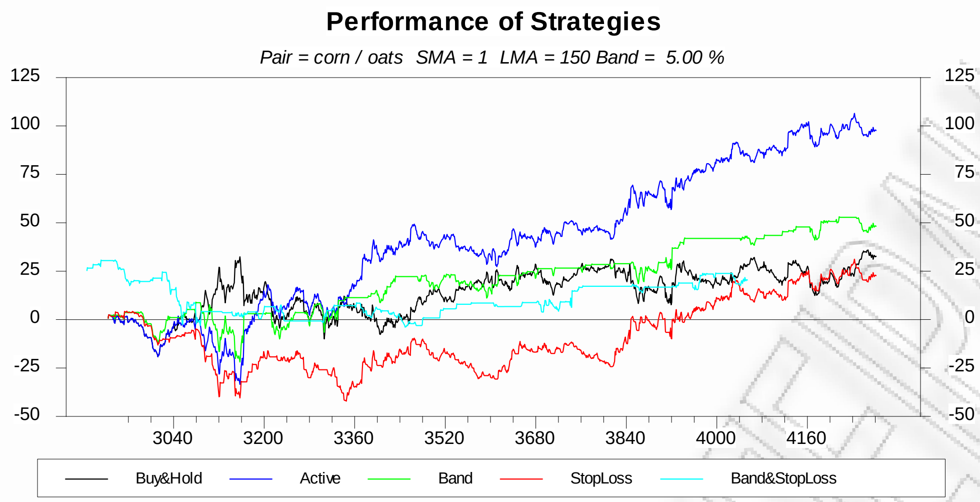
Net Performance of BuyHold_Performance = -0.27
Net Performance of Active_Performance = 108.37 %
Net Performance of Band_Performance = 116.29 %
Net Performance of StopLoss_Performance = 40.15 %
Net Performance of Band&StopLoss_Performance = 42.33 %
Nr.of Switches of Active_Performance = 68.0
Nr.of Switches of Band_Performance = 71.0
Nr.of Switches of StopLoss_Performance = 85.0
Nr.of Switches of Band&StopLoss_performance = 109.0

Net Performance of BuyHold_Performance = -0.27
Net Performance of Active_Performance = 108.37 %
Net Performance of Band_Performance = 116.29 %
Net Performance of StopLoss_Performance = 40.15 %
Net Performance of Band&StopLoss_Performance = 42.33 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.05 30.53 -2.12 51.25 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 23.71 30.50 -2.07 49.41 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 29.25 26.52 -1.57 25.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 16.73 23.67 -1.93 42.19 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 19.83 18.90 -1.28 19.44 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-9-





Pair = corn / oats
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 32.17951033365 97.1886329214 47.71415246247 22.19300669508 -5.47843124051

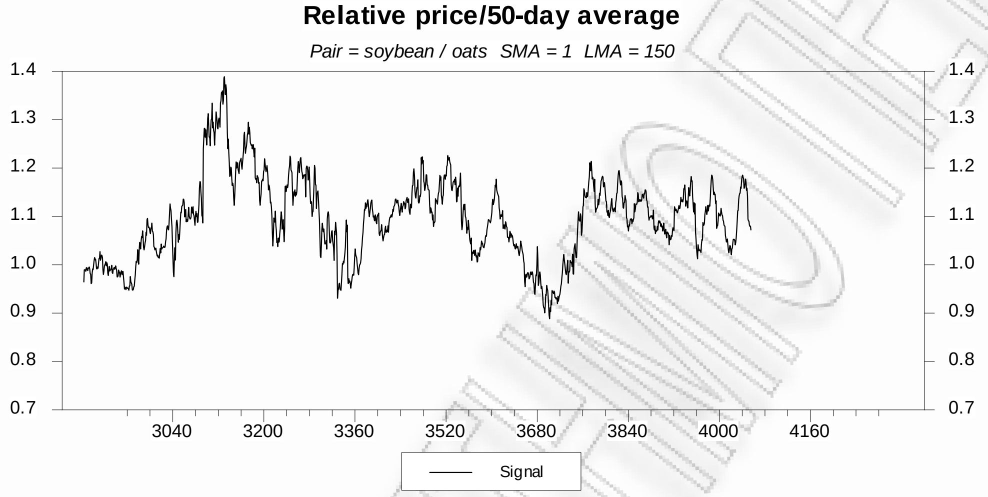
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 32.17951033365 97.1886329214 47.71415246247 22.19300669508 -5.47843124051

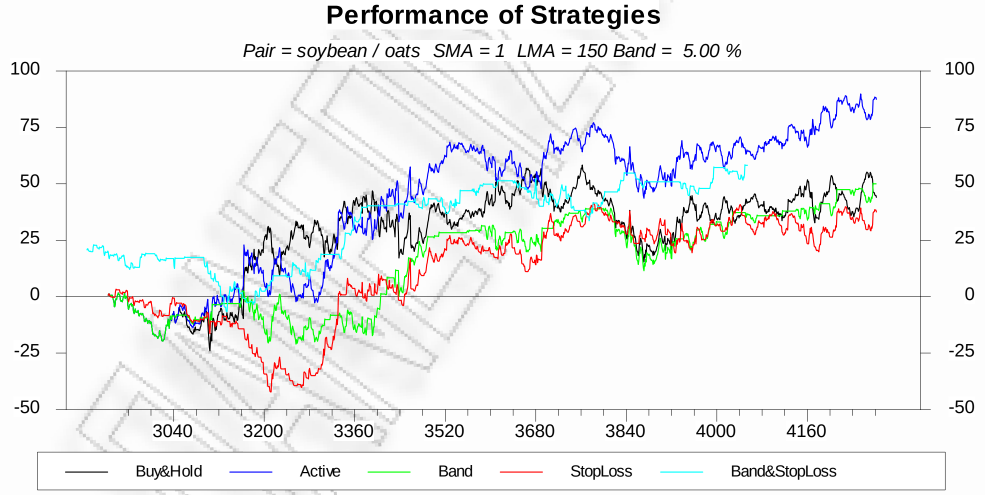
Nr.of Switches of Active_Performance = 72.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 97.0

Net Performance of BuyHold_Performance = 32.18
Net Performance of Active_Performance = 75.59 %
Net Performance of Band_Performance = 29.11 %
Net Performance of StopLoss_Performance = -18.61 %
Net Performance of Band&StopLoss_Performance = -34.58 %
Nr.of Switches of Active_Performance = 72.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 97.0

Net Performance of BuyHold_Performance = 32.18
Net Performance of Active_Performance = 75.59 %
Net Performance of Band_Performance = 29.11 %
Net Performance of StopLoss_Performance = -18.61 %
Net Performance of Band&StopLoss_Performance = -34.58 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 5.92 24.69 -2.18 48.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 17.89 24.67 -2.12 48.97 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 12.15 18.50 -1.67 21.28 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 11.54 20.23 -1.79 34.76 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 4.29 13.76 -1.10 12.74 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-14-





Pair = soybean / oats
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 43.43754207640 86.82332297032 49.57277049651 36.92876835314 43.81736402828

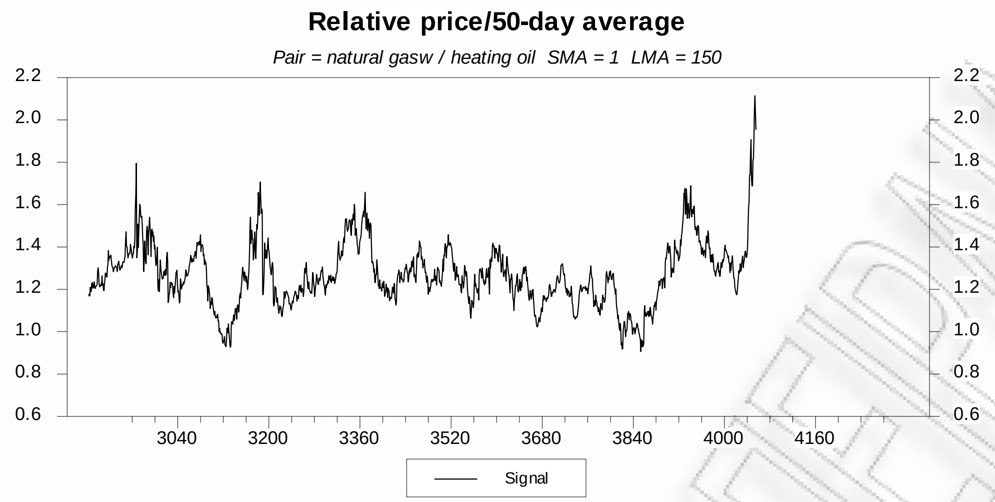
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 43.43754207640 86.82332297032 49.57277049651 36.92876835314 43.81736402828

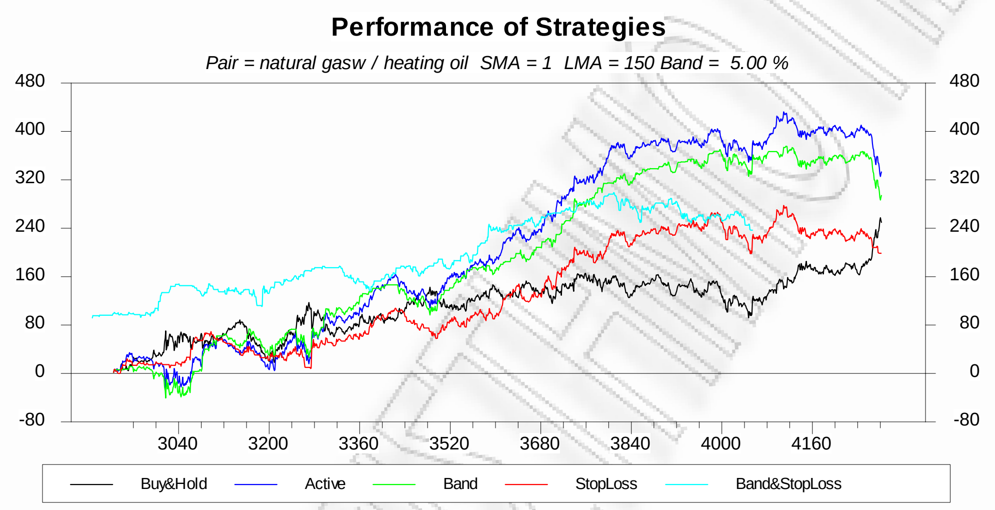
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 63.0
Nr.of Switches of StopLoss_Performance = 146.0
Nr.of Switches of Band&StopLoss_performance = 137.0

Net Performance of BuyHold_Performance = 43.44
Net Performance of Active_Performance = 67.92 %
Net Performance of Band_Performance = 30.67 %
Net Performance of StopLoss_Performance = -6.87 %
Net Performance of Band&StopLoss_Performance = 2.72 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 63.0
Nr.of Switches of StopLoss_Performance = 146.0
Nr.of Switches of Band&StopLoss_performance = 137.0

Net Performance of BuyHold_Performance = 43.44
Net Performance of Active_Performance = 67.92 %
Net Performance of Band_Performance = 30.67 %
Net Performance of StopLoss_Performance = -6.87 %
Net Performance of Band&StopLoss_Performance = 2.72 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 8.00 29.27 -2.68 49.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 15.98 29.25 -2.45 50.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 12.55 22.41 -1.99 30.27 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 14.81 22.66 -1.98 32.92 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 15.58 16.37 -1.38 16.49 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-18-





Pair = natural gasw / heating oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 247.45569445834 332.1231519355 293.1596129826 197.0469386797 168.90843998184

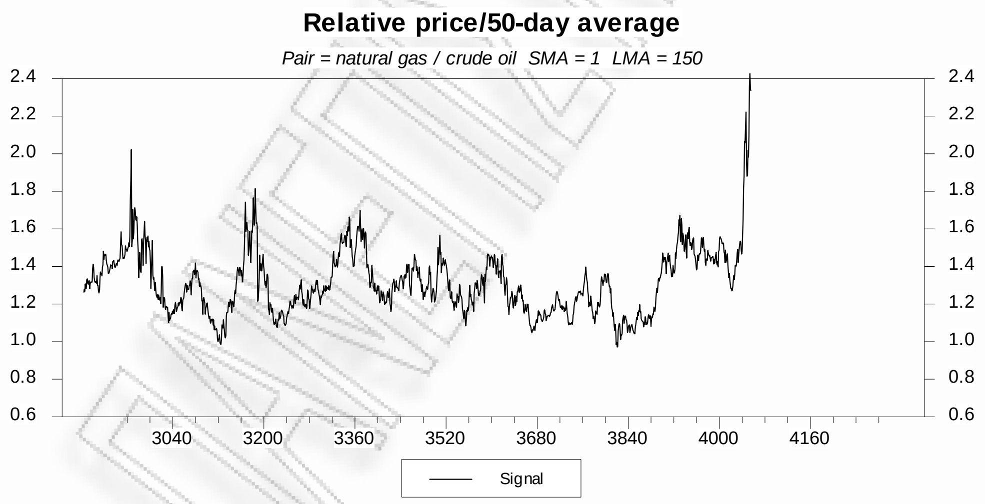
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 247.45569445834 332.1231519355 293.1596129826 197.0469386797 168.90843998184

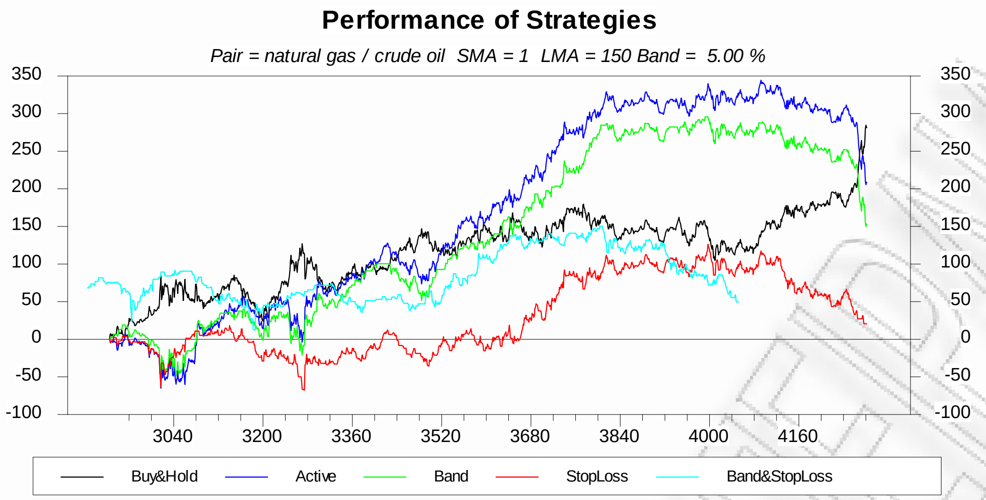
Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 103.0
Nr.of Switches of StopLoss_Performance = 108.0
Nr.of Switches of Band&StopLoss_performance = 167.0

Net Performance of BuyHold_Performance = 247.46
Net Performance of Active_Performance = 299.12 %
Net Performance of Band_Performance = 262.26 %
Net Performance of StopLoss_Performance = 164.65 %
Net Performance of Band&StopLoss_Performance = 118.81 %
Nr.of Switches of Active_Performance = 110.0
Nr.of Switches of Band_Performance = 103.0
Nr.of Switches of StopLoss_Performance = 108.0
Nr.of Switches of Band&StopLoss_performance = 167.0

Net Performance of BuyHold_Performance = 247.46
Net Performance of Active_Performance = 299.12 %
Net Performance of Band_Performance = 262.26 %
Net Performance of StopLoss_Performance = 164.65 %
Net Performance of Band&StopLoss_Performance = 118.81 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 45.56 66.93 -5.71 48.53 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 61.14 66.88 -5.68 48.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 59.60 60.71 -5.40 34.17 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 42.18 54.16 -5.08 38.95 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 40.26 46.69 -4.14 24.74 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-22-





Pair = natural gas / crude oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 280.56614945871 206.8995663561 151.3001789995 19.2552380389 -22.15223813755

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 280.56614945871 206.8995663561 151.3001789995 19.2552380389 -22.15223813755

Nr.of Switches of Active_Performance = 93.0
Nr.of Switches of Band_Performance = 77.0
Nr.of Switches of StopLoss_Performance = 140.0
Nr.of Switches of Band&StopLoss_performance = 181.0

Net Performance of BuyHold_Performance = 280.57
Net Performance of Active_Performance = 179.00 %
Net Performance of Band_Performance = 128.20 %
Net Performance of StopLoss_Performance = -22.74 %
Net Performance of Band&StopLoss_Performance = -76.45 %
Nr.of Switches of Active_Performance = 93.0
Nr.of Switches of Band_Performance = 77.0
Nr.of Switches of StopLoss_Performance = 140.0
Nr.of Switches of Band&StopLoss_performance = 181.0

Net Performance of BuyHold_Performance = 280.57
Net Performance of Active_Performance = 179.00 %
Net Performance of Band_Performance = 128.20 %
Net Performance of StopLoss_Performance = -22.74 %
Net Performance of Band&StopLoss_Performance = -76.45 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 51.65 69.37 -6.23 47.79 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 38.09 69.40 -6.42 49.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 32.11 63.67 -5.82 39.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 11.22 56.32 -5.41 37.63 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 5.92 50.57 -4.95 28.65 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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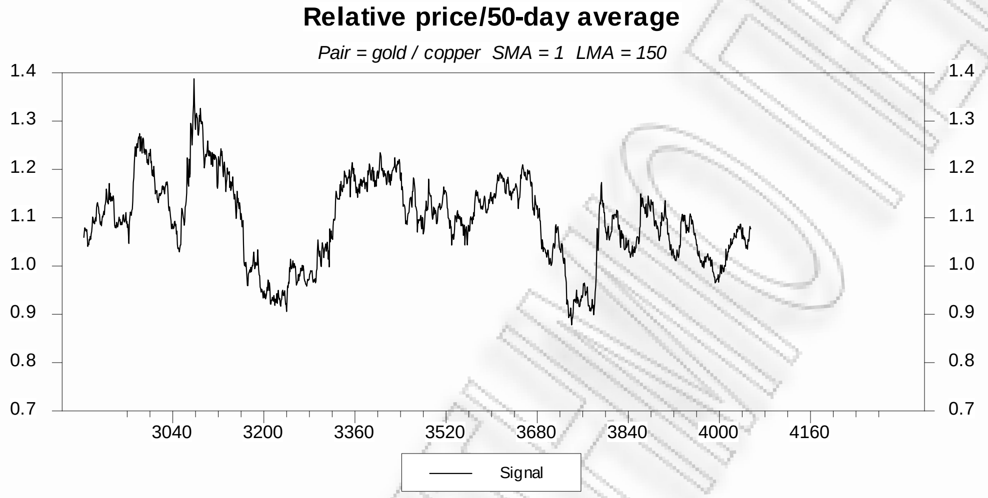

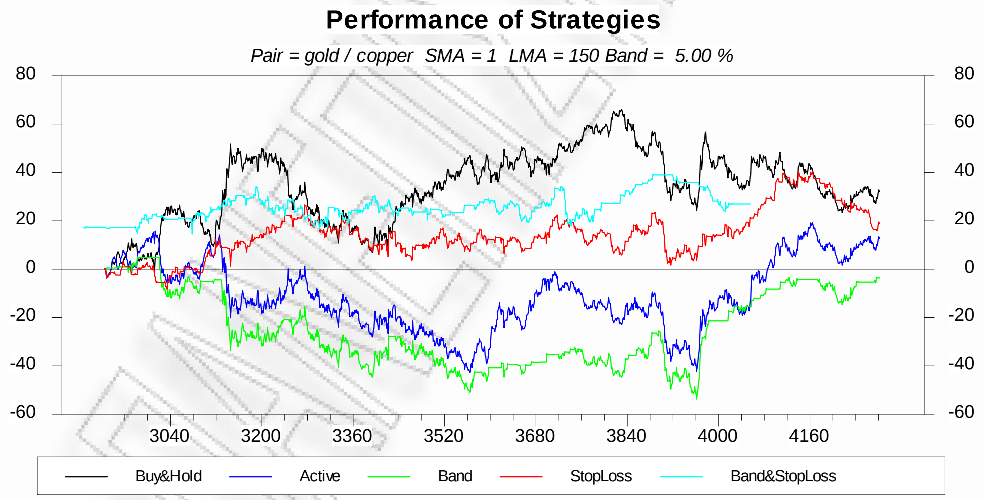

Pair = gold / copper
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 31.63023932684 12.26337275683 -4.01955728279 18.37981189232 11.21581626546

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 31.63023932684 12.26337275683 -4.01955728279 18.37981189232 11.21581626546

Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 56.0
Nr.of Switches of StopLoss_Performance = 192.0
Nr.of Switches of Band&StopLoss_performance = 146.0

Net Performance of BuyHold_Performance = 31.63
Net Performance of Active_Performance = -6.64 %
Net Performance of Band_Performance = -20.82 %
Net Performance of StopLoss_Performance = -39.22 %
Net Performance of Band&StopLoss_Performance = -32.58 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 56.0
Nr.of Switches of StopLoss_Performance = 192.0
Nr.of Switches of Band&StopLoss_performance = 146.0

Net Performance of BuyHold_Performance = 31.63
Net Performance of Active_Performance = -6.64 %
Net Performance of Band_Performance = -20.82 %
Net Performance of StopLoss_Performance = -39.22 %
Net Performance of Band&StopLoss_Performance = -32.58 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 5.82 27.02 -2.65 51.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 2.26 27.02 -2.63 47.79 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 2.35 22.06 -2.26 31.00 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 13.93 19.11 -1.96 25.92 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 10.13 16.02 -1.60 18.04 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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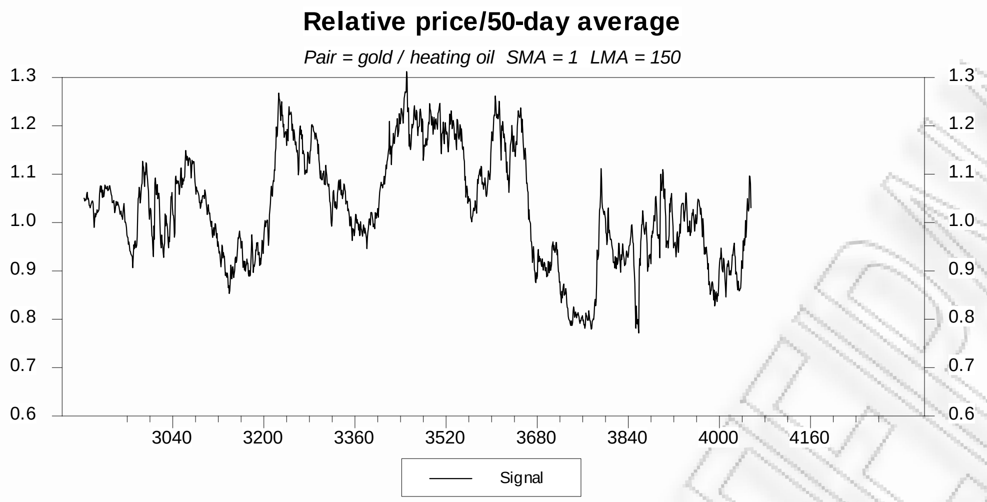

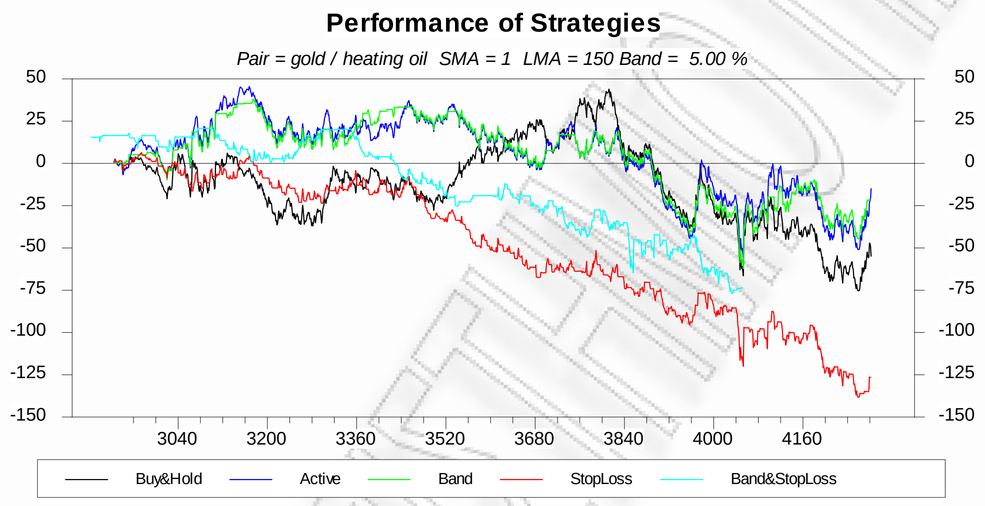

Pair = gold / heating oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -55.67931525282 -15.31318819922 -22.26964078446 -127.1473850413 -103.9880858065

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -55.67931525282 -15.31318819922 -22.26964078446 -127.1473850413 -103.9880858065

Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 173.0

Nr.of Switches of Band&StopLoss_performance = 146.0

Net Performance of BuyHold_Performance = -55.68
Net Performance of Active_Performance = -32.71 %
Net Performance of Band_Performance = -35.47 %
Net Performance of StopLoss_Performance = -179.05 %
Net Performance of Band&StopLoss_Performance = -147.79 %
Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 173.0
Nr.of Switches of Band&StopLoss_performance = 146.0

Net Performance of BuyHold_Performance = -55.68
Net Performance of Active_Performance = -32.71 %
Net Performance of Band_Performance = -35.47 %
Net Performance of StopLoss_Performance = -179.05 %
Net Performance of Band&StopLoss_Performance = -147.79 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.25 39.48 -3.61 52.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -2.82 39.49 -3.61 51.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -1.67 36.13 -3.42 39.69 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -13.91 29.74 -3.14 28.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -11.08 26.95 -2.86 20.77 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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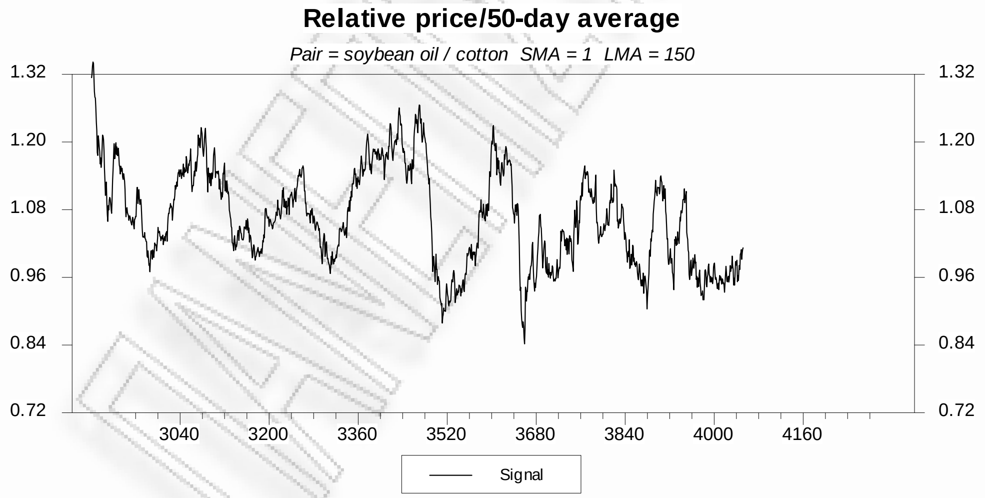
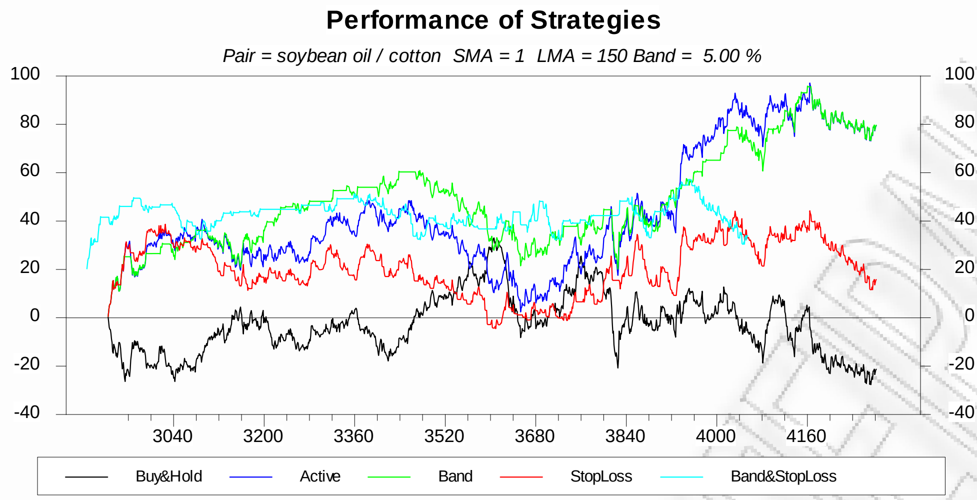




Pair = soybean oil / cotton
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -21.57800100423 79.196154033752 79.383824802341 15.50966818294 16.336937752089

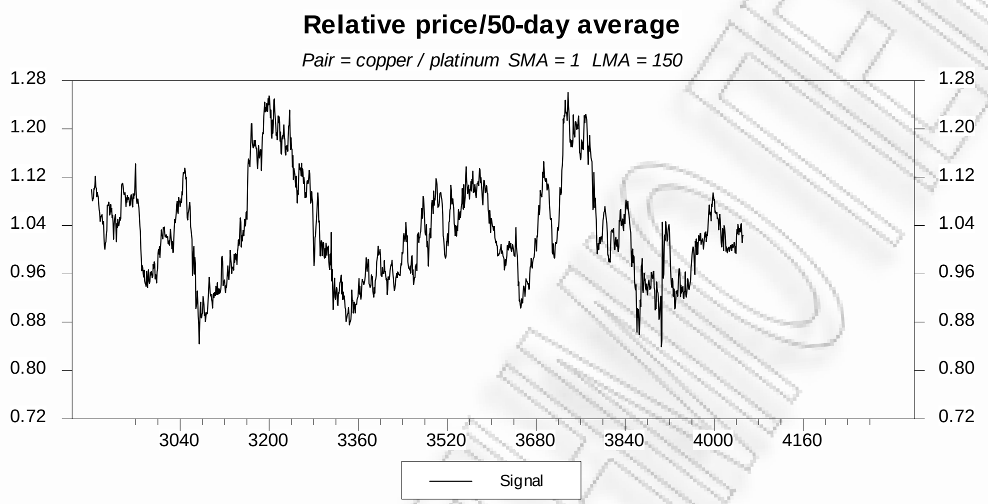
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -21.57800100423 79.196154033752 79.383824802341 15.50966818294 16.336937752089

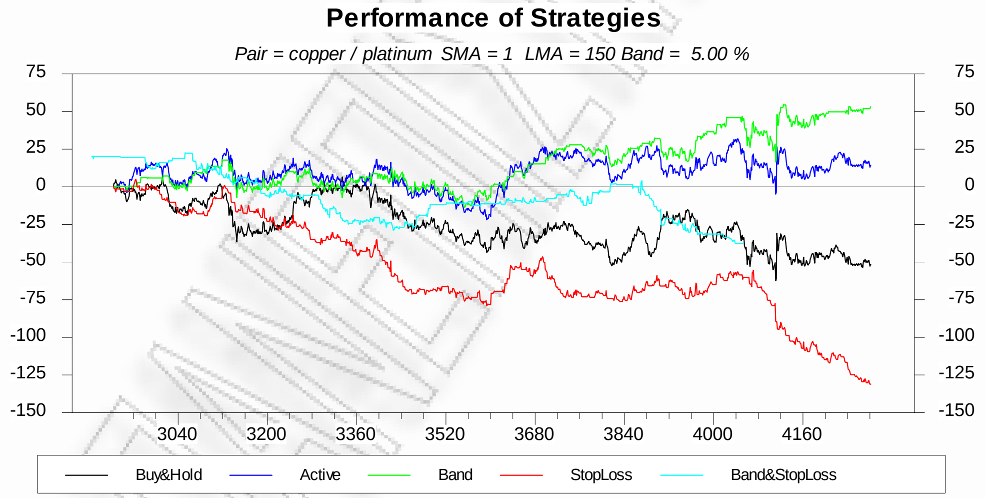
Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 143.0

Net Performance of BuyHold_Performance = -21.58
Net Performance of Active_Performance = 61.80 %
Net Performance of Band_Performance = 60.78 %
Net Performance of StopLoss_Performance = -30.99 %
Net Performance of Band&StopLoss_Performance = -26.56 %
Nr.of Switches of Active_Performance = 58.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 143.0

Net Performance of BuyHold_Performance = -21.58
Net Performance of Active_Performance = 61.80 %
Net Performance of Band_Performance = 60.78 %
Net Performance of StopLoss_Performance = -30.99 %
Net Performance of Band&StopLoss_Performance = -26.56 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -3.97 28.18 -2.81 50.37 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 14.58 28.17 -2.64 48.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 17.98 23.95 -2.38 32.25 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 11.36 22.39 -2.26 32.18 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 10.85 17.63 -1.65 18.04 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-27-





Pair = copper / platinum
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 -52.03661793330 13.72524111653 52.19247434127 -131.7408788832 -67.36004487649

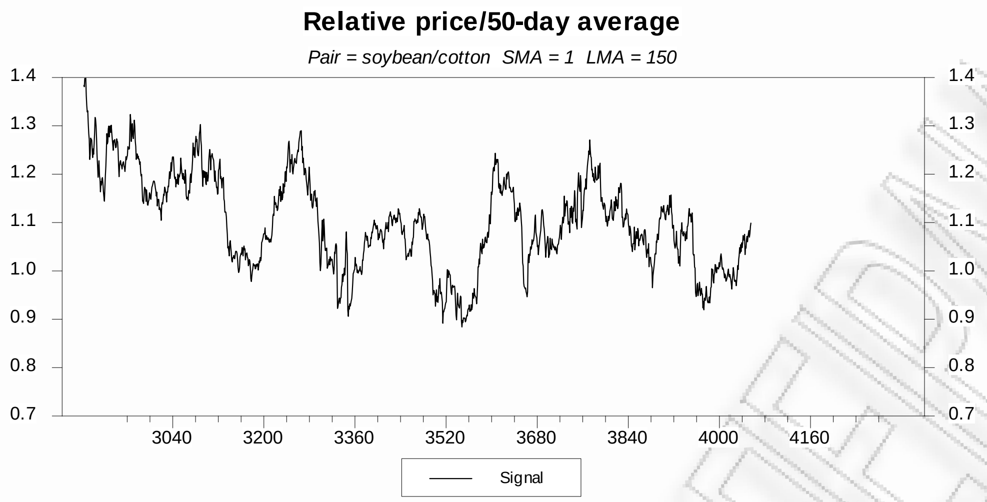
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -52.03661793330 13.72524111653 52.19247434127 -131.7408788832 -67.36004487649

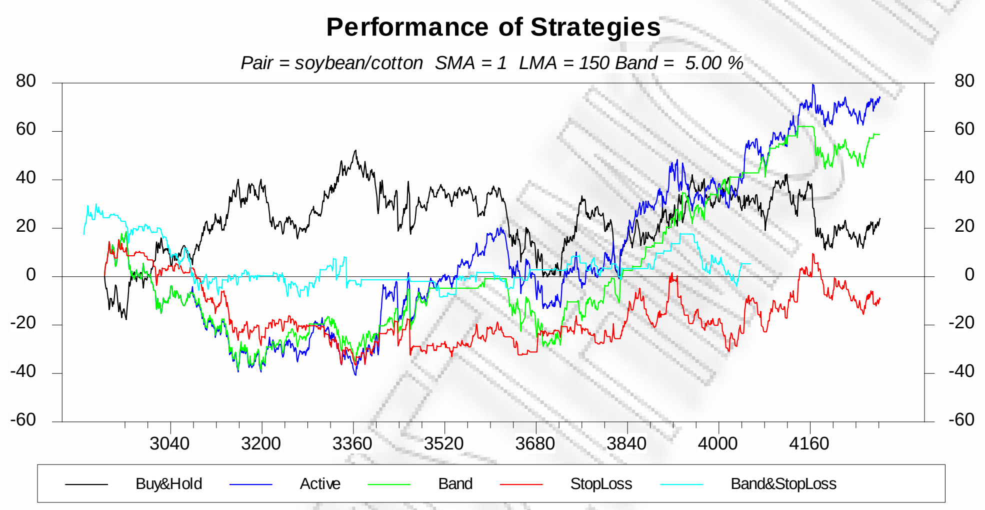
Nr.of Switches of Active_Performance = 54.0
Nr.of Switches of Band_Performance = 66.0
Nr.of Switches of StopLoss_Performance = 195.0
Nr.of Switches of Band&StopLoss_performance = 150.0

Net Performance of BuyHold_Performance = -52.04
Net Performance of Active_Performance = -2.47 %
Net Performance of Band_Performance = 32.39 %
Net Performance of StopLoss_Performance = -190.24 %
Net Performance of Band&StopLoss_Performance = -112.36 %
Nr.of Switches of Active_Performance = 54.0
Nr.of Switches of Band_Performance = 66.0
Nr.of Switches of StopLoss_Performance = 195.0
Nr.of Switches of Band&StopLoss_performance = 150.0

Net Performance of BuyHold_Performance = -52.04
Net Performance of Active_Performance = -2.47 %
Net Performance of Band_Performance = 32.39 %
Net Performance of StopLoss_Performance = -190.24 %
Net Performance of Band&StopLoss_Performance = -112.36 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -9.58 34.10 -3.40 51.91 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 2.53 34.10 -3.39 47.13 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 13.25 29.67 -2.73 31.30 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -13.54 22.45 -2.44 26.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -4.12 17.42 -1.73 15.46 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-28-





\ Pair = soybean/cotton
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 23.81806237596 73.17965006729 58.36046944607 -9.96513631668 -13.96477701917

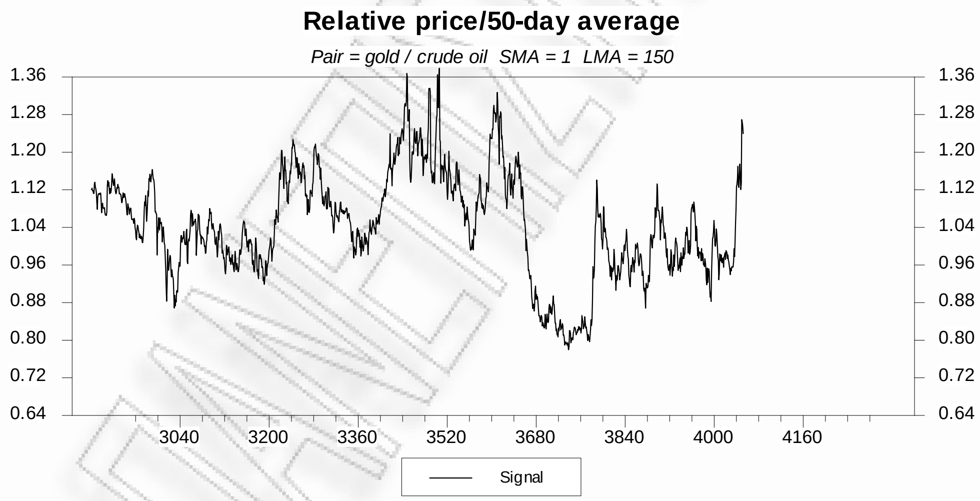
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 23.81806237596 73.17965006729 58.36046944607 -9.96513631668 -13.96477701917

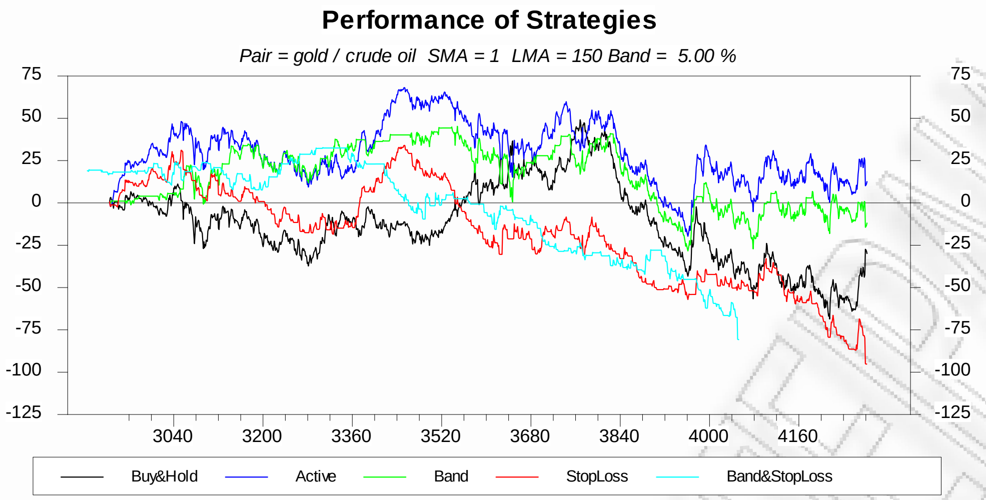
Nr.of Switches of Active_Performance = 47.0
Nr.of Switches of Band_Performance = 54.0
Nr.of Switches of StopLoss_Performance = 182.0
Nr.of Switches of Band&StopLoss_performance = 146.0

Net Performance of BuyHold_Performance = 23.82
Net Performance of Active_Performance = 59.08 %
Net Performance of Band_Performance = 42.16 %
Net Performance of StopLoss_Performance = -64.57 %
Net Performance of Band&StopLoss_Performance = -57.76 %
Nr.of Switches of Active_Performance = 47.0
Nr.of Switches of Band_Performance = 54.0
Nr.of Switches of StopLoss_Performance = 182.0
Nr.of Switches of Band&StopLoss_performance = 146.0

Net Performance of BuyHold_Performance = 23.82
Net Performance of Active_Performance = 59.08 %
Net Performance of Band_Performance = 42.16 %
Net Performance of StopLoss_Performance = -64.57 %
Net Performance of Band&StopLoss_Performance = -57.76 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 4.38 30.09 -2.94 48.82 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 13.47 30.07 -3.03 48.45 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 13.67 25.03 -2.29 31.74 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 8.16 22.61 -2.16 27.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 5.44 17.98 -1.76 16.27 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-29-





Pair = gold / crude oil
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -30.67935636052 12.27146618320 -12.25767932703 -95.78178701097 -116.2522962345

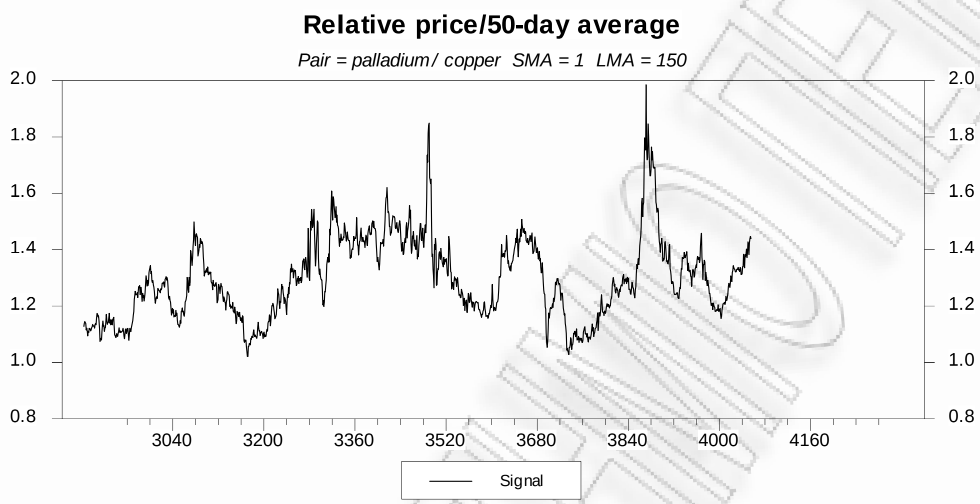
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -30.67935636052 12.27146618320 -12.25767932703 -95.78178701097 -116.2522962345

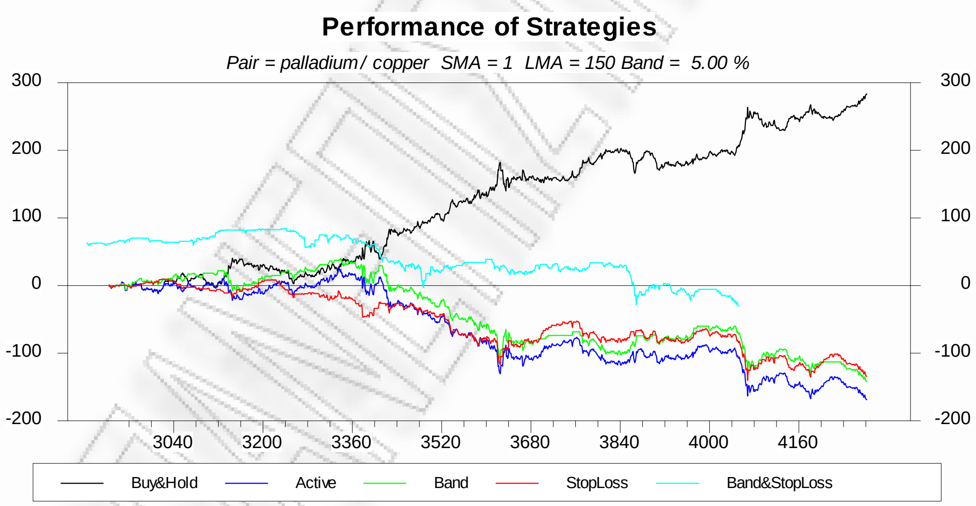
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 55.0
Nr.of Switches of StopLoss_Performance = 181.0
Nr.of Switches of Band&StopLoss_performance = 163.0

Net Performance of BuyHold_Performance = -30.68
Net Performance of Active_Performance = -6.63 %
Net Performance of Band_Performance = -28.76 %
Net Performance of StopLoss_Performance = -150.08 %
Net Performance of Band&StopLoss_Performance = -165.15 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 55.0
Nr.of Switches of StopLoss_Performance = 181.0
Nr.of Switches of Band&StopLoss_performance = 163.0

Net Performance of BuyHold_Performance = -30.68
Net Performance of Active_Performance = -6.63 %
Net Performance of Band_Performance = -28.76 %
Net Performance of StopLoss_Performance = -150.08 %
Net Performance of Band&StopLoss_Performance = -165.15 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -5.65 39.80 -3.82 52.72 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 2.26 39.80 -3.83 51.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 0.78 35.90 -3.56 37.63 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -7.69 27.96 -2.83 28.50 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -12.40 23.35 -2.49 17.53 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-30-





Pair = palladium / copper
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 281.2017081613 -169.8051952904 -142.9416884381 -135.2120372766 -109.2673749229

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 281.2017081613 -169.8051952904 -142.9416884381 -135.2120372766 -109.2673749229

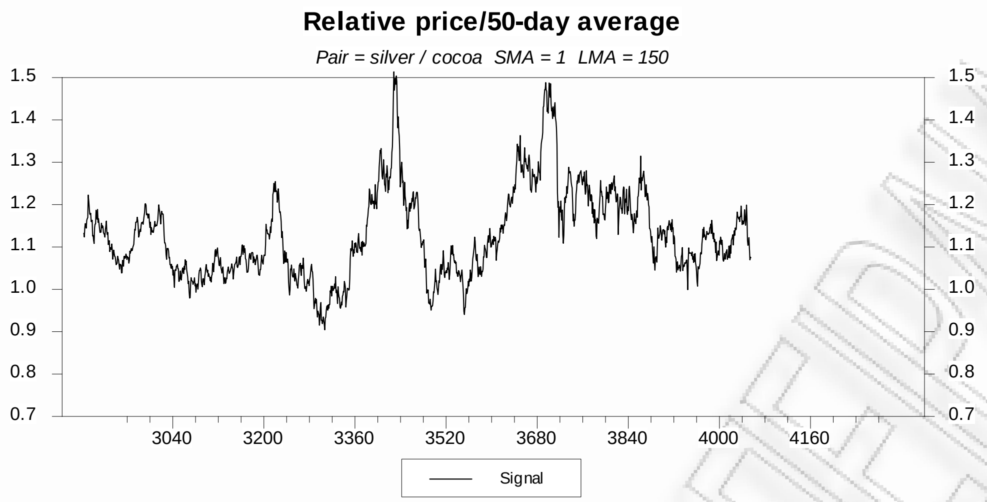
Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 43.0
Nr.of Switches of StopLoss_Performance = 167.0
Nr.of Switches of Band&StopLoss_performance = 133.0

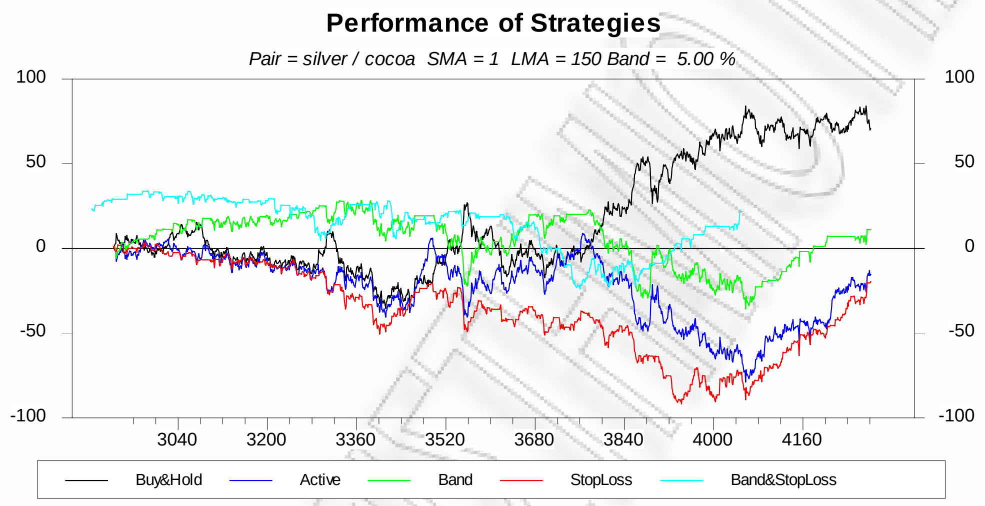
Net Performance of BuyHold_Performance = 281.20
Net Performance of Active_Performance = -184.21 %
Net Performance of Band_Performance = -155.84 %
Net Performance of StopLoss_Performance = -185.31 %
Net Performance of Band&StopLoss_Performance = -149.17 %
Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 43.0
Nr.of Switches of StopLoss_Performance = 167.0
Nr.of Switches of Band&StopLoss_performance = 133.0

Net Performance of BuyHold_Performance = 281.20
Net Performance of Active_Performance = -184.21 %
Net Performance of Band_Performance = -155.84 %
Net Performance of StopLoss_Performance = -185.31 %
Net Performance of Band&StopLoss_Performance = -149.17 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 51.77 43.16 -3.52 45.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -31.26 43.24 -4.23 50.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -24.00 40.32 -4.06 39.76 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -15.72 33.88 -3.40 32.55 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -12.83 32.03 -3.02 26.58 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-31-





Pair = silver / cocoa
SMA ---> 1 LMA ---> 150
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 69.85158208165 -16.12059475948 10.44873589675 -20.49885968171 -1.17510727265

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 69.85158208165 -16.12059475948 10.44873589675 -20.49885968171 -1.17510727265

Nr.of Switches of Active_Performance = 52.0
Nr.of Switches of Band_Performance = 64.0
Nr.of Switches of StopLoss_Performance = 195.0

Nr.of Switches of Band&StopLoss_performance = 160.0

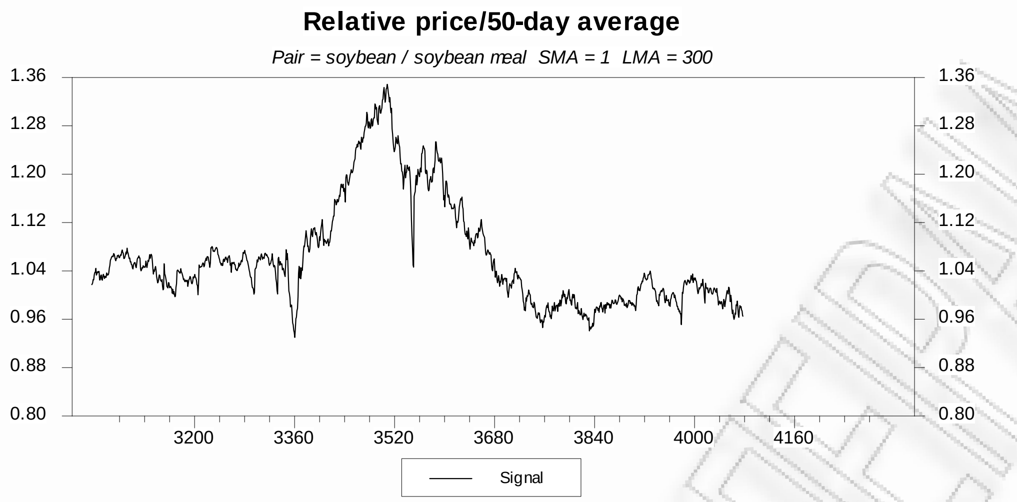
Net Performance of BuyHold_Performance = 69.85
Net Performance of Active_Performance = -31.72 %
Net Performance of Band_Performance = -8.75 %
Net Performance of StopLoss_Performance = -79.00 %
Net Performance of Band&StopLoss_Performance = -49.18 %
Nr.of Switches of Active_Performance = 52.0
Nr.of Switches of Band_Performance = 64.0
Nr.of Switches of StopLoss_Performance = 195.0
Nr.of Switches of Band&StopLoss_performance = 160.0

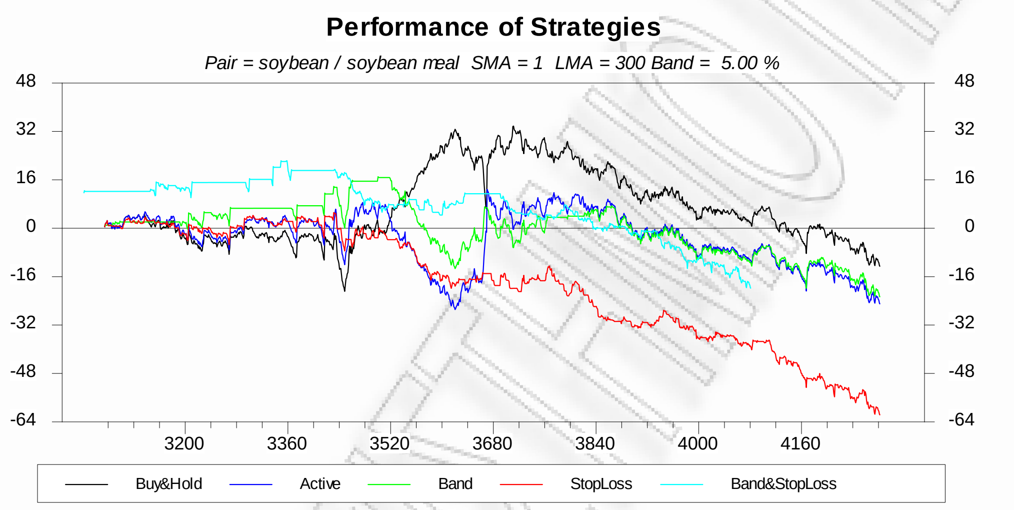
Net Performance of BuyHold_Performance = 69.85
Net Performance of Active_Performance = -31.72 %
Net Performance of Band_Performance = -8.75 %
Net Performance of StopLoss_Performance = -79.00 %
Net Performance of Band&StopLoss_Performance = -49.18 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 12.86 33.84 -3.23 48.45 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -2.97 33.85 -3.35 49.41 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 5.40 28.98 -3.04 32.77 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 6.94 25.35 -2.71 26.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 8.56 23.04 -2.45 19.81 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

1.7. **1-300, 5%**

-1-





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -13.00148254878 -25.42172612109 -23.08131174636 -62.10474836090 -36.64808440328

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -13.00148254878 -25.42172612109 -23.08131174636 -62.10474836090 -36.64808440328

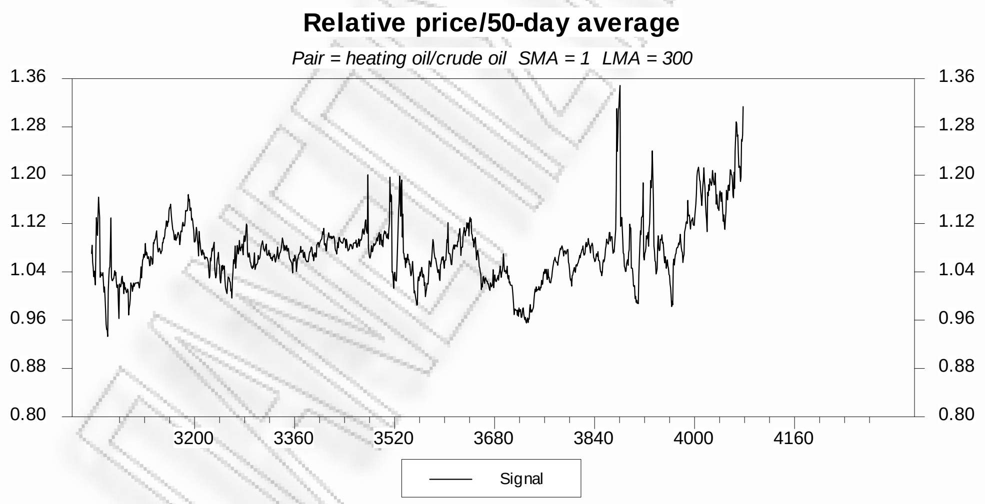
Nr.of Switches of Active_Performance = 17.0
Nr.of Switches of Band_Performance = 30.0
Nr.of Switches of StopLoss_Performance = 151.0
Nr.of Switches of Band&StopLoss_performance = 104.0

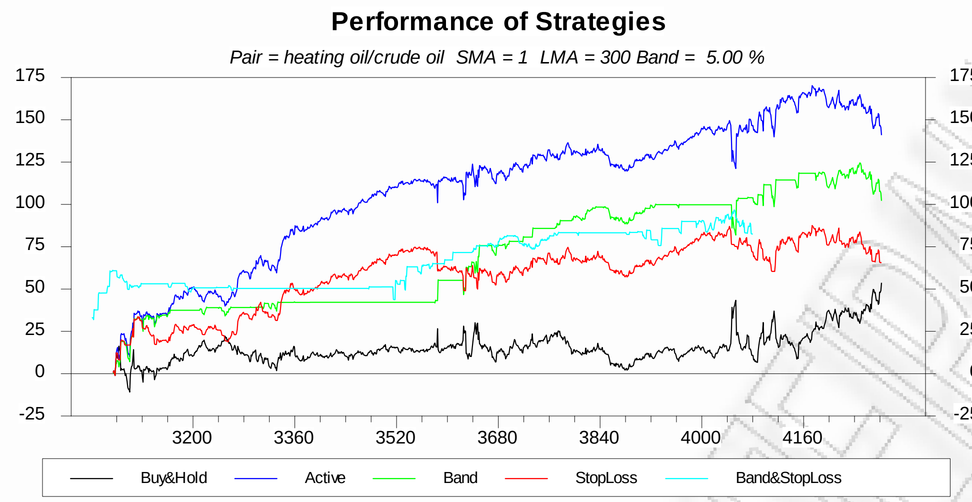
Net Performance of BuyHold_Performance = -13.00
Net Performance of Active_Performance = -30.52 %
Net Performance of Band_Performance = -32.08 %
Net Performance of StopLoss_Performance = -107.40 %
Net Performance of Band&StopLoss_Performance = -67.85 %
Nr.of Switches of Active_Performance = 17.0
Nr.of Switches of Band_Performance = 30.0
Nr.of Switches of StopLoss_Performance = 151.0
Nr.of Switches of Band&StopLoss_performance = 104.0

Net Performance of BuyHold_Performance = -13.00
Net Performance of Active_Performance = -30.52 %
Net Performance of Band_Performance = -32.08 %
Net Performance of StopLoss_Performance = -107.40 %
Net Performance of Band&StopLoss_Performance = -67.85 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.69 16.73 -1.52 53.81 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -5.26 16.73 -1.50 54.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -2.98 13.52 -1.31 35.93 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -3.54 11.40 -1.11 30.38 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -1.19 10.06 -0.93 21.11 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-2-





Pair = heating oil/crude oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 53.12459997992 140.3338738144 101.5454755686 65.06331765170 57.35306733550

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 53.12459997992 140.3338738144 101.5454755686 65.06331765170 57.35306733550

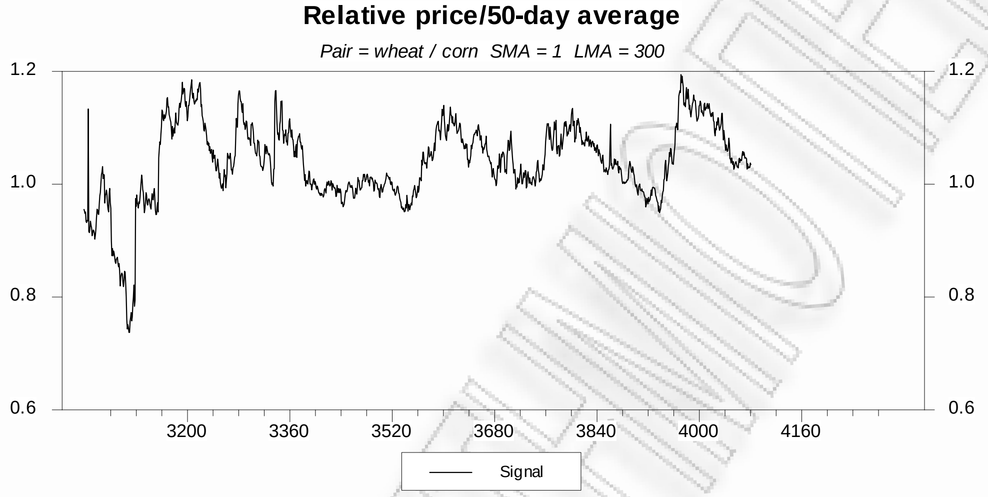
Nr.of Switches of Active_Performance = 100.0
Nr.of Switches of Band_Performance = 55.0
Nr.of Switches of StopLoss_Performance = 58.0
Nr.of Switches of Band&StopLoss_performance = 71.0

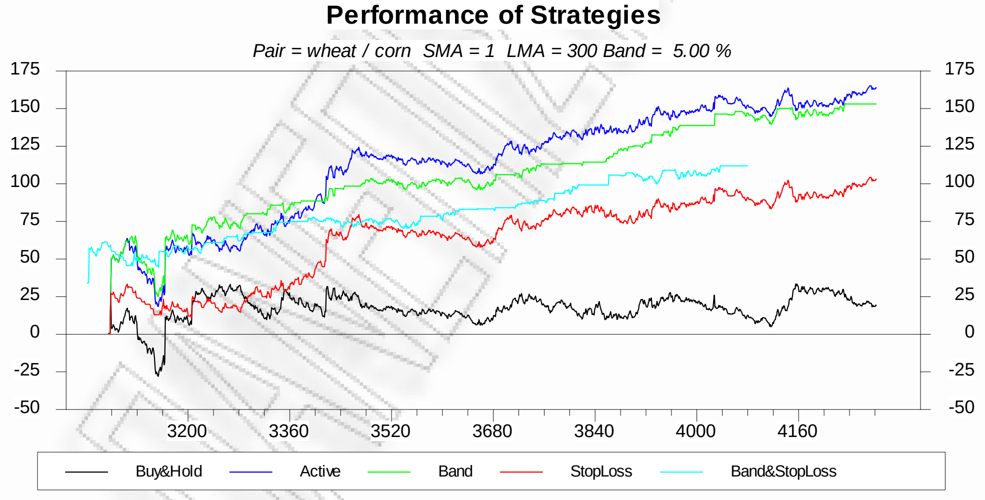
Net Performance of BuyHold_Performance = 53.12
Net Performance of Active_Performance = 110.33 %
Net Performance of Band_Performance = 85.05 %
Net Performance of StopLoss_Performance = 47.66 %
Net Performance of Band&StopLoss_Performance = 36.05 %
Nr.of Switches of Active_Performance = 100.0
Nr.of Switches of Band_Performance = 55.0
Nr.of Switches of StopLoss_Performance = 58.0
Nr.of Switches of Band&StopLoss_performance = 71.0

Net Performance of BuyHold_Performance = 53.12
Net Performance of Active_Performance = 110.33 %
Net Performance of Band_Performance = 85.05 %
Net Performance of StopLoss_Performance = 47.66 %
Net Performance of Band&StopLoss_Performance = 36.05 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 10.99 30.71 -2.20 47.60 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 29.04 30.67 -2.20 47.93 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 24.43 25.27 -1.52 16.14 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 17.00 24.73 -1.86 43.05 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 16.28 18.26 -0.83 12.09 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-5-





Pair = wheat / corn
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 18.32335142956 162.8191933514 152.4246737664 101.9376804503 90.28709832334

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 18.32335142956 162.8191933514 152.4246737664 101.9376804503 90.28709832334

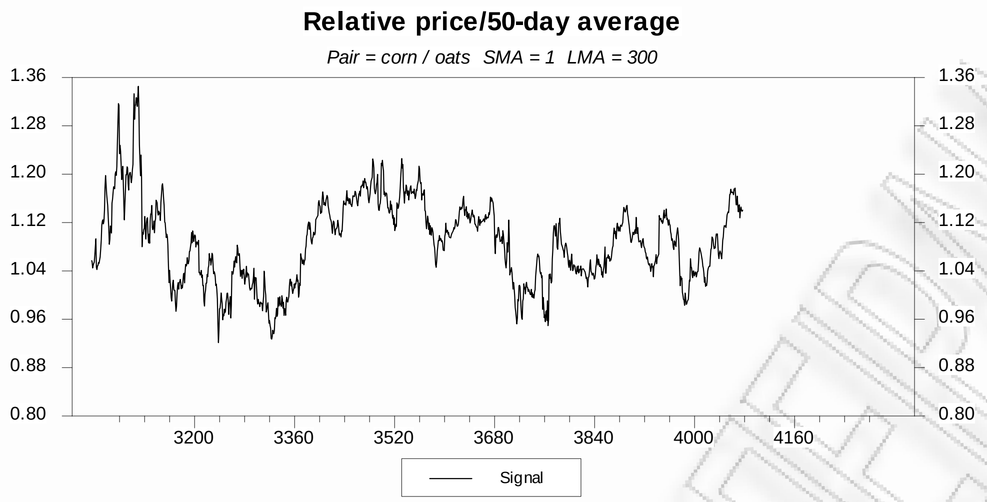
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 60.0
Nr.of Switches of Band&StopLoss_performance = 96.0

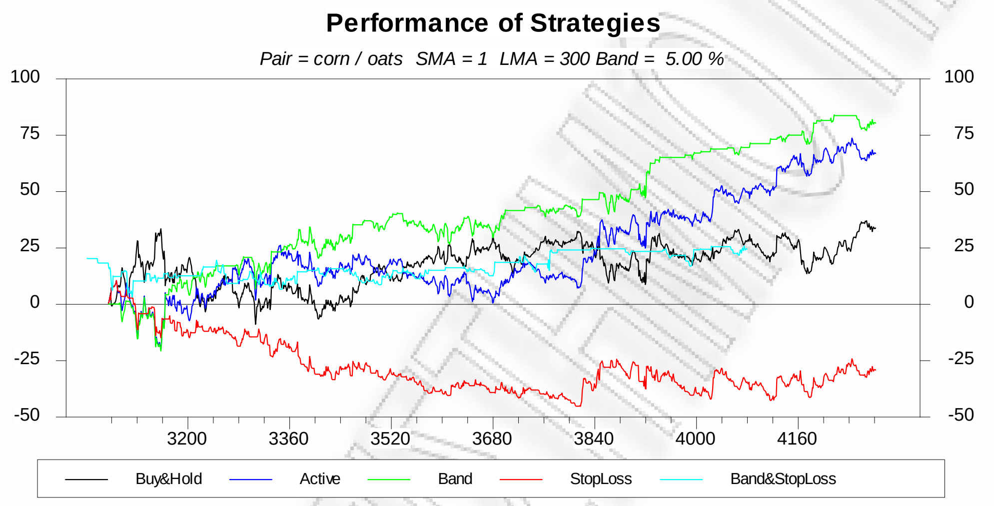
Net Performance of BuyHold_Performance = 18.32
Net Performance of Active_Performance = 143.92 %
Net Performance of Band_Performance = 133.82 %
Net Performance of StopLoss_Performance = 83.94 %
Net Performance of Band&StopLoss_Performance = 61.49 %
Nr.of Switches of Active_Performance = 63.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 60.0
Nr.of Switches of Band&StopLoss_performance = 96.0

Net Performance of BuyHold_Performance = 18.32
Net Performance of Active_Performance = 143.92 %
Net Performance of Band_Performance = 133.82 %
Net Performance of StopLoss_Performance = 83.94 %
Net Performance of Band&StopLoss_Performance = 61.49 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 3.79 31.76 -2.15 50.66 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 33.70 31.68 -2.12 48.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 35.33 27.65 -1.49 26.66 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 24.76 24.78 -1.95 43.29 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 24.58 19.70 -1.27 22.27 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-9-





Pair = corn / oats
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 33.37117169989 66.50824836020 79.96199906143 -29.56991832461 4.60372509942

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 33.37117169989 66.50824836020 79.96199906143 -29.56991832461 4.60372509942

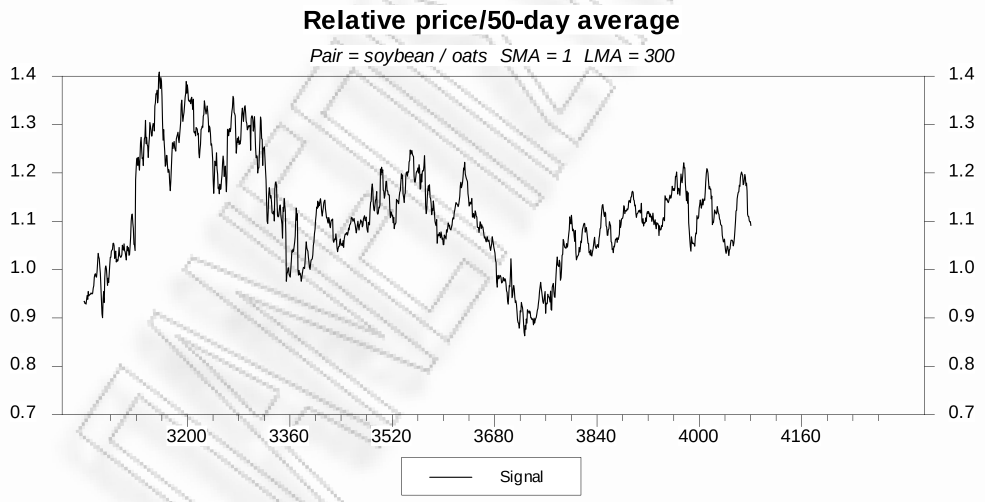
Nr.of Switches of Active_Performance = 36.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 109.0

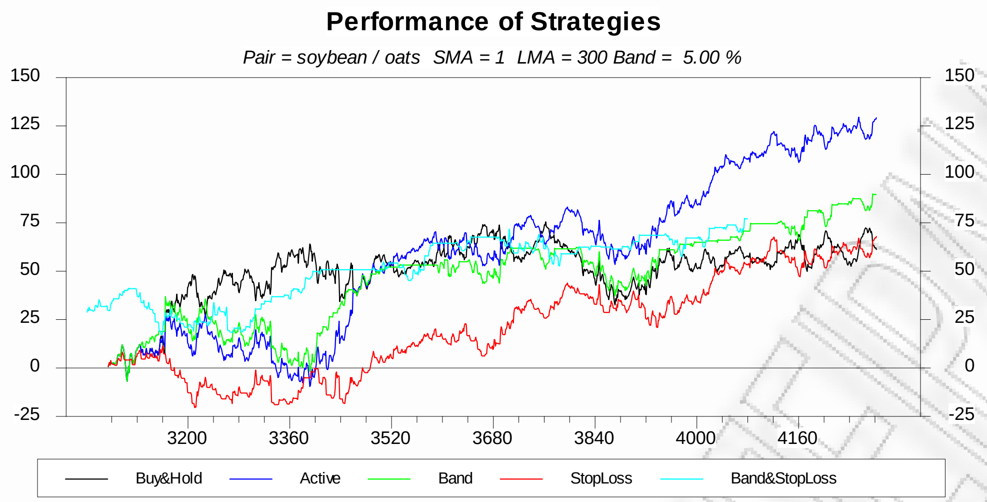
Net Performance of BuyHold_Performance = 33.37
Net Performance of Active_Performance = 55.71 %
Net Performance of Band_Performance = 61.36 %
Net Performance of StopLoss_Performance = -76.07 %
Net Performance of Band&StopLoss_Performance = -28.10 %
Nr.of Switches of Active_Performance = 36.0
Nr.of Switches of Band_Performance = 62.0
Nr.of Switches of StopLoss_Performance = 155.0
Nr.of Switches of Band&StopLoss_performance = 109.0

Net Performance of BuyHold_Performance = 33.37
Net Performance of Active_Performance = 55.71 %
Net Performance of Band_Performance = 61.36 %
Net Performance of StopLoss_Performance = -76.07 %
Net Performance of Band&StopLoss_Performance = -28.10 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 6.91 25.43 -2.28 48.34 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 13.76 25.42 -2.28 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 20.40 20.61 -1.81 26.49 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 3.44 19.54 -1.86 30.22 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 7.72 14.22 -1.06 13.08 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-14-





Pair = soybean / oats
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 60.52088431679 128.9095481135 89.09436027738 67.64079612730 56.29842462022

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 60.52088431679 128.9095481135 89.09436027738 67.64079612730 56.29842462022

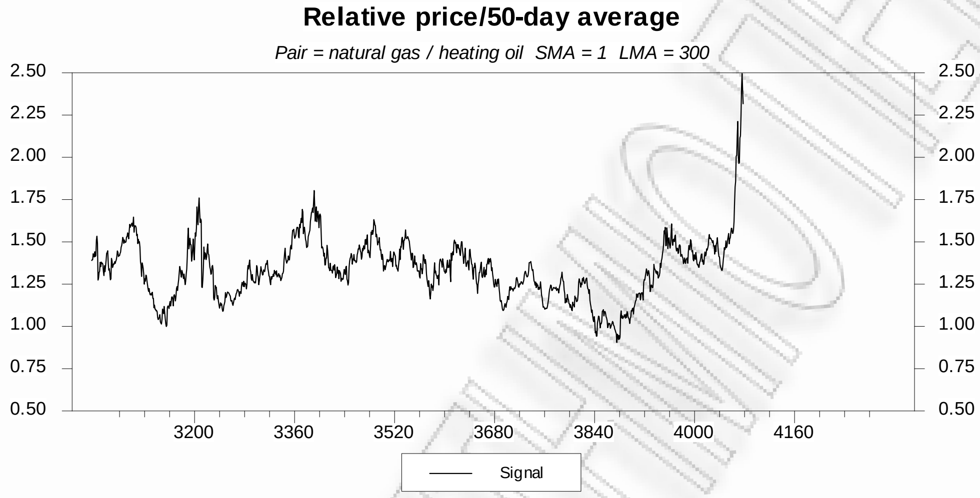
Nr.of Switches of Active_Performance = 50.0
Nr.of Switches of Band_Performance = 45.0
Nr.of Switches of StopLoss_Performance = 119.0
Nr.of Switches of Band&StopLoss_performance = 113.0

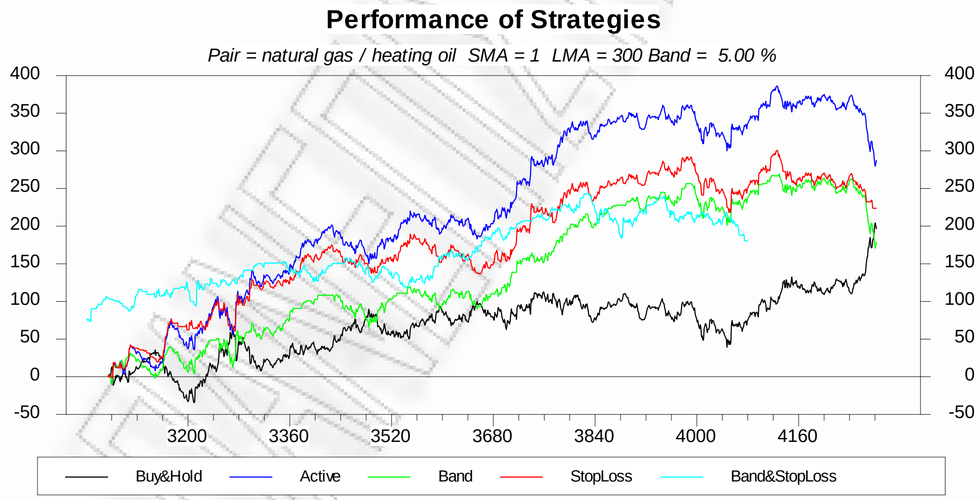
Net Performance of BuyHold_Performance = 60.52
Net Performance of Active_Performance = 113.91 %
Net Performance of Band_Performance = 75.59 %
Net Performance of StopLoss_Performance = 31.94 %
Net Performance of Band&StopLoss_Performance = 22.40 %
Nr.of Switches of Active_Performance = 50.0
Nr.of Switches of Band_Performance = 45.0
Nr.of Switches of StopLoss_Performance = 119.0
Nr.of Switches of Band&StopLoss_performance = 113.0

Net Performance of BuyHold_Performance = 60.52
Net Performance of Active_Performance = 113.91 %
Net Performance of Band_Performance = 75.59 %
Net Performance of StopLoss_Performance = 31.94 %
Net Performance of Band&StopLoss_Performance = 22.40 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 12.53 30.28 -2.80 48.76 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 26.68 30.24 -2.49 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 21.17 25.41 -2.23 30.30 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.32 23.46 -1.99 33.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 18.60 18.11 -1.47 16.31 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

18-





Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 194.8745123624 286.5705448141 177.6374322201 222.4717374655 121.8820091560

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 194.8745123624 286.5705448141 177.6374322201 222.4717374655 121.8820091560

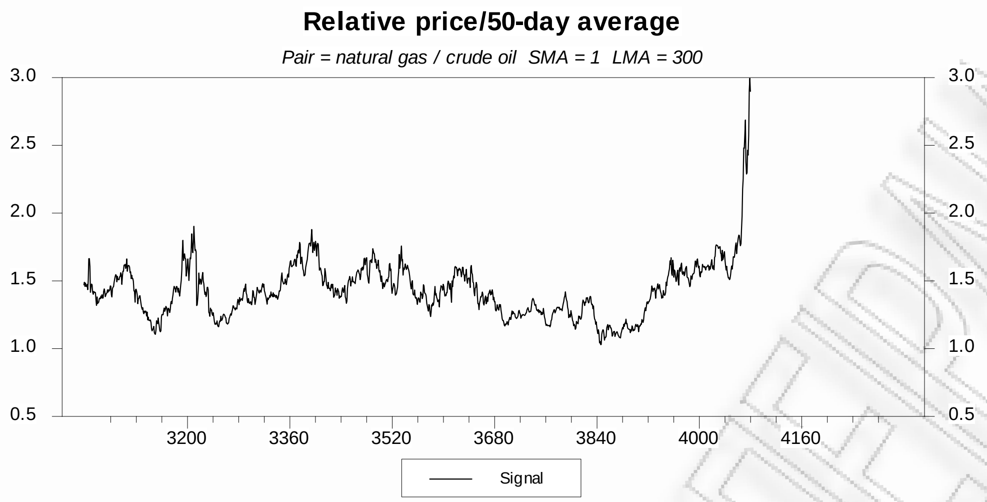
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 70.0
Nr.of Switches of StopLoss_Performance = 90.0
Nr.of Switches of Band&StopLoss_performance = 146.0

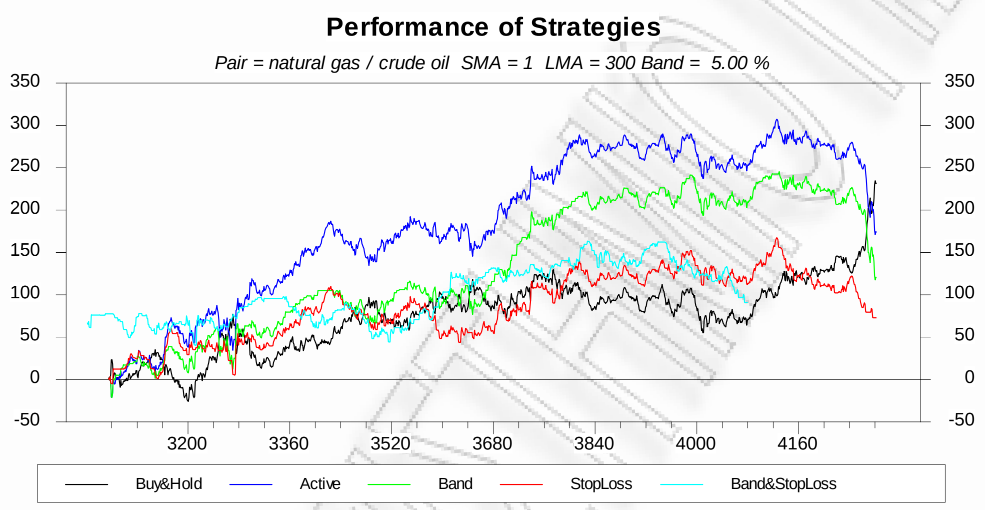
Net Performance of BuyHold_Performance = 194.87
Net Performance of Active_Performance = 264.07 %
Net Performance of Band_Performance = 156.64 %
Net Performance of StopLoss_Performance = 195.47 %
Net Performance of Band&StopLoss_Performance = 78.08 %
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 70.0
Nr.of Switches of StopLoss_Performance = 90.0
Nr.of Switches of Band&StopLoss_performance = 146.0

Net Performance of BuyHold_Performance = 194.87
Net Performance of Active_Performance = 264.07 %
Net Performance of Band_Performance = 156.64 %
Net Performance of StopLoss_Performance = 195.47 %
Net Performance of Band&StopLoss_Performance = 78.08 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 40.33 64.31 -5.65 49.09 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 59.31 64.25 -5.56 48.68 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 41.05 57.42 -5.37 38.99 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 51.57 57.67 -5.21 40.23 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 34.23 49.98 -4.78 30.63 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-22-





Pair = natural gas / crude oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 230.7452038544 172.7053844010 119.1151114078 71.6734892144 28.2758008965

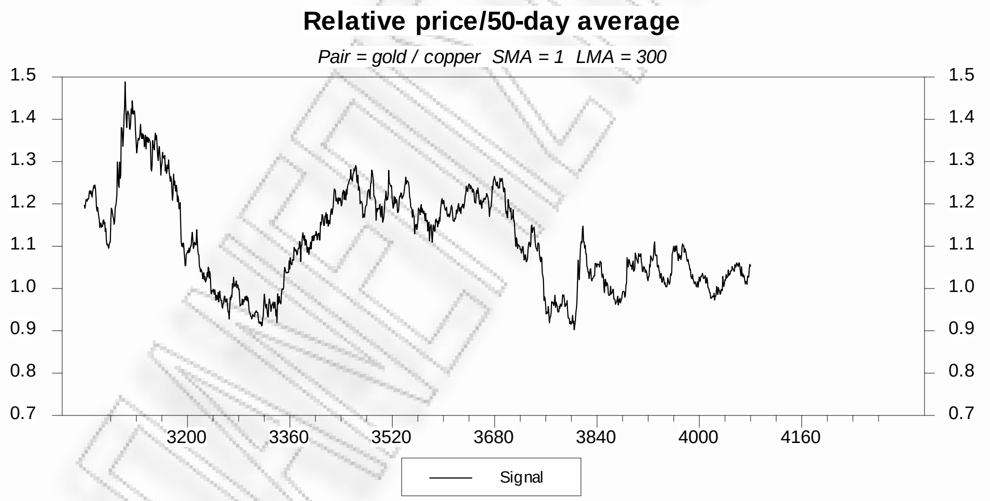
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 230.7452038544 172.7053844010 119.1151114078 71.6734892144 28.2758008965

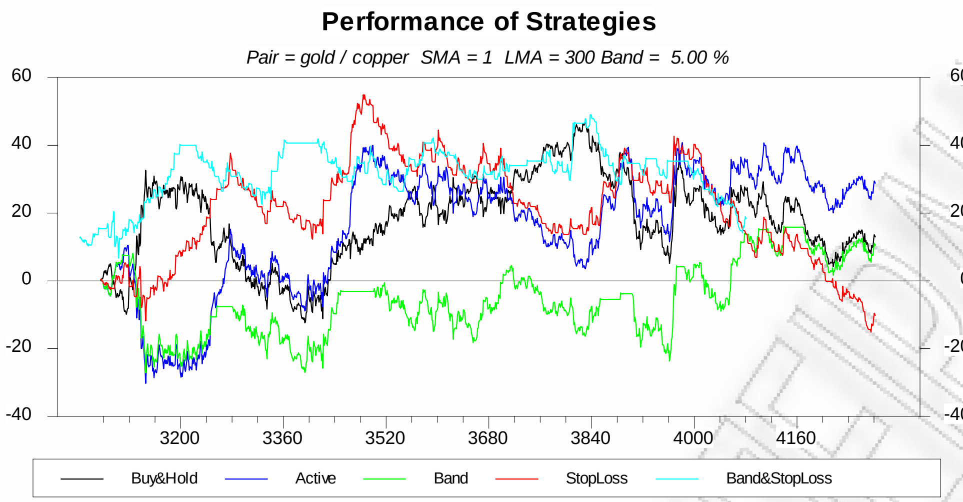
Nr.of Switches of Active_Performance = 71.0
Nr.of Switches of Band_Performance = 69.0
Nr.of Switches of StopLoss_Performance = 109.0
Nr.of Switches of Band&StopLoss_performance = 152.0

Net Performance of BuyHold_Performance = 230.75
Net Performance of Active_Performance = 151.41 %
Net Performance of Band_Performance = 98.42 %
Net Performance of StopLoss_Performance = 38.97 %
Net Performance of Band&StopLoss_Performance = -17.32 %
Nr.of Switches of Active_Performance = 71.0
Nr.of Switches of Band_Performance = 69.0
Nr.of Switches of StopLoss_Performance = 109.0
Nr.of Switches of Band&StopLoss_performance = 152.0

Net Performance of BuyHold_Performance = 230.75
Net Performance of Active_Performance = 151.41 %
Net Performance of Band_Performance = 98.42 %
Net Performance of StopLoss_Performance = 38.97 %
Net Performance of Band&StopLoss_Performance = -17.32 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 47.75 66.06 -6.18 48.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 35.74 66.09 -6.00 49.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 28.87 60.77 -5.57 40.31 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 21.54 55.62 -5.36 39.32 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 15.23 50.16 -4.84 30.63 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-24-





Pair = gold / copper
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 12.59256267509 28.45310903268 10.06732236193 -10.56637687635 6.46837615771

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 12.59256267509 28.45310903268 10.06732236193 -10.56637687635 6.46837615771

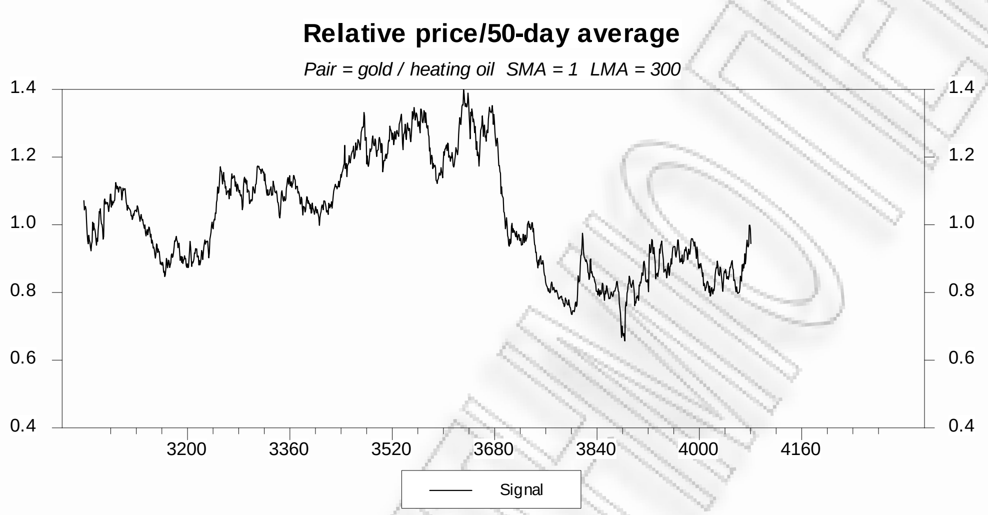
Nr.of Switches of Active_Performance = 38.0
Nr.of Switches of Band_Performance = 30.0
Nr.of Switches of StopLoss_Performance = 179.0
Nr.of Switches of Band&StopLoss_performance = 159.0

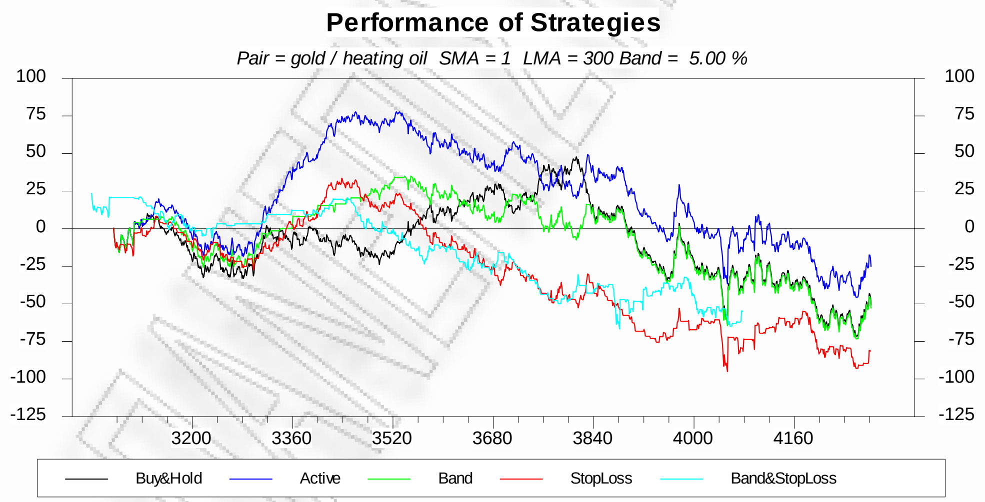
Net Performance of BuyHold_Performance = 12.59
Net Performance of Active_Performance = 17.05 %
Net Performance of Band_Performance = 1.07 %
Net Performance of StopLoss_Performance = -64.27 %
Net Performance of Band&StopLoss_Performance = -41.23 %
Nr.of Switches of Active_Performance = 38.0
Nr.of Switches of Band_Performance = 30.0
Nr.of Switches of StopLoss_Performance = 179.0
Nr.of Switches of Band&StopLoss_performance = 159.0

Net Performance of BuyHold_Performance = 12.59
Net Performance of Active_Performance = 17.05 %
Net Performance of Band_Performance = 1.07 %
Net Performance of StopLoss_Performance = -64.27 %
Net Performance of Band&StopLoss_Performance = -41.23 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 2.61 27.40 -2.68 51.90 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 5.89 27.40 -2.61 50.08 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 3.88 24.76 -2.46 39.98 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 8.86 22.09 -2.19 29.14 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 11.15 19.48 -1.90 21.11 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-25-





Pair = gold / heating oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE

4284 -51.86494189381 -26.07289031083 -53.76161781965 -81.94914755036 -91.5209037359

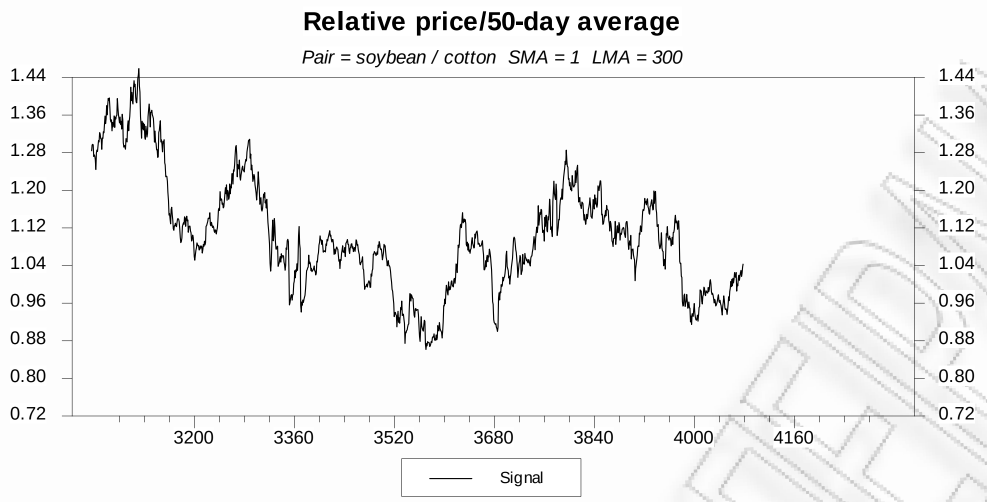
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -51.86494189381 -26.07289031083 -53.76161781965 -81.94914755036 -91.5209037359

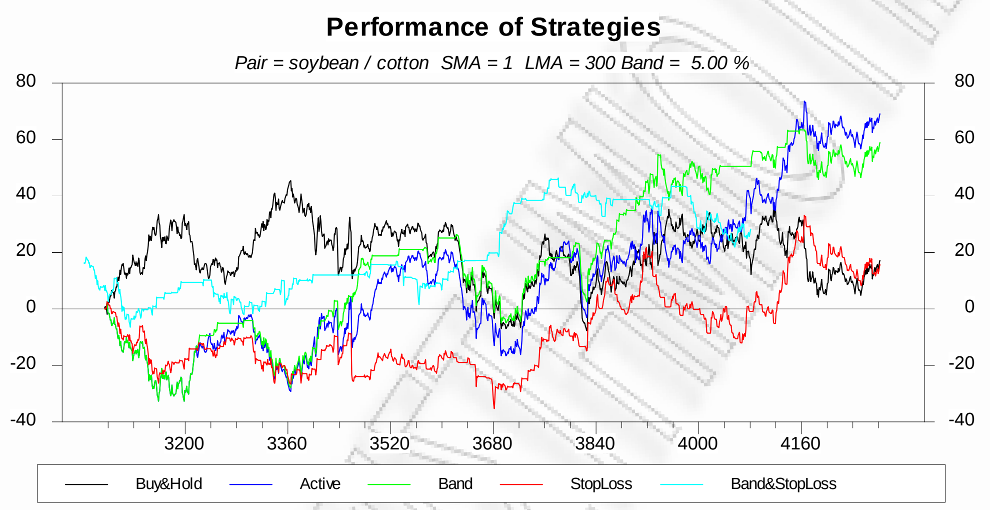
Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 30.0
Nr.of Switches of StopLoss_Performance = 161.0
Nr.of Switches of Band&StopLoss_performance = 147.0

Net Performance of BuyHold_Performance = -51.86
Net Performance of Active_Performance = -39.57 %
Net Performance of Band_Performance = -62.76 %
Net Performance of StopLoss_Performance = -130.25 %
Net Performance of Band&StopLoss_Performance = -135.62 %
Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 30.0
Nr.of Switches of StopLoss_Performance = 161.0
Nr.of Switches of Band&StopLoss_performance = 147.0

Net Performance of BuyHold_Performance = -51.86
Net Performance of Active_Performance = -39.57 %
Net Performance of Band_Performance = -62.76 %
Net Performance of StopLoss_Performance = -130.25 %
Net Performance of Band&StopLoss_Performance = -135.62 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.73 39.98 -3.66 52.65 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -5.40 39.98 -3.65 52.40 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -9.33 38.12 -3.58 43.87 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -7.03 31.65 -3.14 29.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -9.88 29.51 -2.97 22.10 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-26-





Pair = soybean / cotton
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 17.02362010152 68.88345802611 58.67572441865 15.42978788285 13.93121329439

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 17.02362010152 68.88345802611 58.67572441865 15.42978788285 13.93121329439

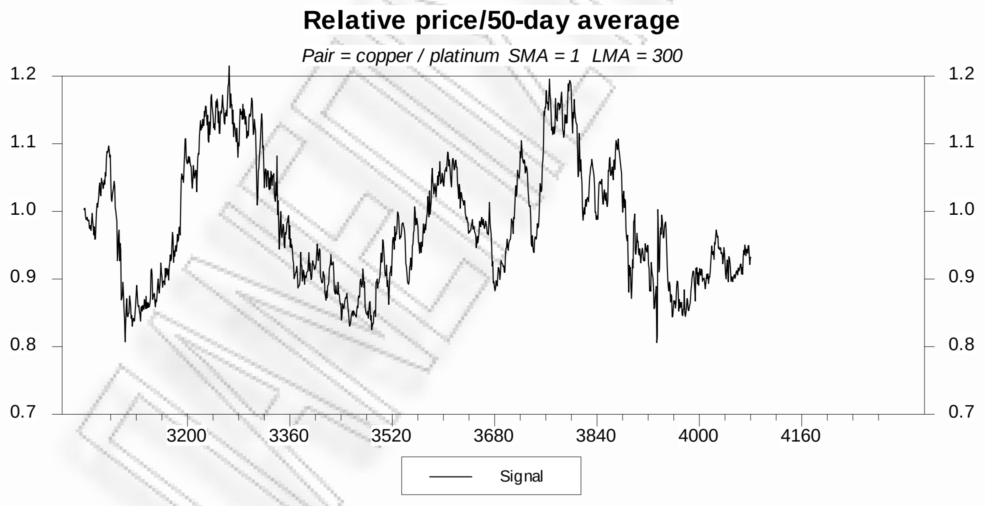
Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 51.0
Nr.of Switches of StopLoss_Performance = 160.0
Nr.of Switches of Band&StopLoss_performance = 122.0

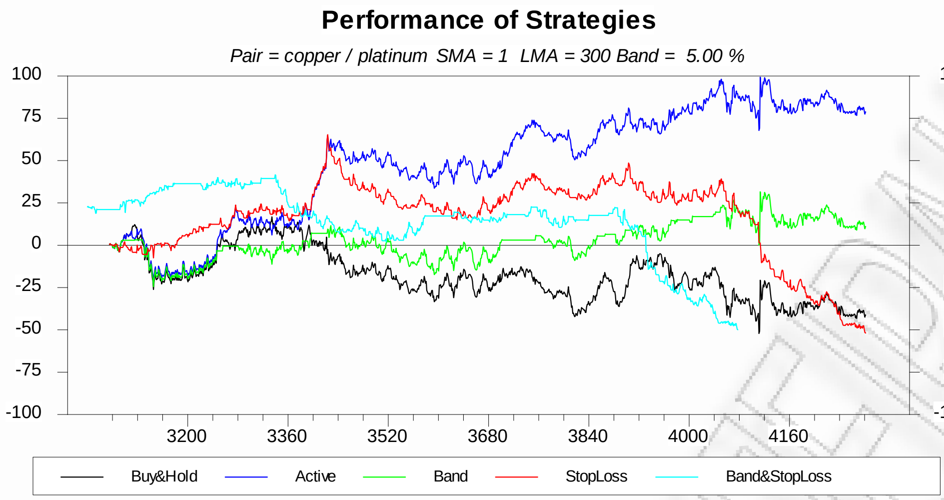
Net Performance of BuyHold_Performance = 17.02
Net Performance of Active_Performance = 50.88 %
Net Performance of Band_Performance = 43.38 %
Net Performance of StopLoss_Performance = -32.57 %
Net Performance of Band&StopLoss_Performance = -22.67 %
Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 51.0
Nr.of Switches of StopLoss_Performance = 160.0
Nr.of Switches of Band&StopLoss_performance = 122.0

Net Performance of BuyHold_Performance = 17.02
Net Performance of Active_Performance = 50.88 %
Net Performance of Band_Performance = 43.38 %
Net Performance of StopLoss_Performance = -32.57 %
Net Performance of Band&StopLoss_Performance = -22.67 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 3.52 30.48 -2.98 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 14.26 30.47 -2.97 48.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.25 24.67 -2.39 31.13 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 13.06 22.80 -2.00 26.99 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 10.40 17.62 -1.71 15.89 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-27-





Pair = copper / platinum
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.68935102960 78.26613686181 10.51454985745 -52.41236156624 -84.45779442634

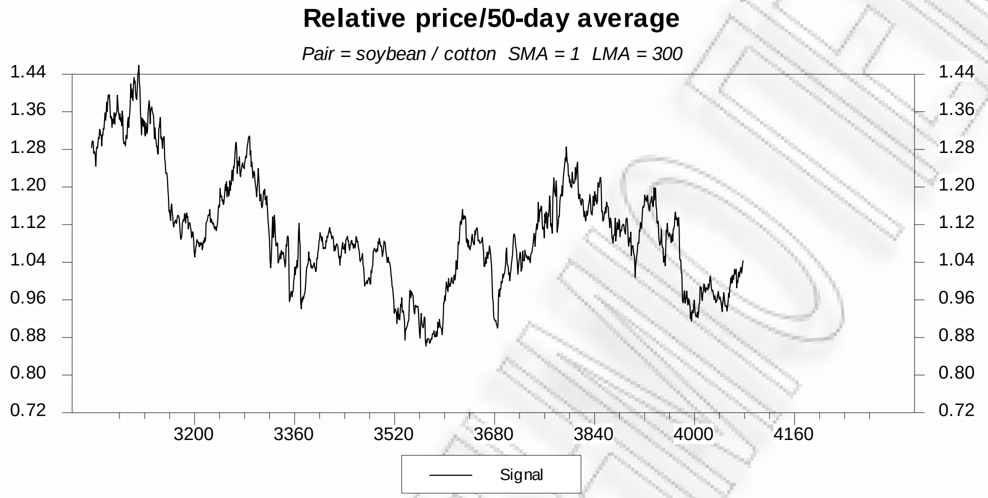
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.68935102960 78.26613686181 10.51454985745 -52.41236156624 -84.45779442634

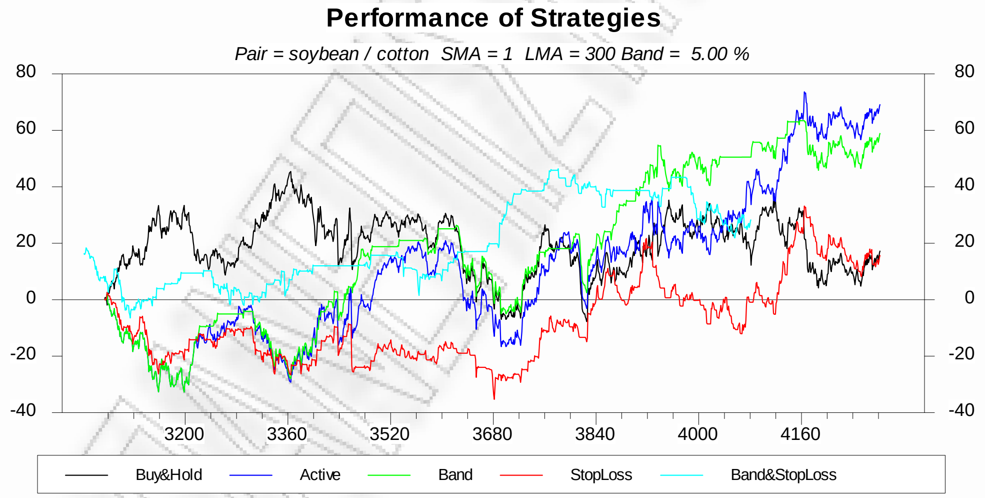
Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 27.0
Nr.of Switches of StopLoss_Performance = 147.0
Nr.of Switches of Band&StopLoss_performance = 140.0

Net Performance of BuyHold_Performance = -41.69
Net Performance of Active_Performance = 62.97 %
Net Performance of Band_Performance = 2.41 %
Net Performance of StopLoss_Performance = -96.51 %
Net Performance of Band&StopLoss_Performance = -126.46 %
Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 27.0
Nr.of Switches of StopLoss_Performance = 147.0
Nr.of Switches of Band&StopLoss_performance = 140.0

Net Performance of BuyHold_Performance = -41.69
Net Performance of Active_Performance = 62.97 %
Net Performance of Band_Performance = 2.41 %
Net Performance of StopLoss_Performance = -96.51 %
Net Performance of Band&StopLoss_Performance = -126.46 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -8.63 35.03 -3.51 51.57 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 16.20 35.02 -3.32 47.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 3.79 31.34 -2.75 37.25 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -1.78 25.87 -2.58 33.28 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -8.85 21.08 -2.22 24.01 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-28-





Pair = soybean / cotton
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 17.02362010152 68.88345802611 58.67572441865 15.42978788285 13.93121329439

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 17.02362010152 68.88345802611 58.67572441865 15.42978788285 13.93121329439

Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 51.0
Nr.of Switches of StopLoss_Performance = 160.0
Nr.of Switches of Band&StopLoss_performance = 122.0

Net Performance of BuyHold_Performance = 17.02
Net Performance of Active_Performance = 50.88 %
Net Performance of Band_Performance = 43.38 %
Net Performance of StopLoss_Performance = -32.57 %
Net Performance of Band&StopLoss_Performance = -22.67 %
Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 51.0
Nr.of Switches of StopLoss_Performance = 160.0
Nr.of Switches of Band&StopLoss_performance = 122.0

Net Performance of BuyHold_Performance = 17.02
Net Performance of Active_Performance = 50.88 %
Net Performance of Band_Performance = 43.38 %
Net Performance of StopLoss_Performance = -32.57 %
Net Performance of Band&StopLoss_Performance = -22.67 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 3.52 30.48 -2.98 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 14.26 30.47 -2.97 48.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.25 24.67 -2.39 31.13 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 13.06 22.80 -2.00 26.99 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 10.40 17.62 -1.71 15.89 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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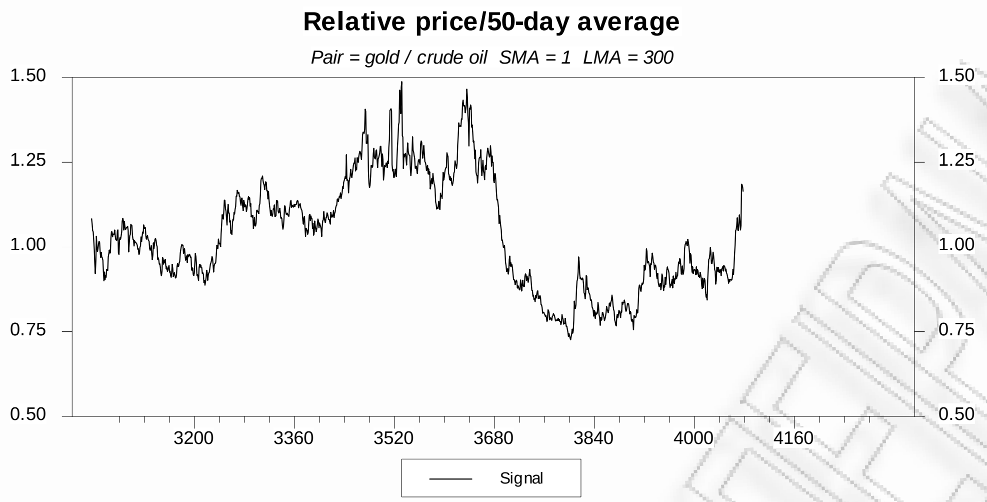
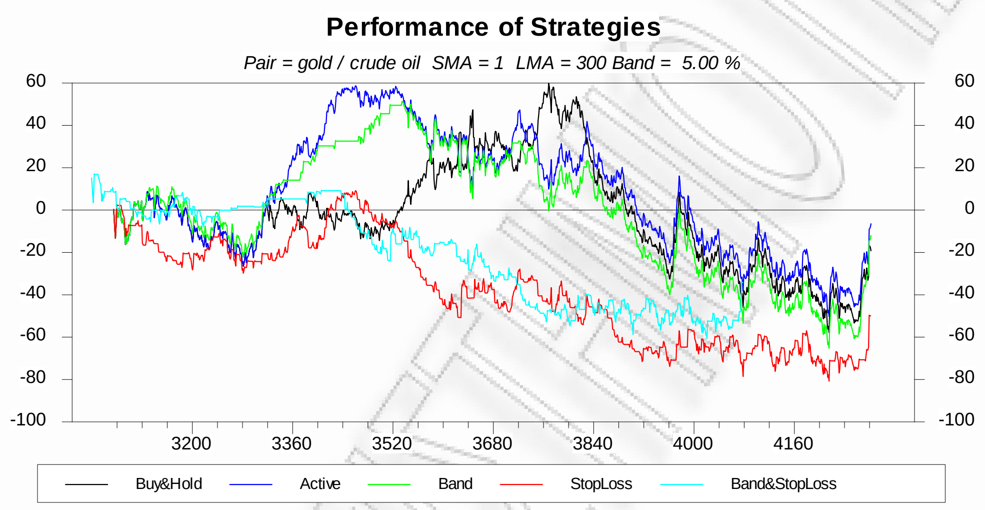




Pair = gold / crude oil
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.84526558957 -6.74784331210 -12.32804845431 -50.39225199277 -57.63546403815

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -19.84526558957 -6.74784331210 -12.32804845431 -50.39225199277 -57.63546403815

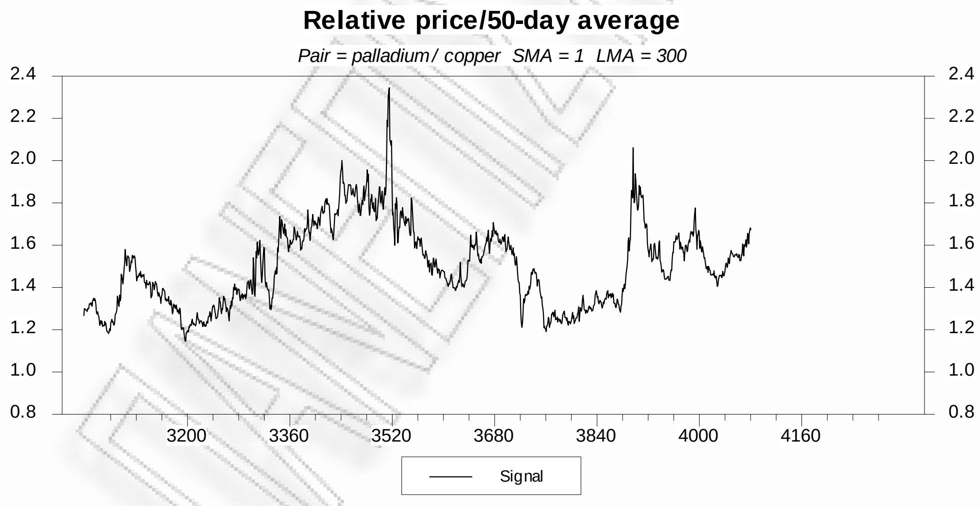
Nr.of Switches of Active_Performance = 32.0
Nr.of Switches of Band_Performance = 26.0
Nr.of Switches of StopLoss_Performance = 159.0
Nr.of Switches of Band&StopLoss_performance = 149.0

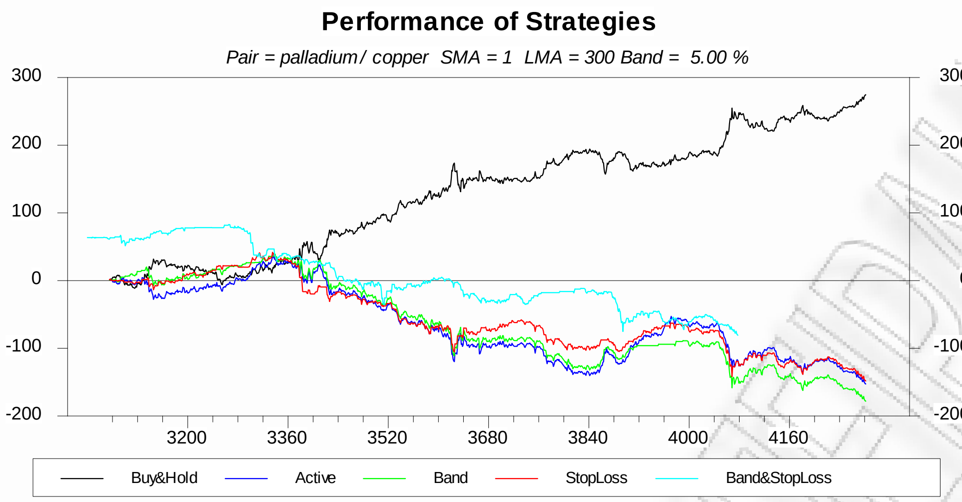
Net Performance of BuyHold_Performance = -19.85
Net Performance of Active_Performance = -16.35 %
Net Performance of Band_Performance = -20.13 %
Net Performance of StopLoss_Performance = -98.09 %
Net Performance of Band&StopLoss_Performance = -102.34 %
Nr.of Switches of Active_Performance = 32.0
Nr.of Switches of Band_Performance = 26.0
Nr.of Switches of StopLoss_Performance = 159.0
Nr.of Switches of Band&StopLoss_performance = 149.0

Net Performance of BuyHold_Performance = -19.85
Net Performance of Active_Performance = -16.35 %
Net Performance of Band_Performance = -20.13 %
Net Performance of StopLoss_Performance = -98.09 %
Net Performance of Band&StopLoss_Performance = -102.34 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -4.11 40.81 -3.85 52.32 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.40 40.81 -3.87 52.07 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -1.00 39.01 -3.83 43.96 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -0.62 30.94 -3.19 29.06 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -2.74 29.07 -3.00 22.68 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-30-





Pair = palladium / copper
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 272.5197669966 -153.6894018538 -179.0781201326 -149.1902336895 -167.6108243331

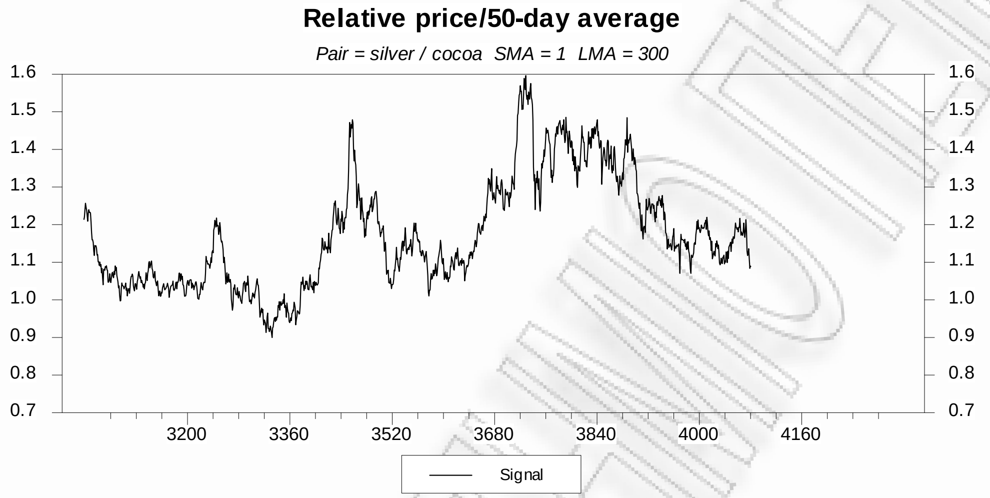
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 272.5197669966 -153.6894018538 -179.0781201326 -149.1902336895 -167.6108243331

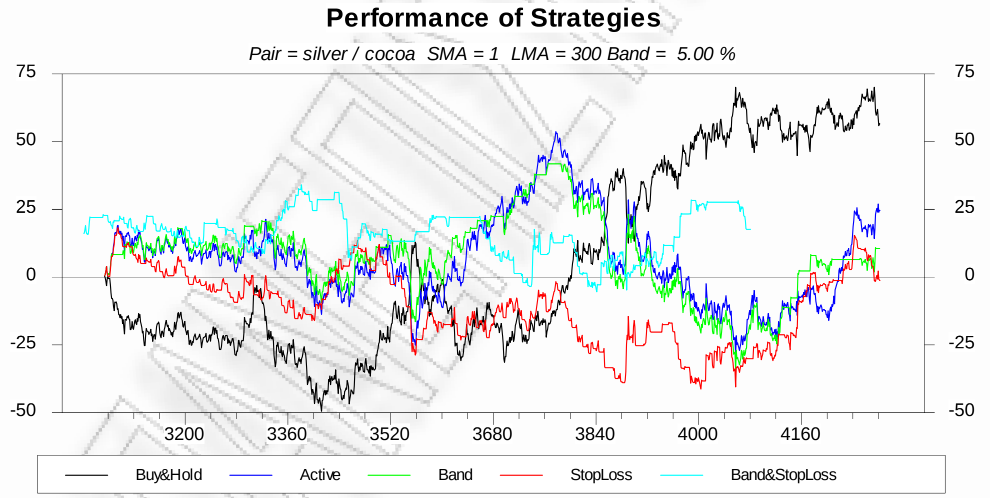
Nr.of Switches of Active_Performance = 29.0
Nr.of Switches of Band_Performance = 35.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 126.0

Net Performance of BuyHold_Performance = 272.52
Net Performance of Active_Performance = -162.39 %
Net Performance of Band_Performance = -189.58 %
Net Performance of StopLoss_Performance = -189.99 %
Net Performance of Band&StopLoss_Performance = -205.41 %
Nr.of Switches of Active_Performance = 29.0
Nr.of Switches of Band_Performance = 35.0
Nr.of Switches of StopLoss_Performance = 136.0
Nr.of Switches of Band&StopLoss_performance = 126.0

Net Performance of BuyHold_Performance = 272.52
Net Performance of Active_Performance = -162.39 %
Net Performance of Band_Performance = -189.58 %
Net Performance of StopLoss_Performance = -189.99 %
Net Performance of Band&StopLoss_Performance = -205.41 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 56.40 44.50 -3.64 46.03 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -31.81 44.60 -4.33 51.24 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -34.89 41.98 -4.13 43.96 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -22.49 36.38 -3.61 34.93 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -26.86 34.95 -3.54 31.62 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-31-





Pair = silver / cocoa
SMA ---> 1 LMA ---> 300
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 56.00002852671 24.08965803227 10.19709964564 -1.73044059667 1.99802986608

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 56.00002852671 24.08965803227 10.19709964564 -1.73044059667 1.99802986608

Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 31.0
Nr.of Switches of StopLoss_Performance = 183.0
Nr.of Switches of Band&StopLoss_performance = 146.0

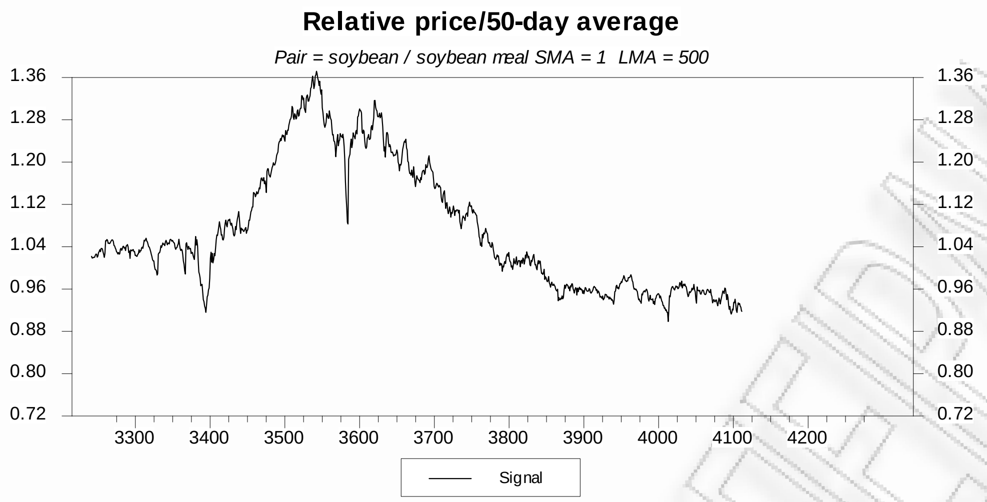
Net Performance of BuyHold_Performance = 56.00
Net Performance of Active_Performance = 9.69 %
Net Performance of Band_Performance = 0.90 %
Net Performance of StopLoss_Performance = -56.63 %
Net Performance of Band&StopLoss_Performance = -41.80 %
Nr.of Switches of Active_Performance = 48.0
Nr.of Switches of Band_Performance = 31.0
Nr.of Switches of StopLoss_Performance = 183.0
Nr.of Switches of Band&StopLoss_performance = 146.0

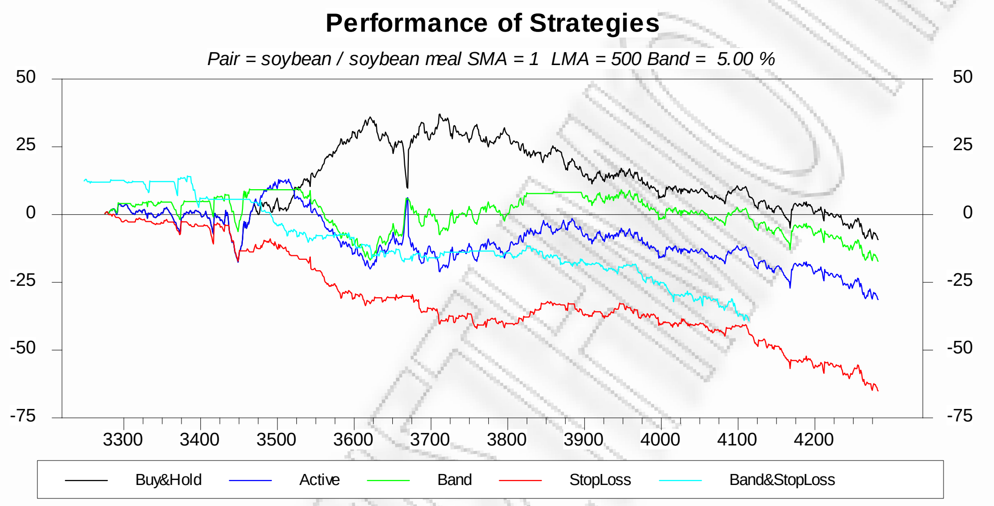
Net Performance of BuyHold_Performance = 56.00
Net Performance of Active_Performance = 9.69 %
Net Performance of Band_Performance = 0.90 %
Net Performance of StopLoss_Performance = -56.63 %
Net Performance of Band&StopLoss_Performance = -41.80 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 11.59 34.90 -3.29 48.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 4.99 34.91 -3.42 48.68 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 3.97 31.55 -3.16 37.17 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 10.94 25.75 -2.71 24.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 9.42 22.47 -2.28 16.06 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

1.8. **1-500, 5%**

-1-





Pair = soybean / soybean meal
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.72494159623 -31.84944015709 -17.69672041118 -65.51601753137 -60.25510960556

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.72494159623 -31.84944015709 -17.69672041118 -65.51601753137 -60.25510960556

Nr.of Switches of Active_Performance = 13.0
Nr.of Switches of Band_Performance = 17.0

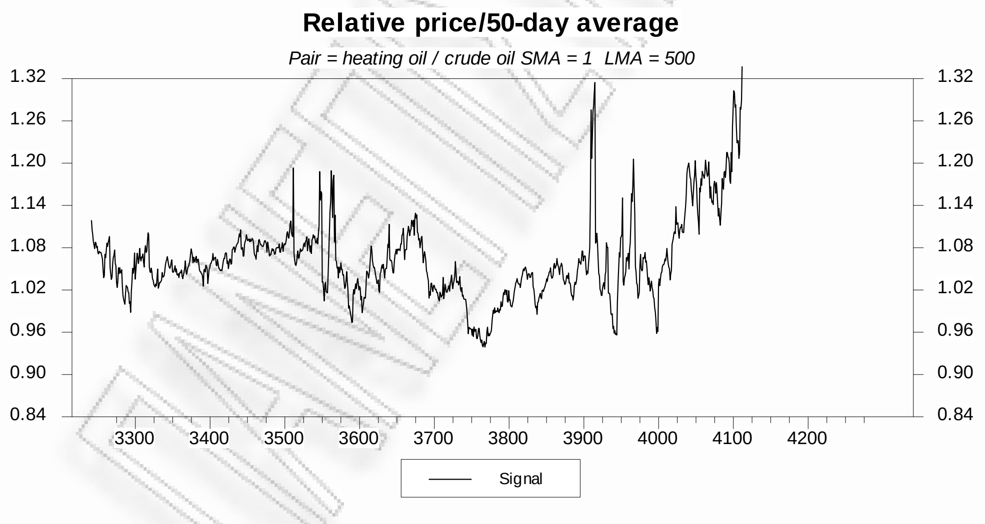
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 100.0

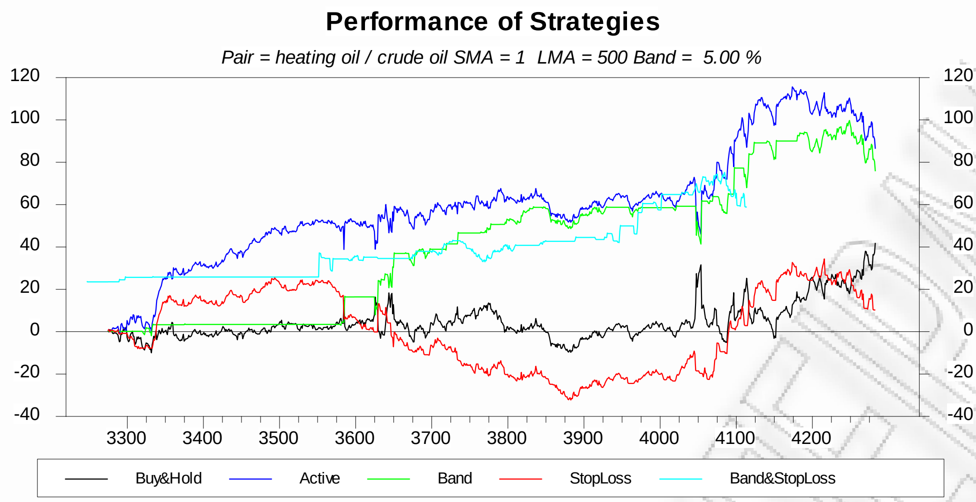
Net Performance of BuyHold_Performance = -9.72
Net Performance of Active_Performance = -35.75 %
Net Performance of Band_Performance = -22.80 %
Net Performance of StopLoss_Performance = -104.22 %
Net Performance of Band&StopLoss_Performance = -90.26 %
Nr.of Switches of Active_Performance = 13.0
Nr.of Switches of Band_Performance = 17.0
Nr.of Switches of StopLoss_Performance = 129.0
Nr.of Switches of Band&StopLoss_performance = 100.0

Net Performance of BuyHold_Performance = -9.72
Net Performance of Active_Performance = -35.75 %
Net Performance of Band_Performance = -22.80 %
Net Performance of StopLoss_Performance = -104.22 %
Net Performance of Band&StopLoss_Performance = -90.26 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.41 17.40 -1.54 53.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -7.90 17.39 -1.52 52.98 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -3.20 14.46 -1.40 41.57 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -6.73 11.71 -1.20 31.75 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -7.58 11.00 -1.04 26.59 %

-2-





Pair = heating oil / crude oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 41.46333529641 85.8846131435 75.28788339179 9.78496777599 40.81765331922

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 41.46333529641 85.8846131435 75.28788339179 9.78496777599 40.81765331922

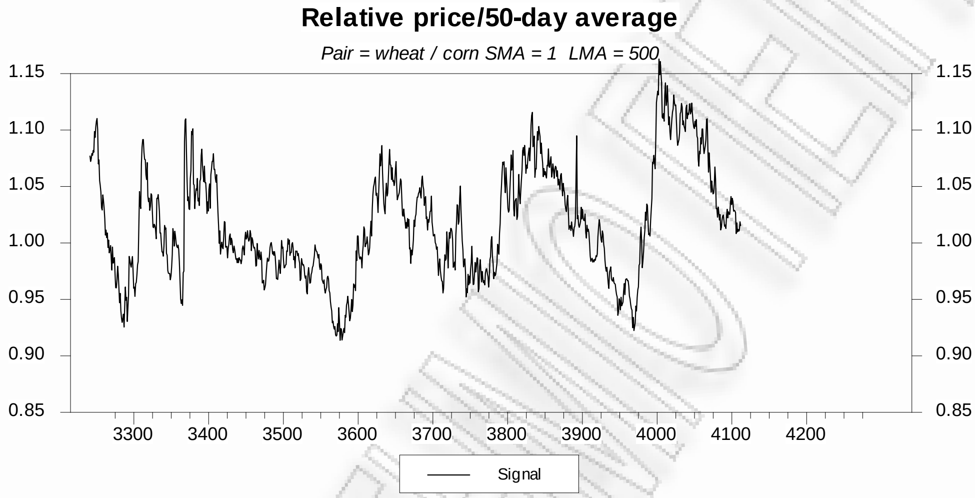
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 98.0
Nr.of Switches of Band&StopLoss_performance = 60.0

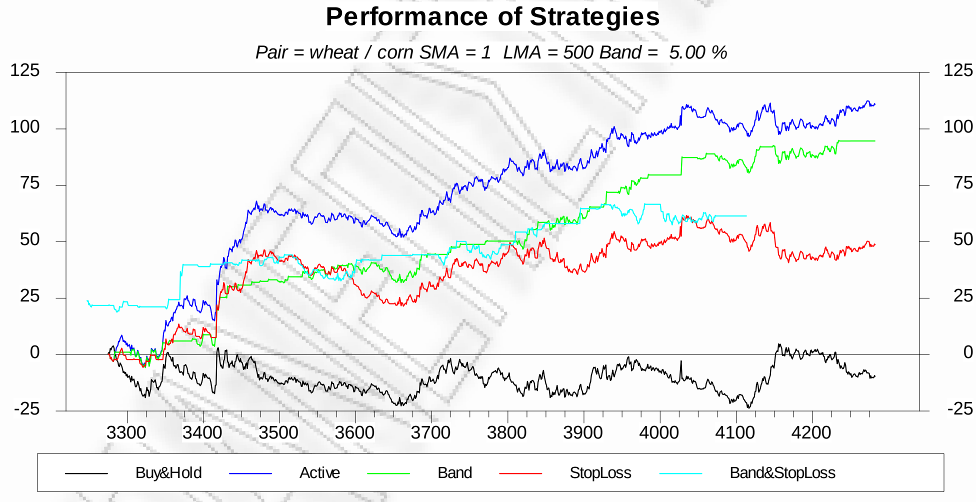
Net Performance of BuyHold_Performance = 41.46
Net Performance of Active_Performance = 63.38 %
Net Performance of Band_Performance = 62.09 %
Net Performance of StopLoss_Performance = -19.62 %
Net Performance of Band&StopLoss_Performance = 22.82 %
Nr.of Switches of Active_Performance = 75.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 98.0
Nr.of Switches of Band&StopLoss_performance = 60.0

Net Performance of BuyHold_Performance = 41.46
Net Performance of Active_Performance = 63.38 %
Net Performance of Band_Performance = 62.09 %
Net Performance of StopLoss_Performance = -19.62 %
Net Performance of Band&StopLoss_Performance = 22.82 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 10.28 30.19 -2.23 47.52 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 21.30 30.16 -2.19 48.02 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 21.95 24.65 -1.50 16.47 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 9.64 21.87 -1.78 36.51 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 14.59 15.11 -0.74 10.42 %

-5-





Pair = wheat / corn
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -10.20366015198 110.2885612336 94.21325006430 48.09526559041 43.50199576082

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -10.20366015198 110.2885612336 94.21325006430 48.09526559041 43.50199576082

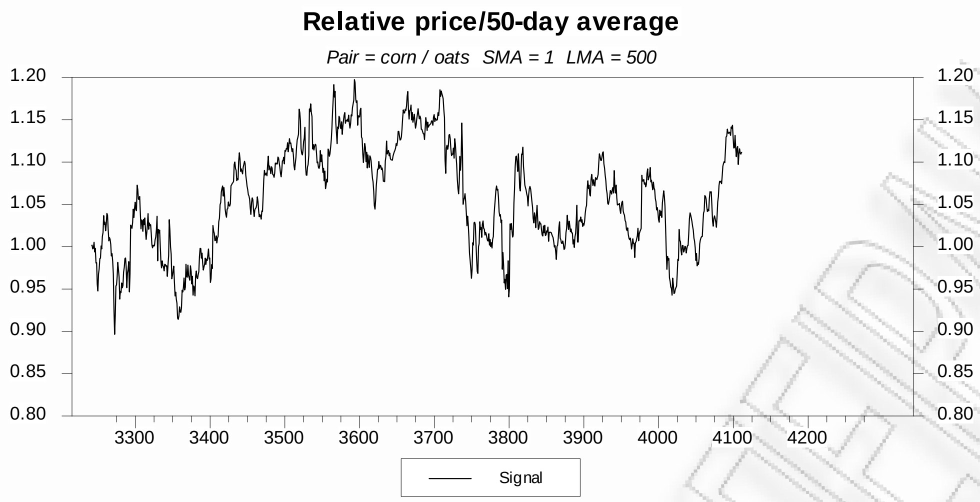
Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 57.0
Nr.of Switches of StopLoss_Performance = 76.0
Nr.of Switches of Band&StopLoss_performance = 80.0

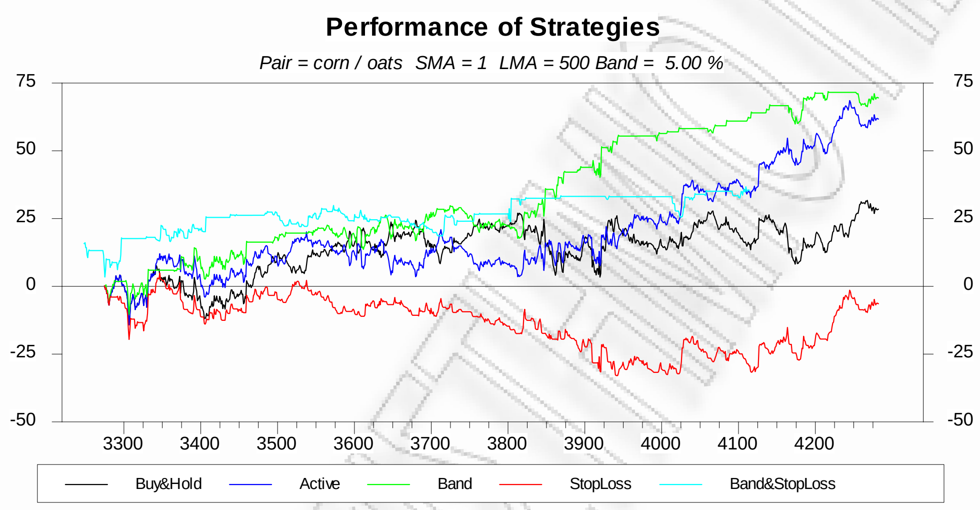
Net Performance of BuyHold_Performance = -10.20
Net Performance of Active_Performance = 92.29 %
Net Performance of Band_Performance = 77.11 %
Net Performance of StopLoss_Performance = 25.30 %
Net Performance of Band&StopLoss_Performance = 19.50 %
Nr.of Switches of Active_Performance = 60.0
Nr.of Switches of Band_Performance = 57.0
Nr.of Switches of StopLoss_Performance = 76.0
Nr.of Switches of Band&StopLoss_performance = 80.0

Net Performance of BuyHold_Performance = -10.20
Net Performance of Active_Performance = 92.29 %
Net Performance of Band_Performance = 77.11 %
Net Performance of StopLoss_Performance = 25.30 %
Net Performance of Band&StopLoss_Performance = 19.50 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.53 21.68 -2.00 50.69 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 27.35 21.61 -1.83 49.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 27.53 16.29 -1.28 21.92 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 17.51 19.71 -1.72 41.67 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 16.67 14.29 -1.04 16.57 %

-9-





Pair = corn / oats
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 28.07217190956 61.35658273914 69.14710635417 -6.75695027155 22.61974834286

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 28.07217190956 61.35658273914 69.14710635417 -6.75695027155 22.61974834286

Nr.of Switches of Active_Performance = 40.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 141.0
Nr.of Switches of Band&StopLoss_performance = 95.0

Net Performance of BuyHold_Performance = 28.07
Net Performance of Active_Performance = 49.36 %
Net Performance of Band_Performance = 55.95 %
Net Performance of StopLoss_Performance = -49.06 %
Net Performance of Band&StopLoss_Performance = -5.88 %
Nr.of Switches of Active_Performance = 40.0
Nr.of Switches of Band_Performance = 44.0
Nr.of Switches of StopLoss_Performance = 141.0
Nr.of Switches of Band&StopLoss_performance = 95.0

Net Performance of BuyHold_Performance = 28.07
Net Performance of Active_Performance = 49.36 %
Net Performance of Band_Performance = 55.95 %
Net Performance of StopLoss_Performance = -49.06 %
Net Performance of Band&StopLoss_Performance = -5.88 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 6.96 23.19 -2.00 49.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 15.22 23.17 -2.12 48.81 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 20.42 18.41 -1.49 25.30 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 8.74 18.85 -1.67 29.37 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 12.68 13.75 -0.93 11.51 %

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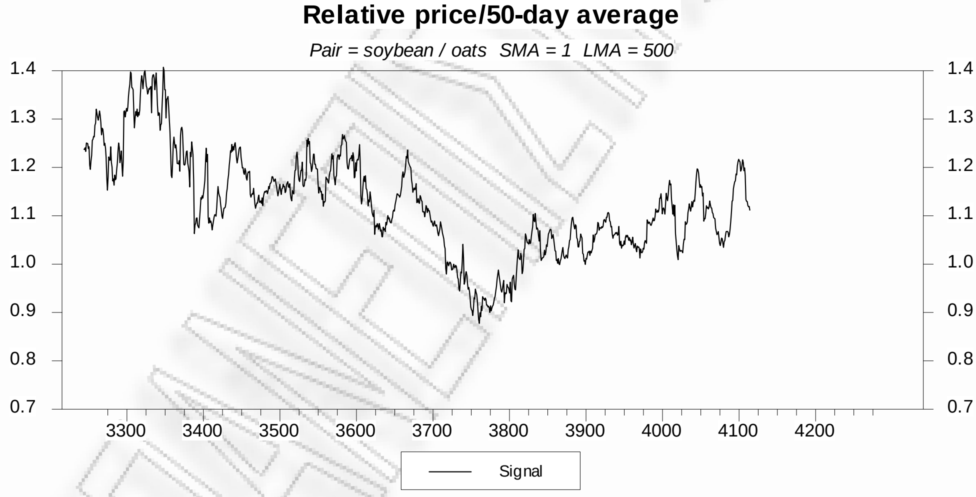
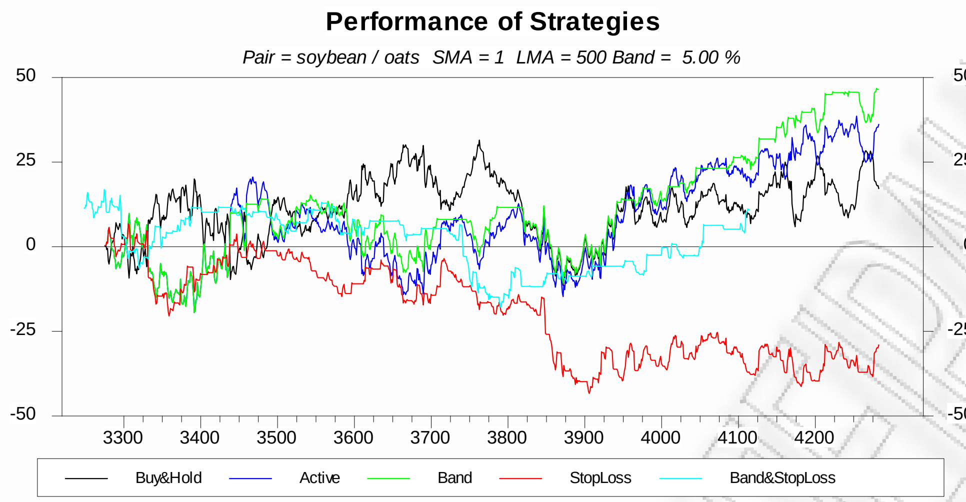




Pair = soybean / oats
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 16.76110955874 35.99924832731 46.19518834404 -29.15644954348 -0.48863373493

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 16.76110955874 35.99924832731 46.19518834404 -29.15644954348 -0.48863373493

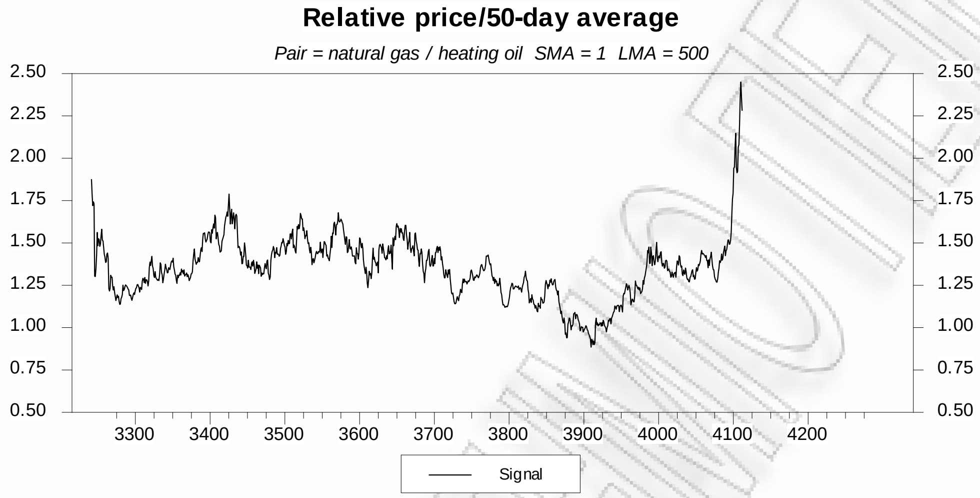
Nr.of Switches of Active_Performance = 37.0
Nr.of Switches of Band_Performance = 38.0
Nr.of Switches of StopLoss_Performance = 137.0
Nr.of Switches of Band&StopLoss_performance = 106.0

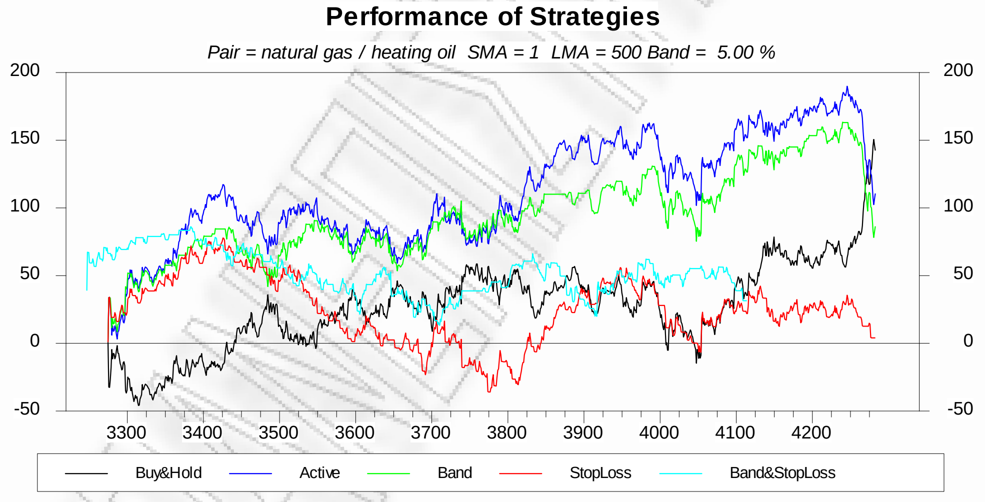
Net Performance of BuyHold_Performance = 16.76
Net Performance of Active_Performance = 24.90 %
Net Performance of Band_Performance = 34.80 %
Net Performance of StopLoss_Performance = -70.26 %
Net Performance of Band&StopLoss_Performance = -32.29 %
Nr.of Switches of Active_Performance = 37.0
Nr.of Switches of Band_Performance = 38.0
Nr.of Switches of StopLoss_Performance = 137.0
Nr.of Switches of Band&StopLoss_performance = 106.0

Net Performance of BuyHold_Performance = 16.76
Net Performance of Active_Performance = 24.90 %
Net Performance of Band_Performance = 34.80 %
Net Performance of StopLoss_Performance = -70.26 %
Net Performance of Band&StopLoss_Performance = -32.29 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 4.16 28.87 -2.74 49.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 8.93 28.86 -2.45 50.10 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 14.21 26.34 -2.21 34.42 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 2.89 19.55 -1.84 27.38 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 7.69 16.83 -1.38 16.07 %

-18-





Pair = natural gas / heating oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 141.6278590770 109.93097124495 85.69076049231 3.31002458635 -8.66278731614

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 141.6278590770 109.93097124495 85.69076049231 3.31002458635 -8.66278731614

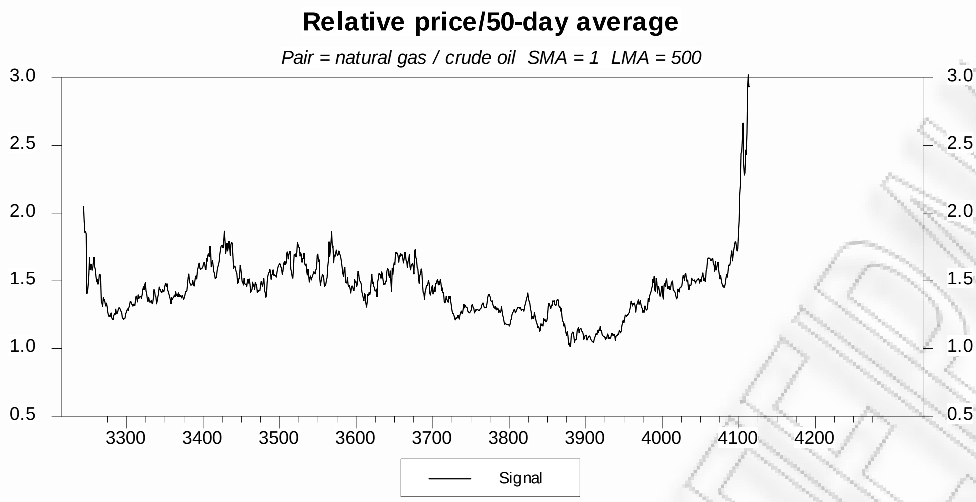
Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 47.0
Nr.of Switches of StopLoss_Performance = 112.0
Nr.of Switches of Band&StopLoss_performance = 133.0

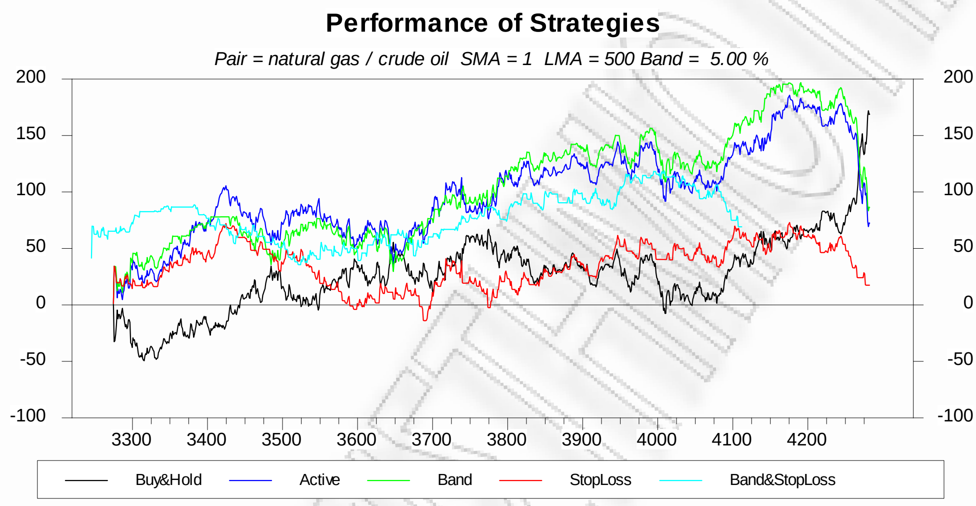
Net Performance of BuyHold_Performance = 141.63
Net Performance of Active_Performance = 94.63 %
Net Performance of Band_Performance = 71.59 %
Net Performance of StopLoss_Performance = -30.29 %
Net Performance of Band&StopLoss_Performance = -48.56 %
Nr.of Switches of Active_Performance = 51.0
Nr.of Switches of Band_Performance = 47.0
Nr.of Switches of StopLoss_Performance = 112.0
Nr.of Switches of Band&StopLoss_performance = 133.0

Net Performance of BuyHold_Performance = 141.63
Net Performance of Active_Performance = 94.63 %
Net Performance of Band_Performance = 71.59 %
Net Performance of StopLoss_Performance = -30.29 %
Net Performance of Band&StopLoss_Performance = -48.56 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 35.13 62.80 -5.57 49.31 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 27.26 62.82 -5.56 48.31 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 24.68 58.42 -5.39 38.59 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 9.08 50.51 -4.92 33.93 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 7.67 44.95 -4.50 24.21 %

-22-





Pair = natural gas / crude oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 168.3299233872 71.17317679464 85.17516276108 16.57306850416 32.66401066926

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 168.3299233872 71.17317679464 85.17516276108 16.57306850416 32.66401066926

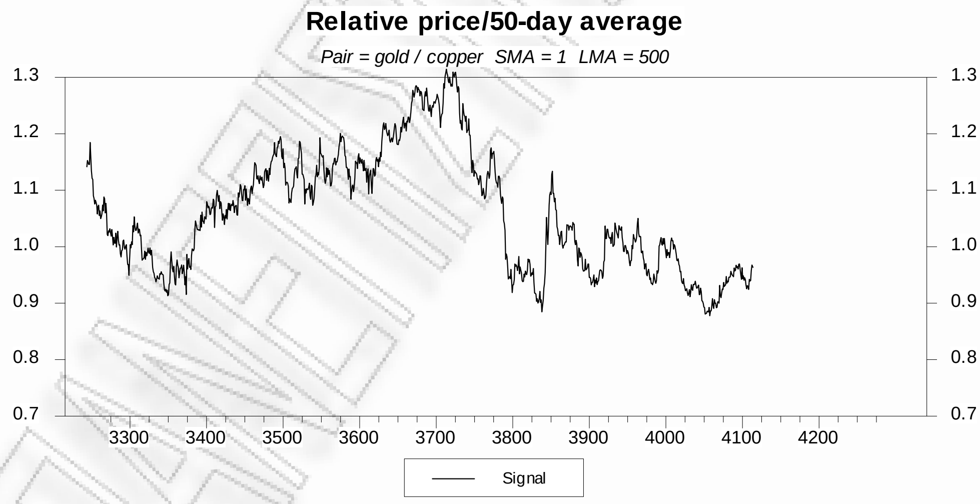
Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 49.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 131.0

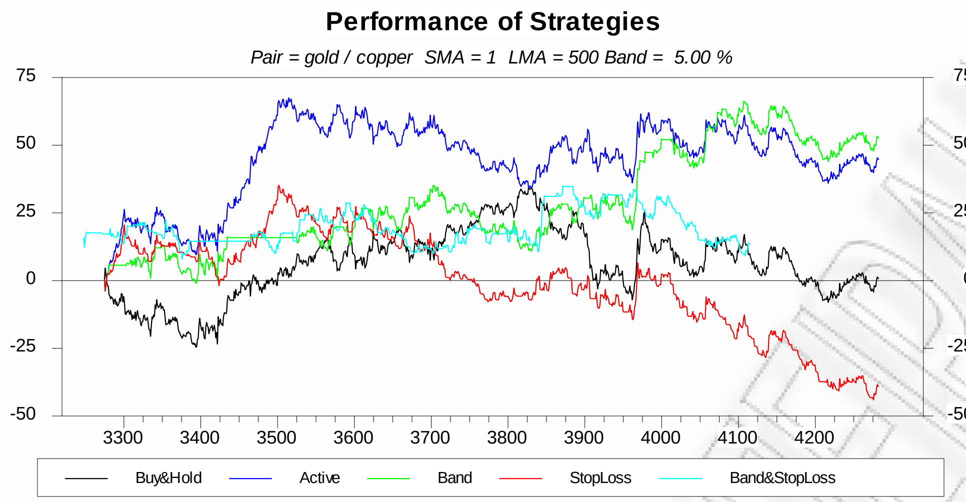
Net Performance of BuyHold_Performance = 168.33
Net Performance of Active_Performance = 57.67 %
Net Performance of Band_Performance = 70.48 %
Net Performance of StopLoss_Performance = -18.23 %
Net Performance of Band&StopLoss_Performance = -6.64 %
Nr.of Switches of Active_Performance = 45.0
Nr.of Switches of Band_Performance = 49.0
Nr.of Switches of StopLoss_Performance = 116.0
Nr.of Switches of Band&StopLoss_performance = 131.0

Net Performance of BuyHold_Performance = 168.33
Net Performance of Active_Performance = 57.67 %
Net Performance of Band_Performance = 70.48 %
Net Performance of StopLoss_Performance = -18.23 %
Net Performance of Band&StopLoss_Performance = -6.64 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 41.75 64.16 -5.86 48.61 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 17.65 64.20 -5.86 49.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 24.70 59.11 -5.56 42.26 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 12.67 49.37 -4.81 33.13 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 17.77 42.88 -4.21 25.79 %

-24-





Pair = gold / copper
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.26121216532 44.27281405734 52.25999429695 -39.54856726425 -3.04650639974

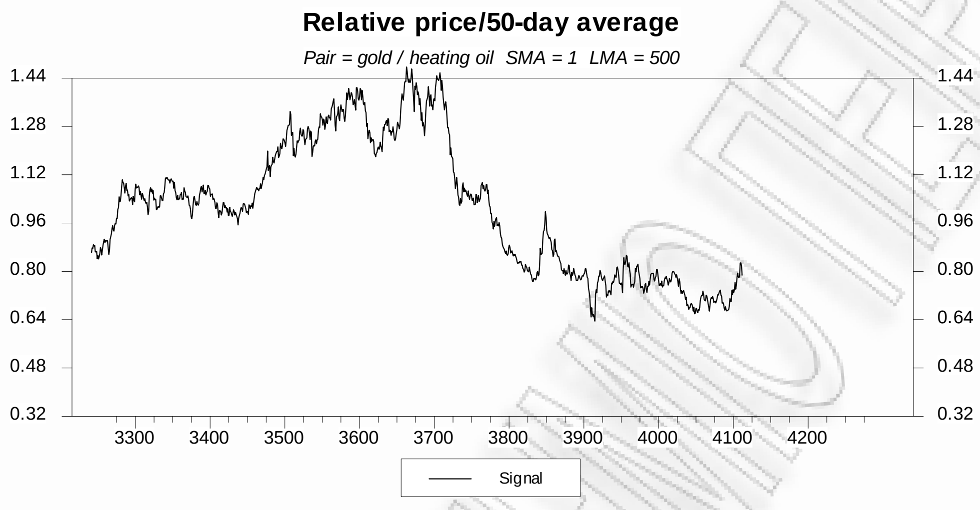
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.26121216532 44.27281405734 52.25999429695 -39.54856726425 -3.04650639974

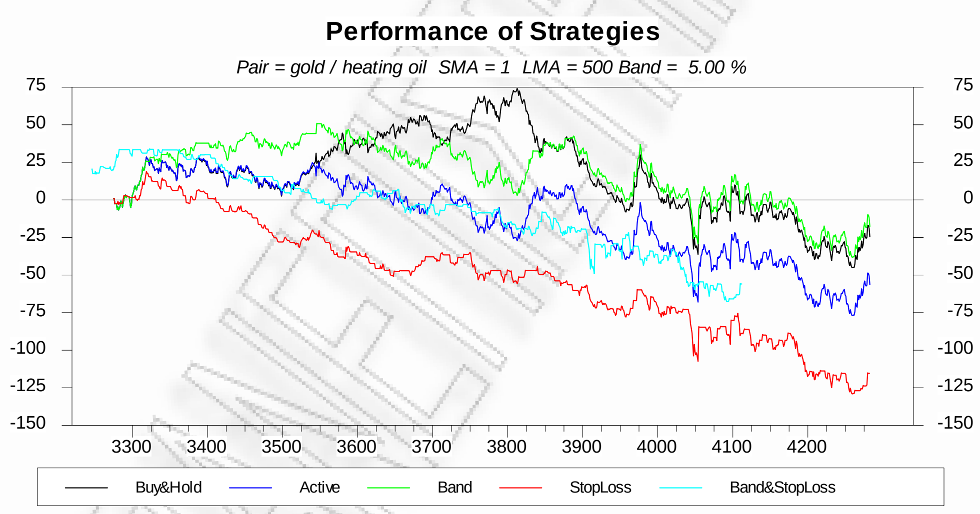
Nr.of Switches of Active_Performance = 30.0
Nr.of Switches of Band_Performance = 32.0
Nr.of Switches of StopLoss_Performance = 127.0
Nr.of Switches of Band&StopLoss_performance = 119.0

Net Performance of BuyHold_Performance = 0.26
Net Performance of Active_Performance = 35.27 %
Net Performance of Band_Performance = 42.66 %
Net Performance of StopLoss_Performance = -77.65 %
Net Performance of Band&StopLoss_Performance = -38.75 %
Nr.of Switches of Active_Performance = 30.0
Nr.of Switches of Band_Performance = 32.0
Nr.of Switches of StopLoss_Performance = 127.0
Nr.of Switches of Band&StopLoss_performance = 119.0

Net Performance of BuyHold_Performance = 0.26
Net Performance of Active_Performance = 35.27 %
Net Performance of Band_Performance = 42.66 %
Net Performance of StopLoss_Performance = -77.65 %
Net Performance of Band&StopLoss_Performance = -38.75 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.06 26.01 -2.60 52.18 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 10.98 26.00 -2.55 50.00 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.27 22.47 -2.13 37.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -0.43 21.92 -2.38 36.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 8.02 18.44 -1.84 25.10 %
-25-





Pair = gold / copper
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.26121216532 44.27281405734 52.25999429695 -39.54856726425 -3.04650639974

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 0.26121216532 44.27281405734 52.25999429695 -39.54856726425 -3.04650639974

Nr.of Switches of Active_Performance = 30.0
Nr.of Switches of Band_Performance = 32.0
Nr.of Switches of StopLoss_Performance = 127.0
Nr.of Switches of Band&StopLoss_performance = 119.0

Net Performance of BuyHold_Performance = 0.26
Net Performance of Active_Performance = 35.27 %
Net Performance of Band_Performance = 42.66 %
Net Performance of StopLoss_Performance = -77.65 %
Net Performance of Band&StopLoss_Performance = -38.75 %
Nr.of Switches of Active_Performance = 30.0
Nr.of Switches of Band_Performance = 32.0
Nr.of Switches of StopLoss_Performance = 127.0
Nr.of Switches of Band&StopLoss_performance = 119.0

Net Performance of BuyHold_Performance = 0.26
Net Performance of Active_Performance = 35.27 %
Net Performance of Band_Performance = 42.66 %
Net Performance of StopLoss_Performance = -77.65 %
Net Performance of Band&StopLoss_Performance = -38.75 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 0.06 26.01 -2.60 52.18 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 10.98 26.00 -2.55 50.00 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 15.27 22.47 -2.13 37.80 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -0.43 21.92 -2.38 36.21 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 8.02 18.44 -1.84 25.10 %

Pair = gold / heating oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -25.48754304034 -57.24946660049 -18.50625558776 -116.0326246731 -88.6452256311

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -25.48754304034 -57.24946660049 -18.50625558776 -116.0326246731 -88.6452256311

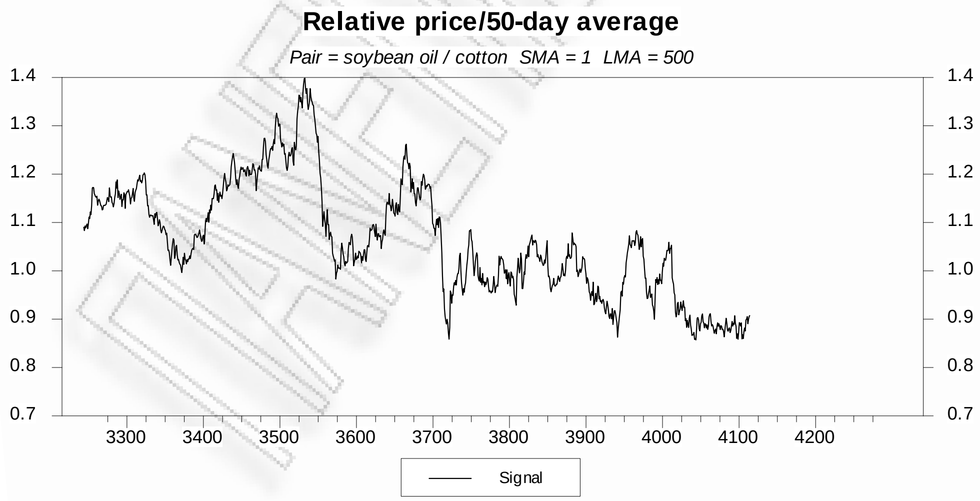
Nr.of Switches of Active_Performance = 9.0
Nr.of Switches of Band_Performance = 23.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 125.0

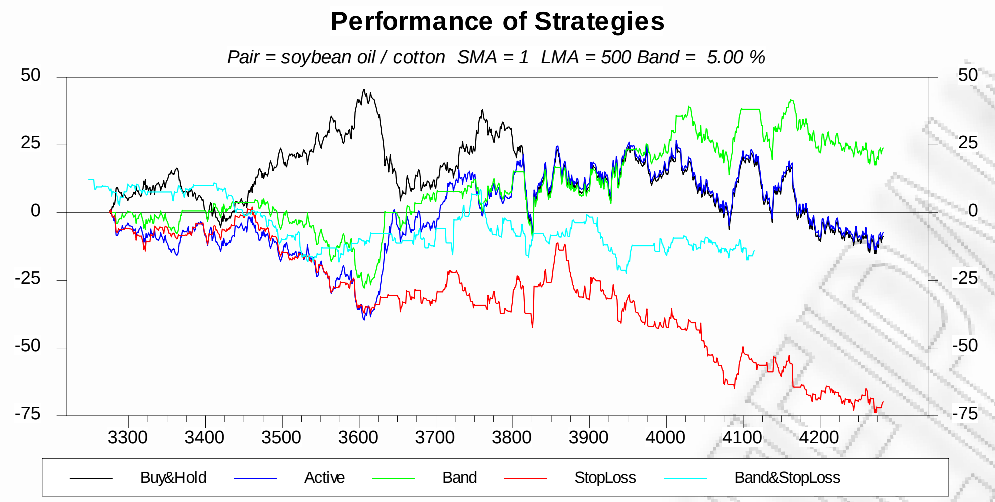
Net Performance of BuyHold_Performance = -25.49
Net Performance of Active_Performance = -59.95 %
Net Performance of Band_Performance = -25.41 %
Net Performance of StopLoss_Performance = -156.53 %
Net Performance of Band&StopLoss_Performance = -126.15 %
Nr.of Switches of Active_Performance = 9.0
Nr.of Switches of Band_Performance = 23.0
Nr.of Switches of StopLoss_Performance = 135.0
Nr.of Switches of Band&StopLoss_performance = 125.0

Net Performance of BuyHold_Performance = -25.49
Net Performance of Active_Performance = -59.95 %
Net Performance of Band_Performance = -25.41 %
Net Performance of StopLoss_Performance = -156.53 %
Net Performance of Band&StopLoss_Performance = -126.15 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -6.32 40.56 -3.69 52.38 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -14.20 40.55 -3.68 53.27 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -2.95 39.49 -3.56 48.02 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -18.81 30.18 -3.06 28.57 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -12.76 29.35 -2.85 24.80 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-26-





Pair = soybean oil / cotton
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.02064510719 -7.63746979944 23.62575527506 -70.10071347515 -30.70277369767

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -9.02064510719 -7.63746979944 23.62575527506 -70.10071347515 -30.70277369767

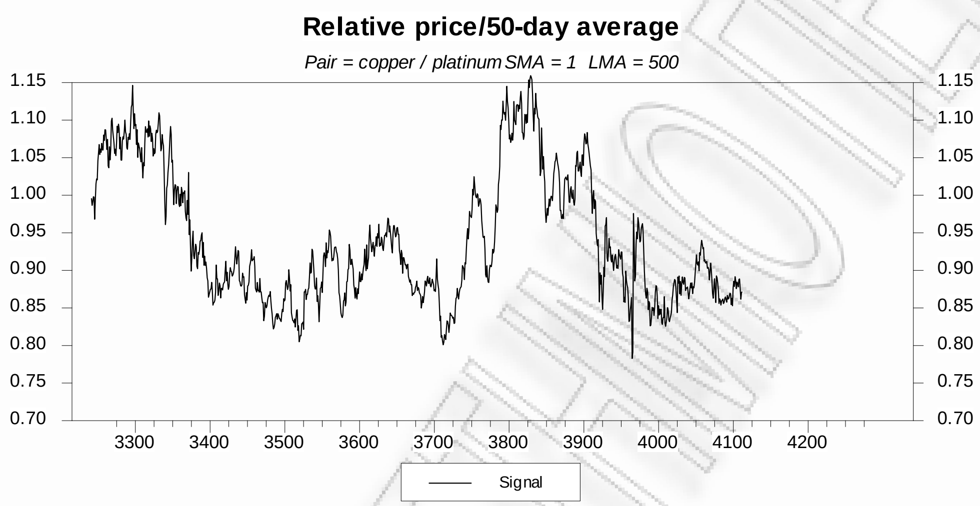
Nr.of Switches of Active_Performance = 18.0
Nr.of Switches of Band_Performance = 27.0
Nr.of Switches of StopLoss_Performance = 139.0
Nr.of Switches of Band&StopLoss_performance = 120.0

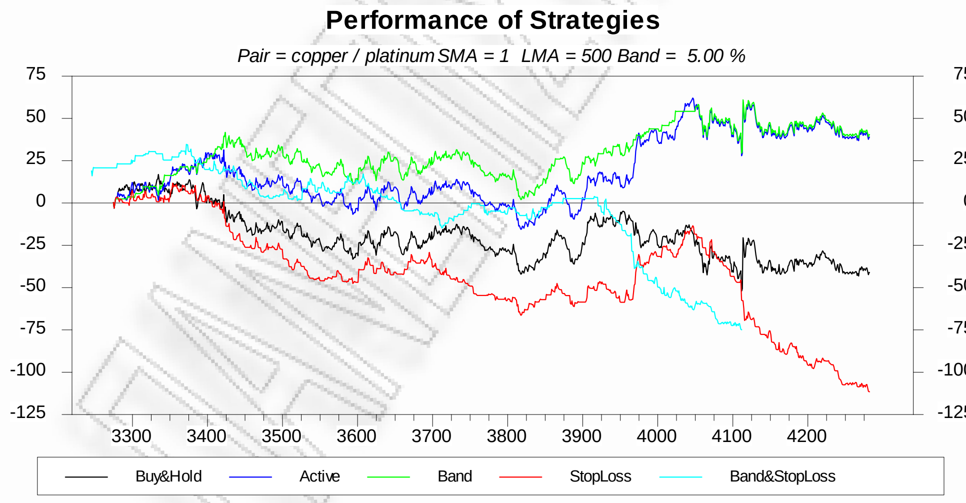
Net Performance of BuyHold_Performance = -9.02
Net Performance of Active_Performance = -13.04 %
Net Performance of Band_Performance = 15.53 %
Net Performance of StopLoss_Performance = -111.80 %
Net Performance of Band&StopLoss_Performance = -66.70 %
Nr.of Switches of Active_Performance = 18.0
Nr.of Switches of Band_Performance = 27.0
Nr.of Switches of StopLoss_Performance = 139.0
Nr.of Switches of Band&StopLoss_performance = 120.0

Net Performance of BuyHold_Performance = -9.02
Net Performance of Active_Performance = -13.04 %
Net Performance of Band_Performance = 15.53 %
Net Performance of StopLoss_Performance = -111.80 %
Net Performance of Band&StopLoss_Performance = -66.70 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -2.24 29.30 -2.92 49.60 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -1.89 29.30 -2.91 49.60 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 7.87 26.00 -2.47 39.19 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -7.12 21.49 -2.11 27.78 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 1.31 19.13 -1.77 22.52 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-27-





Pair = copper / platinum
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.55894242057 38.38927667575 39.90385712024 -112.1020438257 -109.4529517940

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -41.55894242057 38.38927667575 39.90385712024 -112.1020438257 -109.4529517940

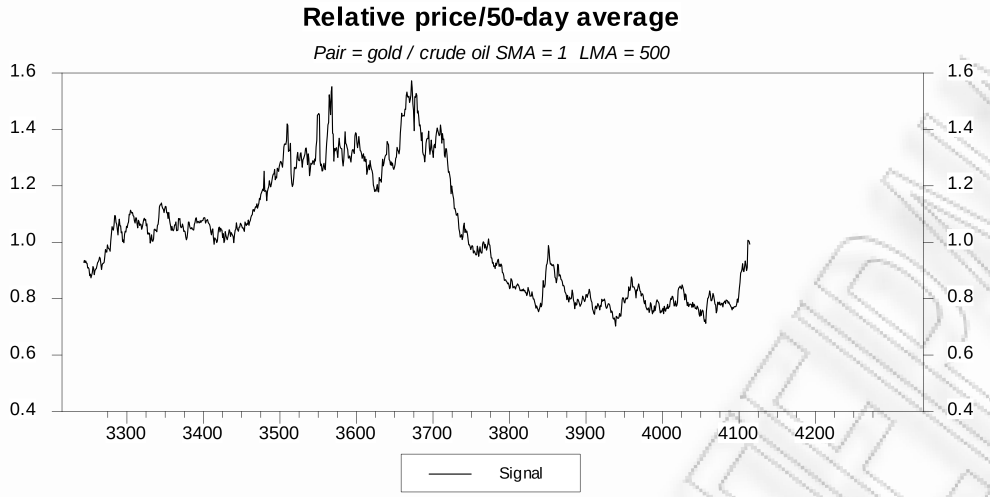
Nr.of Switches of Active_Performance = 27.0
Nr.of Switches of Band_Performance = 36.0
Nr.of Switches of StopLoss_Performance = 158.0
Nr.of Switches of Band&StopLoss_performance = 143.0

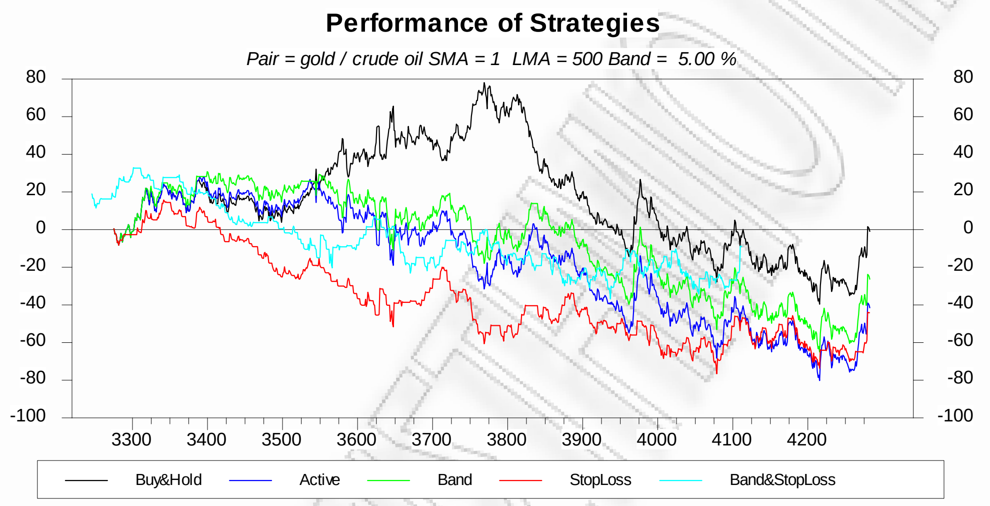
Net Performance of BuyHold_Performance = -41.56
Net Performance of Active_Performance = 30.29 %
Net Performance of Band_Performance = 29.10 %
Net Performance of StopLoss_Performance = -159.50 %
Net Performance of Band&StopLoss_Performance = -152.35 %
Nr.of Switches of Active_Performance = 27.0
Nr.of Switches of Band_Performance = 36.0
Nr.of Switches of StopLoss_Performance = 158.0
Nr.of Switches of Band&StopLoss_performance = 143.0

Net Performance of BuyHold_Performance = -41.56
Net Performance of Active_Performance = 30.29 %
Net Performance of Band_Performance = 29.10 %
Net Performance of StopLoss_Performance = -159.50 %
Net Performance of Band&StopLoss_Performance = -152.35 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -10.31 35.41 -3.51 52.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 9.52 35.41 -3.39 49.11 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = 12.50 32.42 -2.89 40.08 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -16.12 24.95 -2.58 27.98 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -16.58 21.18 -2.23 20.83 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

-29-





Pair = gold / crude oil
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -1.66904204224 -42.23410828139 -27.03093094873 -44.68455293150 -32.56821423375

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 -1.66904204224 -42.23410828139 -27.03093094873 -44.68455293150 -32.56821423375

Nr.of Switches of Active_Performance = 7.0
Nr.of Switches of Band_Performance = 10.0
Nr.of Switches of StopLoss_Performance = 133.0
Nr.of Switches of Band&StopLoss_performance = 132.0

Net Performance of BuyHold_Performance = -1.67
Net Performance of Active_Performance = -44.33 %
Net Performance of Band_Performance = -30.03 %
Net Performance of StopLoss_Performance = -84.58 %
Net Performance of Band&StopLoss_Performance = -72.17 %
Nr.of Switches of Active_Performance = 7.0
Nr.of Switches of Band_Performance = 10.0
Nr.of Switches of StopLoss_Performance = 133.0
Nr.of Switches of Band&StopLoss_performance = 132.0

Net Performance of BuyHold_Performance = -1.67
Net Performance of Active_Performance = -44.33 %
Net Performance of Band_Performance = -30.03 %
Net Performance of StopLoss_Performance = -84.58 %
Net Performance of Band&StopLoss_Performance = -72.17 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = -0.41 41.00 -3.85 52.48 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -10.47 41.00 -3.91 53.37 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -6.03 40.53 -3.88 50.50 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -1.26 31.23 -3.19 29.86 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 1.67 30.82 -3.09 27.98 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<

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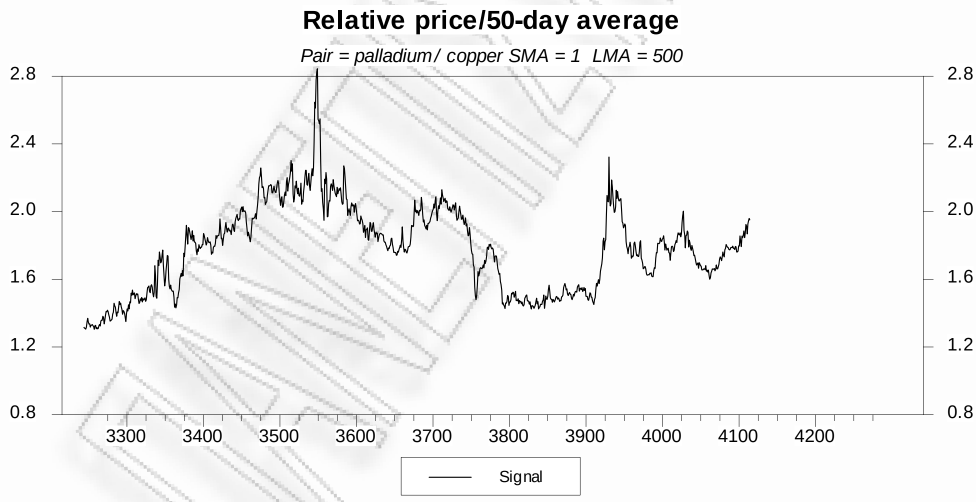
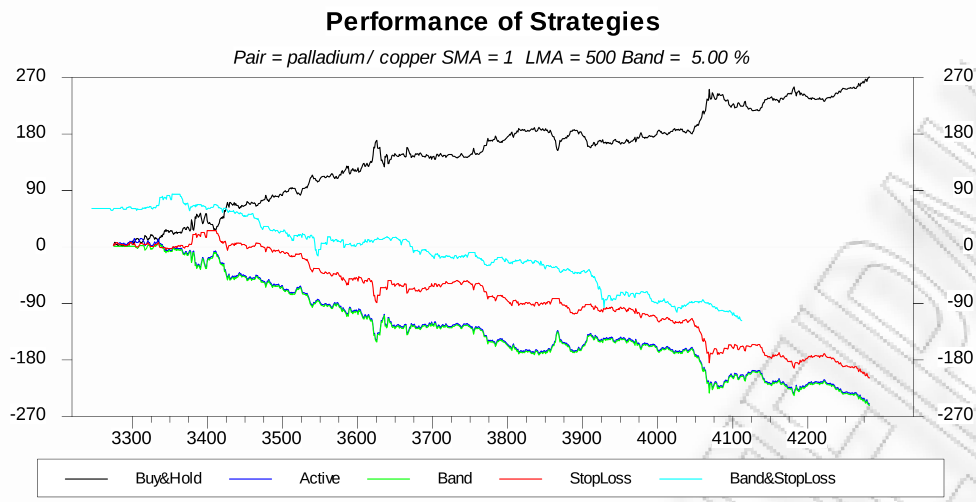




Pair = palladium / copper
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 268.7306599406 -251.4400131507 -253.5882232379 -209.8862591292 -207.4818959444

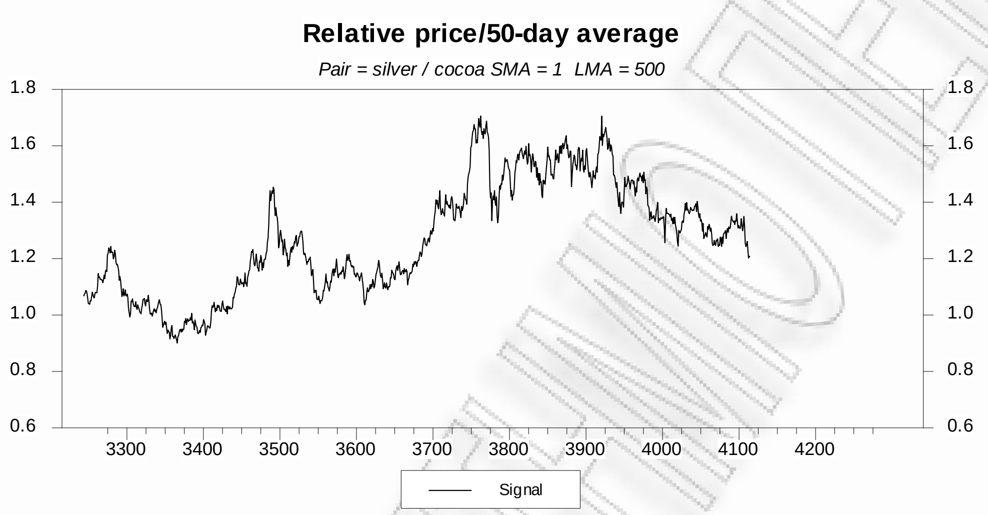
ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 268.7306599406 -251.4400131507 -253.5882232379 -209.8862591292 -207.4818959444

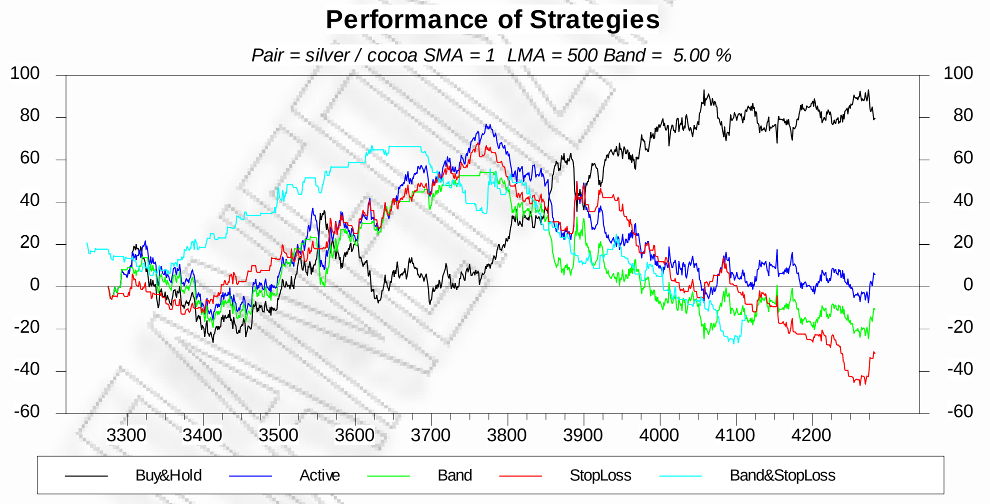
Nr.of Switches of Active_Performance = 6.0
Nr.of Switches of Band_Performance = 4.0
Nr.of Switches of StopLoss_Performance = 77.0
Nr.of Switches of Band&StopLoss_performance = 74.0

Net Performance of BuyHold_Performance = 268.73
Net Performance of Active_Performance = -253.24 %
Net Performance of Band_Performance = -254.79 %
Net Performance of StopLoss_Performance = -232.99 %
Net Performance of Band&StopLoss_Performance = -229.68 %
Nr.of Switches of Active_Performance = 6.0
Nr.of Switches of Band_Performance = 4.0
Nr.of Switches of StopLoss_Performance = 77.0
Nr.of Switches of Band&StopLoss_performance = 74.0

Net Performance of BuyHold_Performance = 268.73
Net Performance of Active_Performance = -253.24 %
Net Performance of Band_Performance = -254.79 %
Net Performance of StopLoss_Performance = -232.99 %
Net Performance of Band&StopLoss_Performance = -229.68 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 66.65 45.89 -3.80 44.64 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = -62.36 45.91 -4.55 53.97 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -62.60 45.42 -4.49 52.28 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = -46.40 39.09 -3.94 44.44 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = -45.95 38.66 -3.88 43.15 %
I1. Expected Instruction - PAI Is Not Recognizable As One
>>>> Pair <<<<
-31-





Pair = silver / cocoa
SMA ---> 1 LMA ---> 500
StopLoss ---> 2.50 %
StopLoss Period ---> 3
Transaction Costs per Switch in BPS = 30

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 79.01208550553 5.56789982603 -10.82634582348 -31.73118674214 -39.95759012243

ENTRY BUYHOLD_PERFORMA ACTIVE_PERFORMAN BAND_PERFORMANCE
STOPLOSS_PERFORM BAND_STOPLOSS_PE
4284 79.01208550553 5.56789982603 -10.82634582348 -31.73118674214 -39.95759012243

Nr.of Switches of Active_Performance = 24.0
Nr.of Switches of Band_Performance = 25.0
Nr.of Switches of StopLoss_Performance = 148.0
Nr.of Switches of Band&StopLoss_performance = 140.0

Net Performance of BuyHold_Performance = 79.01
Net Performance of Active_Performance = -1.63 %
Net Performance of Band_Performance = -18.33 %
Net Performance of StopLoss_Performance = -76.13 %
Net Performance of Band&StopLoss_Performance = -81.96 %
Nr.of Switches of Active_Performance = 24.0
Nr.of Switches of Band_Performance = 25.0
Nr.of Switches of StopLoss_Performance = 148.0
Nr.of Switches of Band&StopLoss_performance = 140.0

Net Performance of BuyHold_Performance = 79.01
Net Performance of Active_Performance = -1.63 %
Net Performance of Band_Performance = -18.33 %
Net Performance of StopLoss_Performance = -76.13 %
Net Performance of Band&StopLoss_Performance = -81.96 %
Performance since start of simulation

Annualized Return,Annualized Risk,5th Centile,% Negative Returns of BuyHold_Performance = 19.60 36.55 -3.64 49.01 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Active_Performance = 1.38 36.57 -3.65 50.00 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_Performance = -0.90 33.97 -3.52 41.87 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of StopLoss_Performance = 3.07 27.24 -2.91 25.79 %
Annualized Return,Annualized Risk,5th Centile,% Negative Returns of Band_StopLoss_Performance = 0.43 24.43 -2.70 19.15 %

ΠΑΡΑΤΗΜΑ 4

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 1: ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ΒΡΩΣΙΜΗ ΣΟΓΙΑ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	-3,90	-1,46	-0,41	2,89	4,89
		ΚΙΝΔΥΝΟΣ	15,59	15,59	14,43	11,82	11,12
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,64	50,89	38,75	25,65	18,79
		SHARPE RATIO	-0,25	-0,09	-0,03	0,24	0,44
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	-3,90	-1,46	2,33	2,89	3,40
		ΚΙΝΔΥΝΟΣ	153,59	15,59	9,40	11,82	7,93
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,64	50,89	7,48	25,65	4,39
		SHARPE RATIO	-0,03	-0,09	0,25	0,24	0,43
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	-3,57	-2,35	-5,36	2,17	1,22
		ΚΙΝΔΥΝΟΣ	15,97	15,97	15,28	12,59	11,95
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,61	52,72	46,76	27,03	22,75
		SHARPE RATIO	-0,22	-0,15	-0,35	0,17	0,10
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	-3,57	-2,35	6,10	2,17	4,92
		ΚΙΝΔΥΝΟΣ	15,97	15,97	12,41	12,59	9,72
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,61	52,72	18,34	27,03	8,25
		SHARPE RATIO	-0,22	-0,15	0,49	0,17	0,51
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	-2,69	-5,26	-4,39	-3,54	-1,90
		ΚΙΝΔΥΝΟΣ	16,73	16,73	16,46	11,40	11,14
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,81	54,47	51,08	30,38	27,40
		SHARPE RATIO	-0,16	-0,31	-0,27	-0,31	-0,17
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	-2,69	-5,26	-2,98	-3,54	-1,19
		ΚΙΝΔΥΝΟΣ	16,73	16,73	13,52	11,40	10,06
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,81	54,47	35,93	30,38	21,11
		SHARPE RATIO	-0,16	-0,31	-0,22	-0,31	-0,12
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	-2,41	-7,90	-4,24	-6,73	-6,25
		ΚΙΝΔΥΝΟΣ	17,40	17,39	15,68	11,71	11,51
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,47	52,98	51,39	31,75	30,65
		SHARPE RATIO	-0,14	-0,45	-0,27	-0,57	-0,54
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	-2,41	-7,90	-3,20	-6,73	-7,58
		ΚΙΝΔΥΝΟΣ	17,40	17,39	14,46	11,71	11,00
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	53,47	52,98	41,57	31,75	26,59
		SHARPE RATIO	-0,14	-0,45	-0,22	-0,57	-0,69

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 2: ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ/ ΑΡΓΟΣ ΠΕΤΡΕΛΑΙΟ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	10,66	21,71	23,29	4,89	7,05
		ΚΙΝΔΥΝΟΣ	30,12	30,10	28,37	23,26	21,06
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,26	49,52	38,13	39,78	28,53
		SHARPE RATIO	0,35	0,72	0,82	0,21	0,33
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	10,66	21,71	26,15	4,89	12,32
		ΚΙΝΔΥΝΟΣ	30,12	30,10	22,35	23,26	13,49
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,26	49,52	10,77	39,78	6,17
		SHARPE RATIO	0,35	0,72	1,17	0,21	0,91
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	9,26	30,67	28,86	18,56	16,48
		ΚΙΝΔΥΝΟΣ	31,01	30,96	30,06	24,67	23,54
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,57	49,04	41,90	43,52	36,52
		SHARPE RATIO	0,30	0,99	0,96	0,75	0,70
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	9,26	30,67	26,02	18,56	14,04
		ΚΙΝΔΥΝΟΣ	31,01	30,96	24,89	24,67	17,22
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,57	49,04	19,15	43,52	14,80
		SHARPE RATIO	0,30	0,99	1,05	0,75	0,82
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	10,99	29,04	27,22	17,00	15,19
		ΚΙΝΔΥΝΟΣ	30,71	30,67	29,48	24,73	23,24
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,60	47,93	39,16	43,05	34,27
		SHARPE RATIO	0,36	0,95	0,92	0,69	0,65
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	10,99	29,04	24,43	17,00	16,28
		ΚΙΝΔΥΝΟΣ	30,71	30,67	25,27	24,73	18,26
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,60	47,93	16,14	43,05	12,09
		SHARPE RATIO	0,36	0,95	0,97	0,69	0,89
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	10,28	21,30	22,30	9,64	10,41
		ΚΙΝΔΥΝΟΣ	30,19	30,16	29,41	21,87	20,84
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,52	48,02	41,27	36,51	29,96
		SHARPE RATIO	0,34	0,71	0,76	0,44	0,50
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	10,28	21,30	21,95	9,64	14,59
		ΚΙΝΔΥΝΟΣ	30,19	30,16	24,65	21,87	15,11
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,52	48,02	16,47	36,51	10,42
		SHARPE RATIO	0,34	0,71	0,89	0,44	0,97

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 5: ΣΙΤΑΡΙ/ ΑΡΑΒΟΣΙΤΟΣ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	0,87	19,61	13,88	21,06	15,20
		ΚΙΝΔΥΝΟΣ	30,39	30,37	29,03	28,41	27,00
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,17	49,45	40,74	40,74	32,37
		SHARPE RATIO	0,03	0,65	0,48	0,74	0,56
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	0,87	19,61	20,10	21,06	18,39
		ΚΙΝΔΥΝΟΣ	30,39	30,27	24,48	28,41	22,63
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,17	49,45	15,02	40,74	9,33
		SHARPE RATIO	0,03	0,65	0,82	0,74	0,81
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	-0,05	23,71	25,79	16,73	18,92
		ΚΙΝΔΥΝΟΣ	30,53	30,50	29,88	23,67	22,88
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,25	49,41	45,21	42,19	38,07
		SHARPE RATIO	0,00	0,78	0,86	0,71	0,83
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	-0,05	23,71	29,25	16,73	19,83
		ΚΙΝΔΥΝΟΣ	30,53	30,50	26,52	23,67	18,90
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,25	49,41	25,48	42,19	19,44
		SHARPE RATIO	0,00	0,78	1,10	0,71	1,05
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	3,79	33,70	30,47	24,76	21,53
		ΚΙΝΔΥΝΟΣ	31,76	31,68	31,09	24,78	24,01
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,66	48,26	44,62	43,29	39,65
		SHARPE RATIO	0,12	1,06	0,98	1,00	0,90
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	3,79	33,70	35,33	24,76	24,58
		ΚΙΝΔΥΝΟΣ	31,76	31,68	27,65	24,78	19,70
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,66	48,26	26,66	43,29	22,27
		SHARPE RATIO	0,12	1,06	1,28	1,00	1,25
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	-2,53	27,35	24,66	17,51	14,82
		ΚΙΝΔΥΝΟΣ	21,68	21,61	20,50	19,71	18,48
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,69	49,01	43,45	41,67	36,11
		SHARPE RATIO	-0,12	1,27	1,20	0,89	0,80
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	-2,53	27,35	27,53	17,51	16,67
		ΚΙΝΔΥΝΟΣ	21,68	21,61	16,29	19,71	14,29
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,69	49,01	21,92	41,67	16,57
		SHARPE RATIO	-0,12	1,27	1,69	0,89	1,17

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 9: ΑΡΑΒΟΣΙΤΟΣ/ ΒΡΩΜΗ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	4,68	15,50	15,13	13,98	14,12
		ΚΙΝΔΥΝΟΣ	24,88	24,86	23,08	19,21	17,01
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,90	48,56	41,98	32,72	26,41
		SHARPE RATIO	0,19	0,62	0,66	0,73	0,83
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	4,68	15,50	12,66	13,98	9,19
		ΚΙΝΔΥΝΟΣ	24,88	24,86	15,41	19,21	11,06
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,90	48,56	15,36	32,72	6,38
		SHARPE RATIO	0,19	0,62	0,82	0,73	0,83
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	5,92	17,89	20,17	11,54	12,18
		ΚΙΝΔΥΝΟΣ	24,69	24,67	23,84	20,23	19,37
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,90	48,97	43,15	34,76	29,60
		SHARPE RATIO	0,24	0,73	0,85	0,57	0,63
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	5,92	17,89	12,15	11,54	4,29
		ΚΙΝΔΥΝΟΣ	24,69	24,67	18,50	20,23	13,76
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,90	48,97	21,28	34,76	12,74
		SHARPE RATIO	0,24	0,73	0,66	0,57	0,31
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	6,91	13,76	15,47	3,44	4,58
		ΚΙΝΔΥΝΟΣ	25,43	25,42	24,49	19,54	18,36
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,34	48,59	44,95	30,22	26,66
		SHARPE RATIO	0,27	0,54	0,63	0,18	0,25
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	6,91	13,76	20,40	3,44	7,72
		ΚΙΝΔΥΝΟΣ	25,43	25,42	20,61	19,54	14,22
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,34	48,59	26,49	30,22	13,08
		SHARPE RATIO	0,27	0,54	0,99	0,18	0,54
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	6,96	15,22	14,55	8,74	8,62
		ΚΙΝΔΥΝΟΣ	23,19	23,17	22,40	18,85	17,91
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,21	48,81	43,95	29,37	24,50
		SHARPE RATIO	0,30	0,66	0,65	0,46	0,48
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	6,96	15,22	20,42	8,74	12,68
		ΚΙΝΔΥΝΟΣ	23,19	23,17	18,41	18,85	13,75
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,21	48,81	25,30	29,37	11,51
		SHARPE RATIO	0,30	0,66	1,11	0,46	0,92

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 14: ΚΑΡΠΟΣ ΣΟΓΙΑΣ/ ΒΡΩΜΗ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	4,48	23,26	17,81	21,29	15,58
		ΚΙΝΔΥΝΟΣ	29,17	29,14	27,53	24,40	22,58
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,21	50,14	44,65	36,49	31,21
		SHARPE RATIO	0,15	0,80	0,65	0,87	0,69
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	4,48	23,26	13,04	21,29	11,08
		ΚΙΝΔΥΝΟΣ	29,17	29,14	19,63	24,40	14,45
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,21	50,14	20,99	36,49	11,66
		SHARPE RATIO	0,15	0,80	0,66	0,87	0,77
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	8,00	15,98	17,70	14,81	19,52
		ΚΙΝΔΥΝΟΣ	29,27	29,25	26,89	22,70	21,13
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,48	50,44	45,95	32,92	29,31
		SHARPE RATIO	0,27	0,55	0,66	0,65	0,92
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	8,00	15,98	12,55	14,81	15,58
		ΚΙΝΔΥΝΟΣ	29,27	29,25	22,41	22,66	16,37
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,48	50,44	30,27	32,92	16,49
		SHARPE RATIO	0,27	0,55	0,56	0,65	0,95
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	12,53	26,68	24,58	21,32	19,23
		ΚΙΝΔΥΝΟΣ	30,28	30,24	29,62	23,46	22,65
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,76	48,59	45,28	33,44	30,13
		SHARPE RATIO	0,41	0,88	0,83	0,91	0,85
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	12,53	26,68	21,17	21,32	18,60
		ΚΙΝΔΥΝΟΣ	30,28	30,24	25,41	23,46	18,11
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,76	48,59	30,30	33,44	16,31
		SHARPE RATIO	0,41	0,88	0,83	0,91	1,03
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	4,16	8,93	12,06	2,89	6,34
		ΚΙΝΔΥΝΟΣ	28,87	28,86	28,45	19,55	18,95
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,21	50,10	46,33	27,38	23,71
		SHARPE RATIO	0,14	0,31	0,42	0,15	0,33
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	4,16	8,93	14,21	2,89	7,69
		ΚΙΝΔΥΝΟΣ	28,87	28,86	26,34	19,55	16,83
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,21	50,10	34,42	27,38	16,07
		SHARPE RATIO	0,14	0,31	0,54	0,15	0,46

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 18: ΦΥΣΙΚΟ ΑΕΡΙΟ/ ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	41,41	43,29	42,72	29,67	29,10
		ΚΙΝΔΥΝΟΣ	65,43	65,42	63,30	56,52	54,05
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,11	48,63	45,54	38,96	35,87
		SHARPE RATIO	0,63	0,66	0,67	0,52	0,54
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	41,41	43,29	32,53	29,67	22,20
		ΚΙΝΔΥΝΟΣ	65,43	65,42	56,90	56,52	46,50
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,11	48,63	33,95	38,96	25,03
		SHARPE RATIO	0,63	0,66	0,57	0,52	0,48
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	45,56	61,14	60,27	42,18	42,48
		ΚΙΝΔΥΝΟΣ	66,93	66,88	65,65	54,16	52,69
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,53	48,82	46,02	38,95	36,16
		SHARPE RATIO	0,68	0,91	0,92	0,78	0,81
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	45,56	61,14	59,60	42,18	40,26
		ΚΙΝΔΥΝΟΣ	66,93	66,88	60,71	54,16	46,69
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,53	48,82	34,17	38,95	24,74
		SHARPE RATIO	0,68	0,91	0,98	0,78	0,86
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	40,33	59,31	51,56	51,57	43,82
		ΚΙΝΔΥΝΟΣ	64,31	64,25	63,45	57,67	56,78
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,09	48,68	47,19	40,23	38,74
		SHARPE RATIO	0,63	0,92	0,81	0,89	0,77
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	40,33	59,31	41,05	51,57	34,23
		ΚΙΝΔΥΝΟΣ	64,31	64,25	57,42	57,67	49,98
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,09	48,68	38,99	40,23	30,63
		SHARPE RATIO	0,63	0,92	0,71	0,89	0,68
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	35,13	27,26	26,19	9,08	8,00
		ΚΙΝΔΥΝΟΣ	62,80	62,82	61,81	50,51	49,24
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,31	48,31	46,53	33,93	32,14
		SHARPE RATIO	0,56	0,43	0,42	0,18	0,16
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	35,13	27,26	24,68	9,08	7,67
		ΚΙΝΔΥΝΟΣ	62,80	62,82	58,42	50,51	44,95
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,31	48,31	38,90	33,93	24,21
		SHARPE RATIO	0,56	0,43	0,42	0,18	0,17

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 22: ΦΥΣΙΚΟ ΑΕΡΙΟ/ ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	49,01	43,13	35,56	27,06	19,63
		ΚΙΝΔΥΝΟΣ	67,67	67,68	66,15	57,88	56,08
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,87	49,11	46,16	38,39	36,15
		SHARPE RATIO	0,72	0,64	0,54	0,47	0,35
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	49,01	43,13	20,13	27,06	5,76
		ΚΙΝΔΥΝΟΣ	67,67	67,68	59,33	57,88	47,96
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,87	49,11	34,71	38,89	25,31
		SHARPE RATIO	0,72	0,64	0,34	0,47	0,12
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	51,65	38,09	33,76	11,22	5,70
		ΚΙΝΔΥΝΟΣ	69,37	69,40	67,86	56,32	54,84
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,79	49,48	46,76	37,63	35,20
		SHARPE RATIO	0,74	0,55	0,50	0,20	0,10
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	51,65	38,09	32,11	11,22	5,92
		ΚΙΝΔΥΝΟΣ	69,37	69,40	63,67	56,32	50,57
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	47,79	49,48	39,10	37,63	28,65
		SHARPE RATIO	0,74	0,55	0,50	0,20	0,12
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	47,75	35,74	38,13	21,54	22,73
		ΚΙΝΔΥΝΟΣ	66,06	66,09	64,84	55,62	54,21
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,26	49,59	46,85	39,32	36,67
		SHARPE RATIO	0,72	0,54	0,59	0,39	0,42
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	47,75	35,74	28,87	21,54	15,23
		ΚΙΝΔΥΝΟΣ	66,06	66,09	60,77	55,62	50,16
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,26	49,59	40,31	39,32	30,63
		SHARPE RATIO	0,72	0,54	0,48	0,39	0,30
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	41,75	17,65	15,80	12,67	10,81
		ΚΙΝΔΥΝΟΣ	64,16	64,20	63,03	49,37	47,84
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,61	49,80	48,21	33,13	31,55
		SHARPE RATIO	0,65	0,27	0,25	0,26	0,23
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	41,75	17,65	24,70	12,67	17,77
		ΚΙΝΔΥΝΟΣ	64,16	64,20	59,11	49,37	42,88
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,61	49,80	42,26	33,13	25,79
		SHARPE RATIO	0,65	0,27	0,42	0,26	0,41

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 24: ΧΡΥΣΟΣ/ ΧΑΛΚΟΣ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	5,94	7,65	4,63	4,93	1,87
		ΚΙΝΔΥΝΟΣ	26,70	26,70	25,03	20,25	18,47
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,30	46,78	41,56	28,94	24,62
		SHARPE RATIO	0,22	0,29	0,18	0,24	0,10
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	5,94	7,65	5,01	4,93	4,84
		ΚΙΝΔΥΝΟΣ	26,70	26,70	16,96	20,25	10,52
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,30	46,78	16,94	28,94	8,16
		SHARPE RATIO	0,22	0,29	0,30	0,24	0,46
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	5,82	2,26	6,02	13,93	16,50
		ΚΙΝΔΥΝΟΣ	27,02	27,02	25,80	19,11	18,42
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,10	47,79	43,08	25,92	23,12
		SHARPE RATIO	0,22	0,08	0,23	0,73	0,90
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	5,82	2,26	2,35	13,93	10,13
		ΚΙΝΔΥΝΟΣ	27,02	27,02	22,06	19,11	16,02
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,10	47,79	31,00	25,92	18,04
		SHARPE RATIO	0,22	0,08	0,11	0,73	0,63
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	2,61	5,89	4,12	8,86	9,02
		ΚΙΝΔΥΝΟΣ	27,40	27,40	26,48	22,09	21,01
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,90	50,08	47,52	29,14	26,66
		SHARPE RATIO	0,10	0,21	0,16	0,40	0,43
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	2,61	5,89	3,88	8,86	11,15
		ΚΙΝΔΥΝΟΣ	27,40	27,40	24,76	22,09	19,48
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,90	50,08	39,98	293,14	21,11
		SHARPE RATIO	0,10	0,21	0,16	0,40	0,57
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	0,06	10,98	11,56	-0,43	0,15
		ΚΙΝΔΥΝΟΣ	26,01	26,00	25,50	21,92	21,34
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,18	50,00	47,82	36,21	34,03
		SHARPE RATIO	0,00	0,42	0,45	-0,02	0,01
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	0,06	10,98	15,27	-1,43	8,02
		ΚΙΝΔΥΝΟΣ	26,01	26,00	22,47	21,92	18,44
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,18	50,00	37,80	36,21	25,10
		SHARPE RATIO	0,00	0,42	0,68	-0,07	0,43

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 25: ΧΡΥΣΟΣ/ ΠΕΤΡΕΛΑΙΟ ΘΕΡΜΑΝΣΗΣ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	-10,71	4,41	11,40	12,99	-6,65
		ΚΙΝΔΥΝΟΣ	38,48	38,49	37,32	27,89	26,37
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,95	51,44	46,64	28,40	23,94
		SHARPE RATIO	0,28	0,11	0,31	0,47	-0,25
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	-10,71	4,41	17,26	-12,99	1,26
		ΚΙΝΔΥΝΟΣ	38,48	38,49	30,74	27,89	19,72
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,95	51,44	27,23	28,40	10,56
		SHARPE RATIO	-0,28	0,11	0,56	-0,47	0,06
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	-10,25	-2,82	-1,91	-13,91	-12,03
		ΚΙΝΔΥΝΟΣ	39,48	39,49	38,89	29,74	29,14
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,72	51,47	48,67	28,65	25,99
		SHARPE RATIO	-0,26	-0,07	-0,05	-0,47	-0,41
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	-10,25	-2,82	-1,67	-13,91	-11,08
		ΚΙΝΔΥΝΟΣ	39,48	39,49	36,13	29,74	26,95
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,72	51,47	39,69	28,65	20,77
		SHARPE RATIO	-0,26	-0,07	-0,05	-0,47	-0,41
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	-10,73	-5,40	-7,95	-7,03	-9,25
		ΚΙΝΔΥΝΟΣ	39,98	39,98	39,71	31,65	31,32
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,65	52,40	50,66	29,47	27,81
		SHARPE RATIO	0,27	-0,14	-0,20	-0,22	-0,30
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	-10,73	-5,40	-9,33	-7,03	-9,88
		ΚΙΝΔΥΝΟΣ	39,98	39,98	38,12	31,65	29,51
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,65	52,40	43,87	29,47	22,10
		SHARPE RATIO	-0,27	-0,14	-0,24	-0,22	-0,33
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	-6,32	-14,20	-12,75	-18,81	-18,65
		ΚΙΝΔΥΝΟΣ	40,56	40,55	40,42	30,18	30,07
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,38	53,27	52,48	28,57	27,97
		SHARPE RATIO	-0,16	-0,35	-0,32	-0,62	-0,62
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	-6,32	-14,20	-2,95	-18,81	-12,76
		ΚΙΝΔΥΝΟΣ	40,56	40,55	39,49	30,18	29,35
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,38	53,27	48,02	28,57	24,80
		SHARPE RATIO	-0,16	-0,35	-0,07	-0,62	-0,43

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 26: ΣΟΓΙΕΛΑΙΟ/ ΒΑΜΒΑΚΙ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	2,58	7,33	7,05	10,22	-8,28
		ΚΙΝΔΥΝΟΣ	31,67	31,67	30,50	25,36	24,28
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,48	49,73	43,62	28,46	23,59
		SHARPE RATIO	0,08	0,23	0,23	0,40	-0,34
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	2,58	7,33	9,66	-10,22	-1,26
		ΚΙΝΔΥΝΟΣ	31,67	31,67	20,32	25,36	14,37
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,48	49,73	20,64	28,46	9,67
		SHARPE RATIO	0,08	0,23	0,48	-0,40	-0,09
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	-3,97	14,58	15,51	11,36	12,29
		ΚΙΝΔΥΝΟΣ	28,18	28,17	27,51	22,39	21,55
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,37	48,82	45,29	32,18	28,65
		SHARPE RATIO	-0,14	0,52	0,56	0,51	0,57
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	-3,97	14,58	17,98	11,36	10,85
		ΚΙΝΔΥΝΟΣ	28,18	28,17	23,95	22,39	17,63
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	50,37	48,82	32,25	32,18	18,04
		SHARPE RATIO	-0,14	0,52	0,75	0,51	0,62
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	0,15	18,79	10,73	10,07	1,63
		ΚΙΝΔΥΝΟΣ	28,52	28,50	27,59	22,29	21,19
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,50	48,92	46,77	31,04	29,14
		SHARPE RATIO	0,01	0,66	0,39	0,45	0,08
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	0,15	18,79	8,00	10,70	1,49
		ΚΙΝΔΥΝΟΣ	28,52	28,50	24,22	22,29	17,26
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,50	48,92	33,11	31,04	18,05
		SHARPE RATIO	0,01	0,66	0,33	0,48	0,09
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	-2,24	-1,89	0,50	-7,12	-5,45
		ΚΙΝΔΥΝΟΣ	29,30	29,30	29,14	21,49	21,33
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,60	49,60	47,72	27,78	26,69
		SHARPE RATIO	-0,08	-0,06	0,02	-0,33	-0,26
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	-2,24	-1,89	7,87	-7,12	1,31
		ΚΙΝΔΥΝΟΣ	29,30	29,30	26,00	21,49	19,13
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,60	49,60	39,19	27,78	22,52
		SHARPE RATIO	-0,08	-0,06	0,30	-0,33	0,07

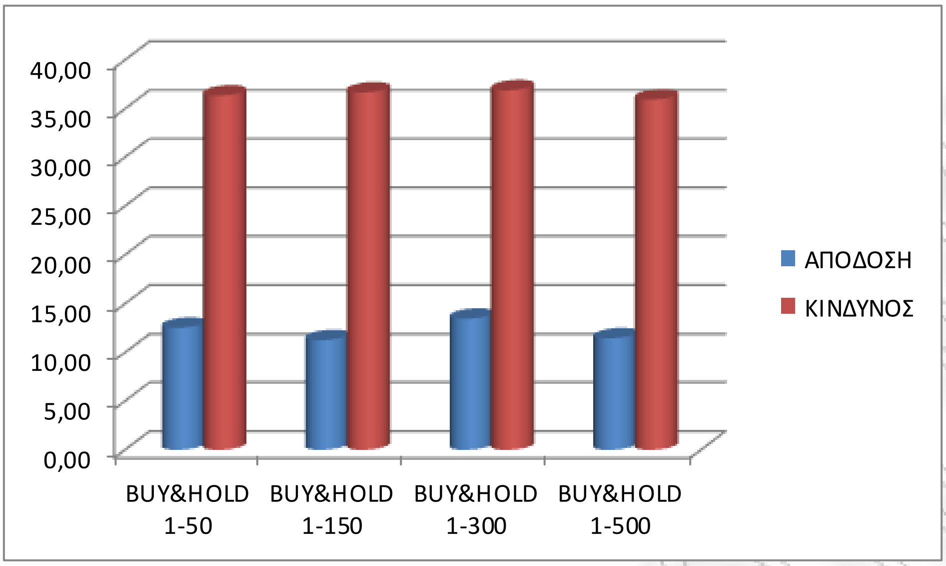
Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 27: ΧΑΛΚΟΣ/ ΛΕΥΚΟΧΡΥΣΟΣ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	-9,10	11,52	16,68	-3,29	0,62
		ΚΙΝΔΥΝΟΣ	33,60	33,60	31,93	22,97	20,91
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,71	47,74	41,36	28,33	23,05
		SHARPE RATIO	-0,27	0,34	0,52	-0,14	0,03
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	-9,10	11,52	23,35	-3,29	8,14
		ΚΙΝΔΥΝΟΣ	33,60	33,60	25,20	22,97	13,80
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,71	47,74	19,34	28,33	8,37
		SHARPE RATIO	-0,27	0,34	0,93	-0,14	0,59
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	-9,58	2,53	6,94	-13,54	-8,27
		ΚΙΝΔΥΝΟΣ	34,10	34,10	33,26	22,45	21,29
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,91	47,13	43,96	26,80	23,86
		SHARPE RATIO	-0,28	0,07	0,21	-0,60	-0,39
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	-9,58	2,53	13,25	-13,54	-4,12
		ΚΙΝΔΥΝΟΣ	34,10	34,10	29,67	22,45	17,42
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,91	47,13	31,30	26,80	15,46
		SHARPE RATIO	-0,28	0,07	0,45	-0,60	-0,24
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	-8,63	16,20	18,37	-1,78	0,90
		ΚΙΝΔΥΝΟΣ	35,03	35,02	34,32	25,87	24,93
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,57	47,10	44,45	33,28	30,63
		SHARPE RATIO	-0,25	0,46	0,54	-0,07	0,04
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	-8,63	16,20	3,79	-1,78	-8,85
		ΚΙΝΔΥΝΟΣ	35,03	35,02	31,34	25,87	21,08
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	51,57	47,10	37,25	33,28	24,01
		SHARPE RATIO	-0,25	0,46	0,12	-0,07	-0,42
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	-10,31	9,52	5,71	-16,12	-19,93
		ΚΙΝΔΥΝΟΣ	35,41	35,41	34,89	24,95	24,19
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,48	49,11	47,82	27,98	26,69
		SHARPE RATIO	-0,29	0,27	0,16	-0,65	-0,82
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	-10,31	9,52	12,50	-16,12	-16,58
		ΚΙΝΔΥΝΟΣ	35,41	35,41	32,42	24,95	21,18
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,48	49,11	40,08	27,98	20,83
		SHARPE RATIO	-0,29	0,27	0,39	-0,65	-0,78

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 29:ΧΡΥΣΟΣ/ ΑΡΓΟ ΠΕΤΡΕΛΑΙΟ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	-4,47	14,73	12,88	-3,15	-5,28
		ΚΙΝΔΥΝΟΣ	38,75	38,74	36,94	31,25	29,01
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,81	49,18	43,90	30,59	26,13
		SHARPE RATIO	-0,12	0,38	0,35	-0,10	-0,18
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	-4,47	14,73	9,76	-3,15	-7,61
		ΚΙΝΔΥΝΟΣ	38,75	38,74	30,31	31,25	21,83
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,81	49,18	25,38	30,59	13,31
		SHARPE RATIO	-0,12	0,38	0,32	-0,10	-0,35
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	-5,65	2,26	-5,94	-7,69	-15,32
		ΚΙΝΔΥΝΟΣ	39,80	39,80	38,85	27,96	26,61
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,72	51,03	48,82	28,50	26,29
		SHARPE RATIO	-0,14	0,06	-0,15	-0,28	-0,58
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	-5,65	2,26	0,78	-7,69	-12,40
		ΚΙΝΔΥΝΟΣ	39,80	39,80	35,90	27,96	23,35
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,72	51,03	37,63	28,50	17,53
		SHARPE RATIO	-0,14	0,06	0,02	-0,28	-0,53
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	-4,11	-1,40	-2,76	-0,62	-2,17
		ΚΙΝΔΥΝΟΣ	40,81	40,81	40,46	30,94	30,48
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,32	52,07	50,33	29,06	27,40
		SHARPE RATIO	-0,10	-0,03	-0,07	-0,02	-0,07
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	-4,11	-1,40	-1,00	-0,62	-2,74
		ΚΙΝΔΥΝΟΣ	40,81	40,81	39,01	30,94	29,07
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,32	52,07	43,96	29,06	22,68
		SHARPE RATIO	-0,10	-0,03	-0,03	-0,02	-0,09
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	-0,41	-10,47	- 11,22	-1,26	-2,00
		ΚΙΝΔΥΝΟΣ	41,00	41,00	40,96	31,23	31,19
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,48	53,37	53,17	29,86	29,66
		SHARPE RATIO	-0,01	-0,26	-0,27	-0,04	-0,06
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	-0,41	-10,47	-6,03	-1,26	1,67
		ΚΙΝΔΥΝΟΣ	41,00	41,00	40,53	31,23	30,82
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	52,48	53,37	50,50	29,86	27,98
		SHARPE RATIO	-0,01	-0,26	-0,15	-0,04	0,05

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 30: ΠΑΛΛΑΔΙΟ/ ΧΑΛΚΟΣ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	47,17	-23,61	-22,47	-6,45	-4,91
		ΚΙΝΔΥΝΟΣ	42,27	42,35	41,42	35,43	35,22
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	46,36	51,58	47,26	32,65	31,21
		SHARPE RATIO	1,12	-0,56	-0,54	-0,18	-0,14
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	47,17	-23,61	-0,34	-6,45	-1,82
		ΚΙΝΔΥΝΟΣ	42,27	42,35	34,92	35,43	31,54
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	46,36	51,58	29,15	32,65	22,98
		SHARPE RATIO	1,12	-0,56	-0,01	-0,18	-0,06
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	51,77	-31,26	-27,22	-15,72	-14,81
		ΚΙΝΔΥΝΟΣ	43,16	43,24	42,63	33,88	33,50
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	45,80	50,44	48,09	32,55	31,37
		SHARPE RATIO	1,20	-0,72	-0,64	-0,46	-0,44
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	51,77	-31,26	-24,00	-15,72	-12,83
		ΚΙΝΔΥΝΟΣ	43,16	43,24	40,32	33,88	32,03
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	45,80	50,44	39,76	32,55	26,58
		SHARPE RATIO	1,20	-0,72	-0,60	-0,46	-0,40
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	56,40	-31,81	-33,92	-22,49	-24,63
		ΚΙΝΔΥΝΟΣ	44,50	44,60	44,27	36,38	36,22
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	46,03	51,24	50,17	34,93	34,69
		SHARPE RATIO	1,27	-0,71	-0,77	-0,62	-0,68
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	56,40	-31,81	-34,89	-22,49	-26,86
		ΚΙΝΔΥΝΟΣ	44,50	44,60	41,98	36,38	34,95
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	46,03	51,24	43,96	34,93	31,62
		SHARPE RATIO	1,27	-0,71	-0,83	-0,62	-0,77
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	66,65	-62,36	-62,33	-46,40	-46,37
		ΚΙΝΔΥΝΟΣ	45,89	45,91	45,87	39,09	39,04
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	44,64	53,97	53,67	44,44	44,15
		SHARPE RATIO	1,45	-1,36	-1,36	-1,19	-1,19
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	66,65	-62,36	-62,60	-46,40	-45,95
		ΚΙΝΔΥΝΟΣ	45,89	45,91	45,42	39,09	38,66
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	44,64	53,97	52,28	-44,44	43,15
		SHARPE RATIO	1,45	-1,36	1,38	-1,19	-1,19

Κινούμενος Μέσος	ΟΡΙΟ	ΖΕΥΓΟΣ 31: ΑΡΓΥΡΟΣ/ ΚΑΚΑΟ					
			BUY&HOLD	ACTIVE	BAND	STOPLOSS	BAND&STOPLOSS
SMA(1)-LMA(50)	1%	ΑΠΟΔΟΣΗ	15,37	20,46	22,46	0,45	1,76
		ΚΙΝΔΥΝΟΣ	34,10	34,09	32,21	25,76	23,36
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,42	47,05	40,33	29,01	22,91
		SHARPE RATIO	0,45	0,60	0,70	0,02	0,08
SMA(1)-LMA(50)	5%	ΑΠΟΔΟΣΗ	15,37	20,46	14,68	0,45	0,75
		ΚΙΝΔΥΝΟΣ	34,10	34,09	24,90	25,76	14,44
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,42	47,05	20,85	29,01	7,96
		SHARPE RATIO	0,45	0,60	0,59	0,02	0,05
SMA(1)-LMA(150)	1%	ΑΠΟΔΟΣΗ	12,86	-2,97	4,24	6,94	10,77
		ΚΙΝΔΥΝΟΣ	33,84	33,85	32,77	25,35	25,03
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,45	49,41	46,02	26,44	25,63
		SHARPE RATIO	0,38	-0,09	0,13	0,27	0,43
SMA(1)-LMA(150)	5%	ΑΠΟΔΟΣΗ	12,86	-2,97	5,40	6,94	8,56
		ΚΙΝΔΥΝΟΣ	33,84	33,85	28,98	25,35	23,04
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,45	49,41	32,77	26,44	19,81
		SHARPE RATIO	0,38	-0,09	0,19	0,27	0,37
SMA(1)-LMA(300)	1%	ΑΠΟΔΟΣΗ	11,59	4,99	8,97	10,94	13,14
		ΚΙΝΔΥΝΟΣ	34,90	34,91	33,96	25,75	24,74
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,59	48,68	46,03	24,01	22,10
		SHARPE RATIO	0,33	0,14	0,26	0,42	0,53
SMA(1)-LMA(300)	5%	ΑΠΟΔΟΣΗ	11,59	4,99	3,97	10,94	9,42
		ΚΙΝΔΥΝΟΣ	34,90	34,91	31,55	25,75	22,47
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	48,59	48,68	37,17	24,01	16,06
		SHARPE RATIO	0,33	0,14	0,13	0,42	0,42
SMA(1)-LMA(500)	1%	ΑΠΟΔΟΣΗ	19,60	1,38	2,73	3,07	4,42
		ΚΙΝΔΥΝΟΣ	36,55	36,57	35,98	27,24	26,45
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,01	50,00	48,12	25,79	23,91
		SHARPE RATIO	0,54	0,04	0,08	0,11	0,17
SMA(1)-LMA(500)	5%	ΑΠΟΔΟΣΗ	19,60	1,38	-0,90	3,07	0,43
		ΚΙΝΔΥΝΟΣ	36,55	36,57	33,97	27,24	24,43
		ΑΡΝΗΤΙΚΗ ΑΠΟΔ.	49,01	50,00	41,87	25,79	19,15
		SHARPE RATIO	0,54	0,04	-0,03	0,11	0,02

ΠΑΡΑΡΤΗΜΑ 5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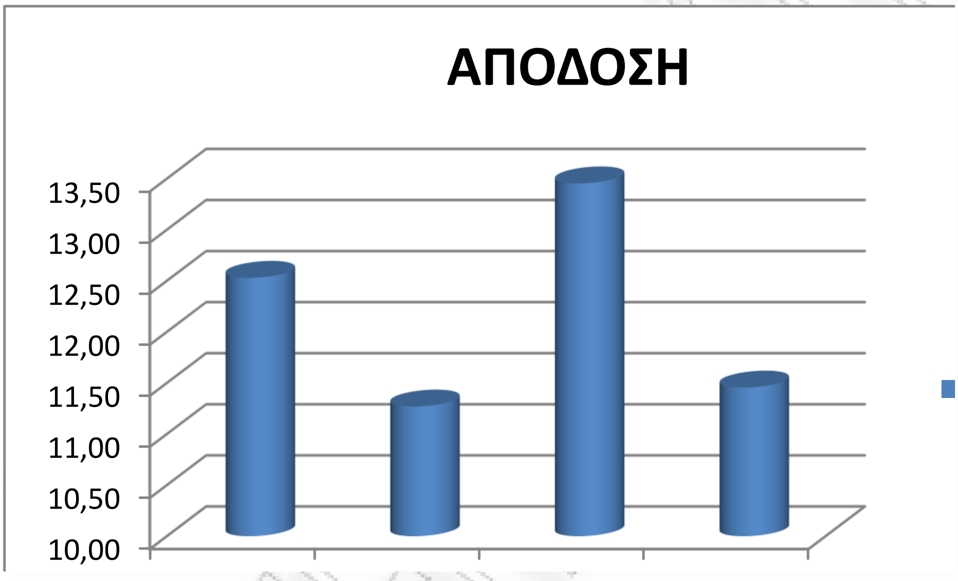
BUY&HOLD 1-150
BUY&HOLD 1-300
BUY&HOLD 1-500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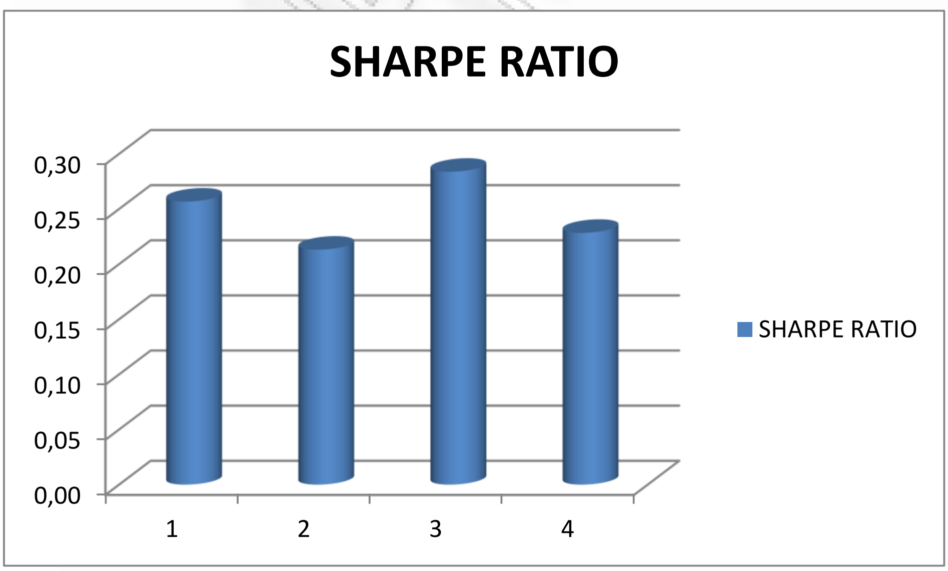
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4
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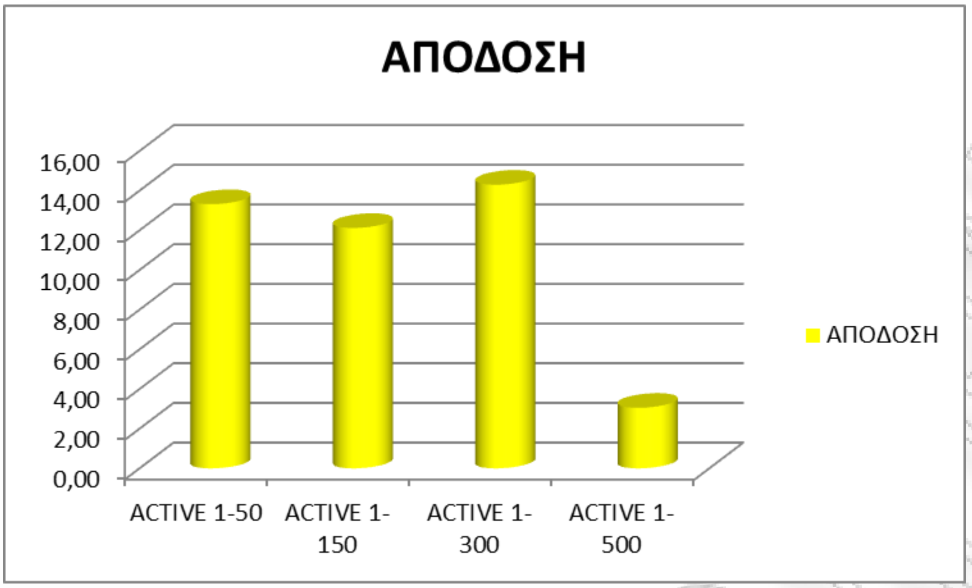
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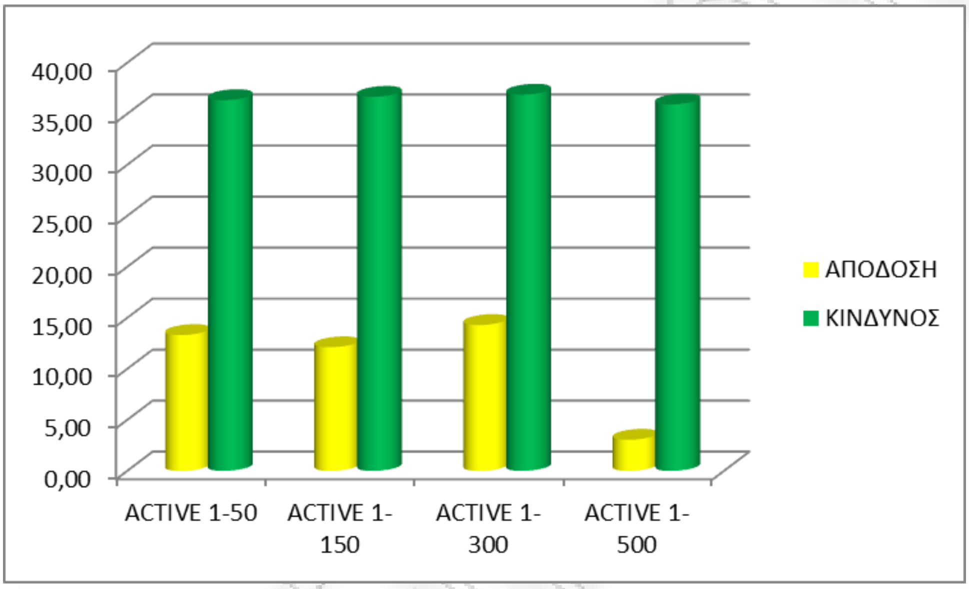
ΑΠΟΔΟΣΗ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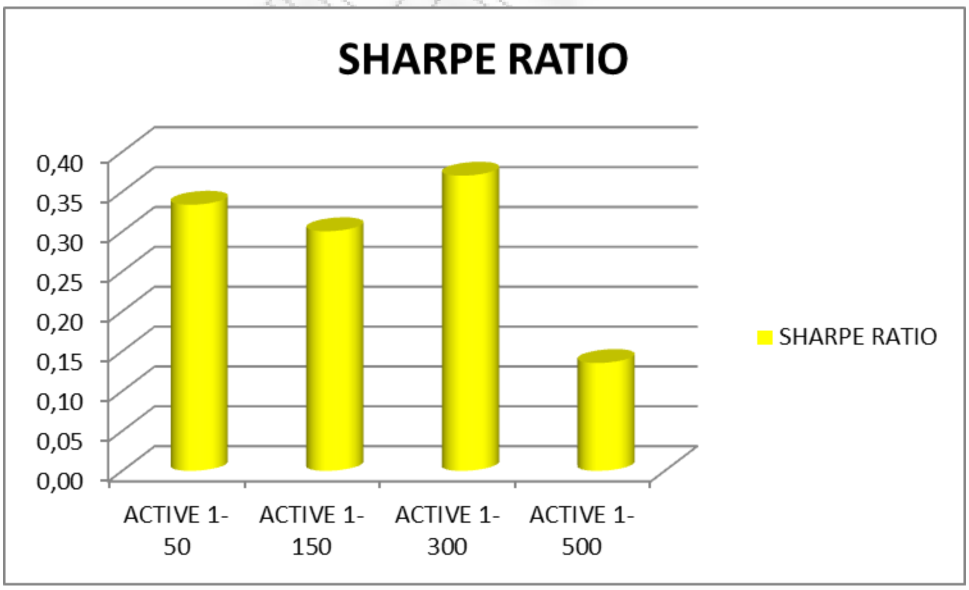
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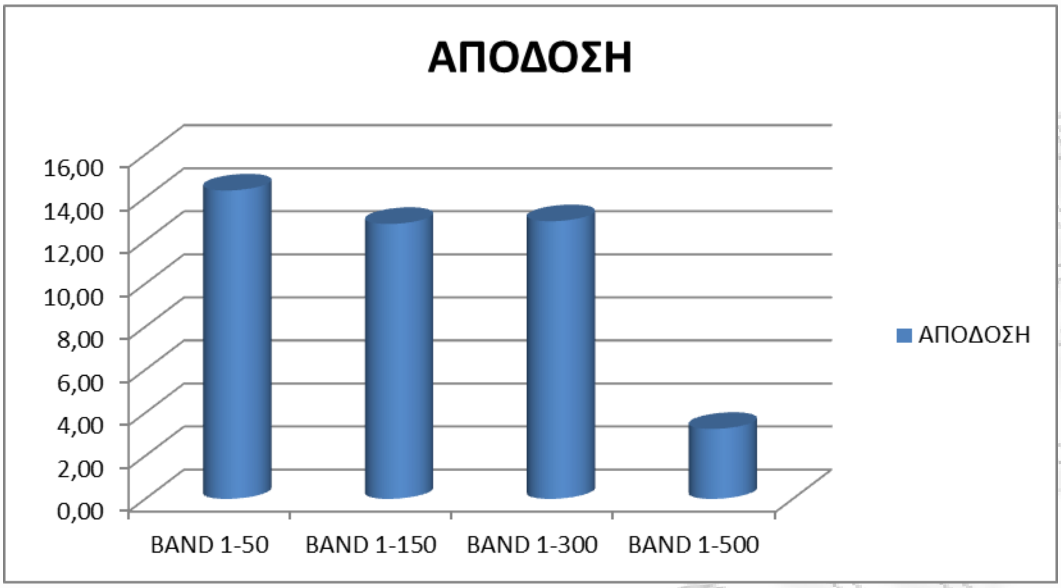
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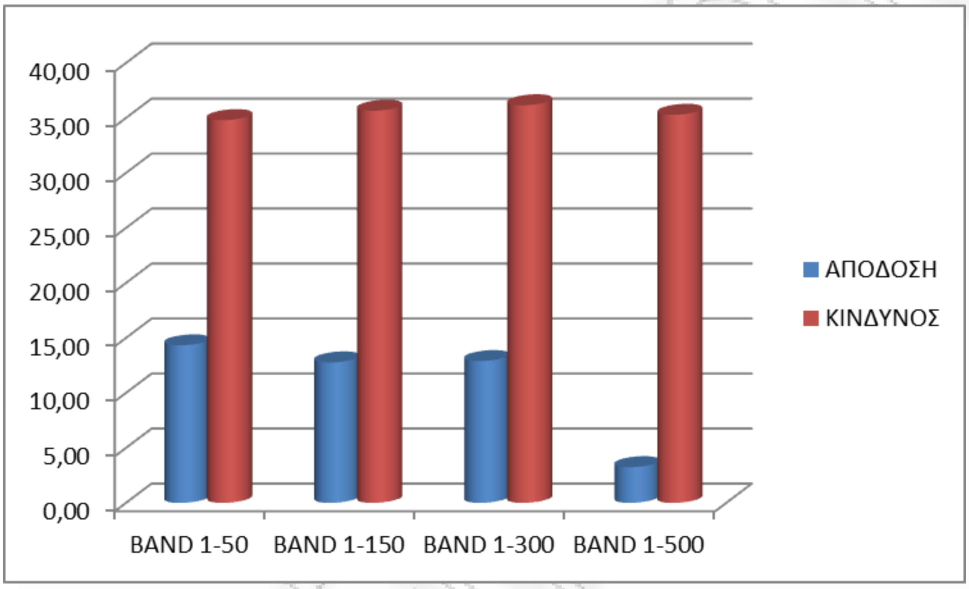
ΑΠΟΔΟΣΗ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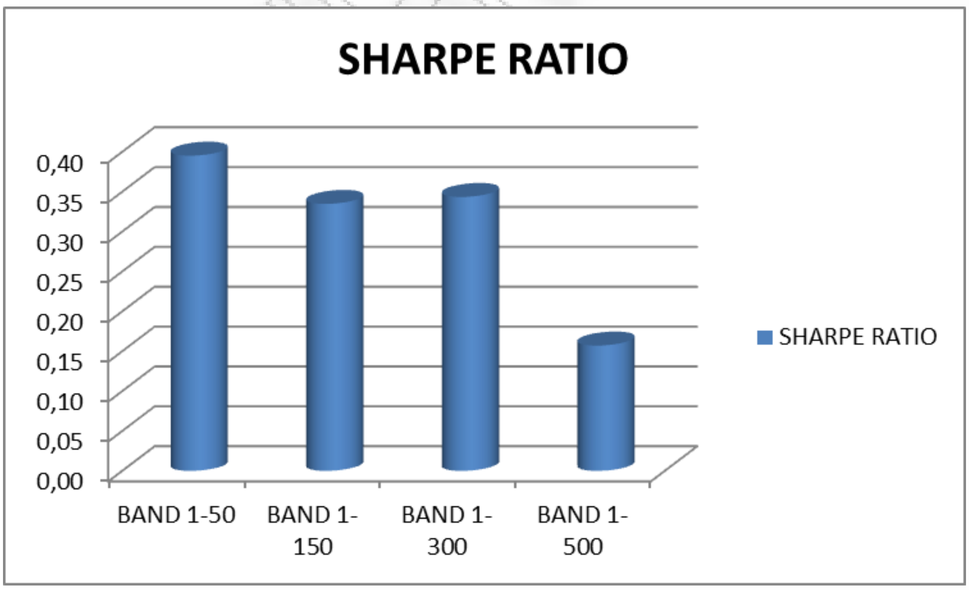
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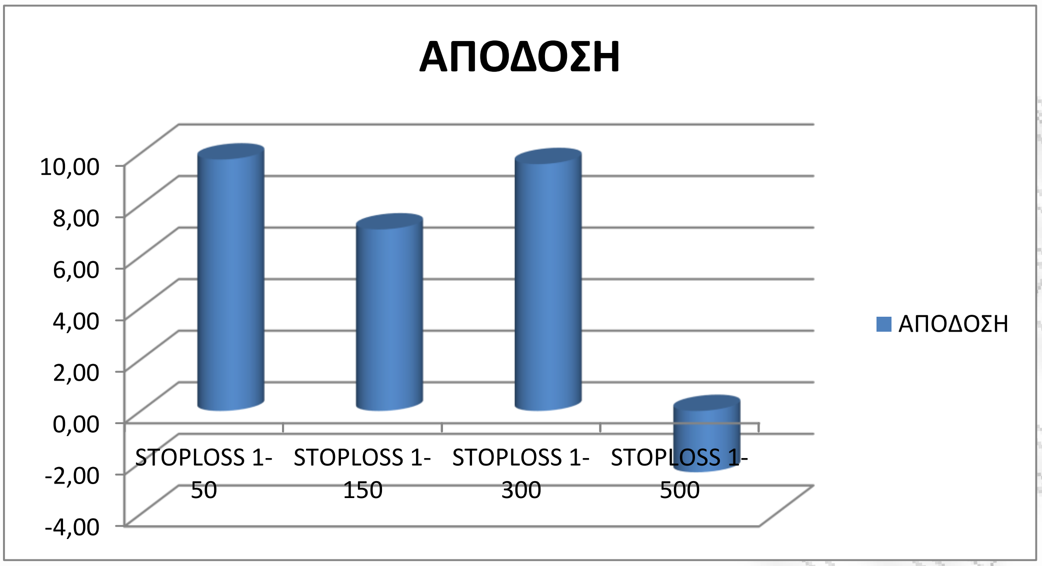
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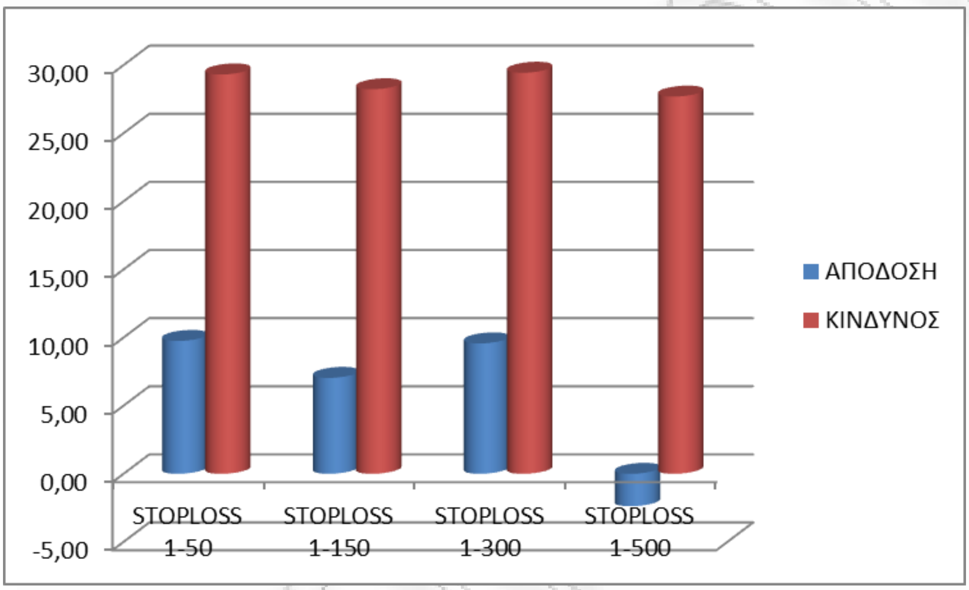
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ΑΠΟΔΟΣΗ
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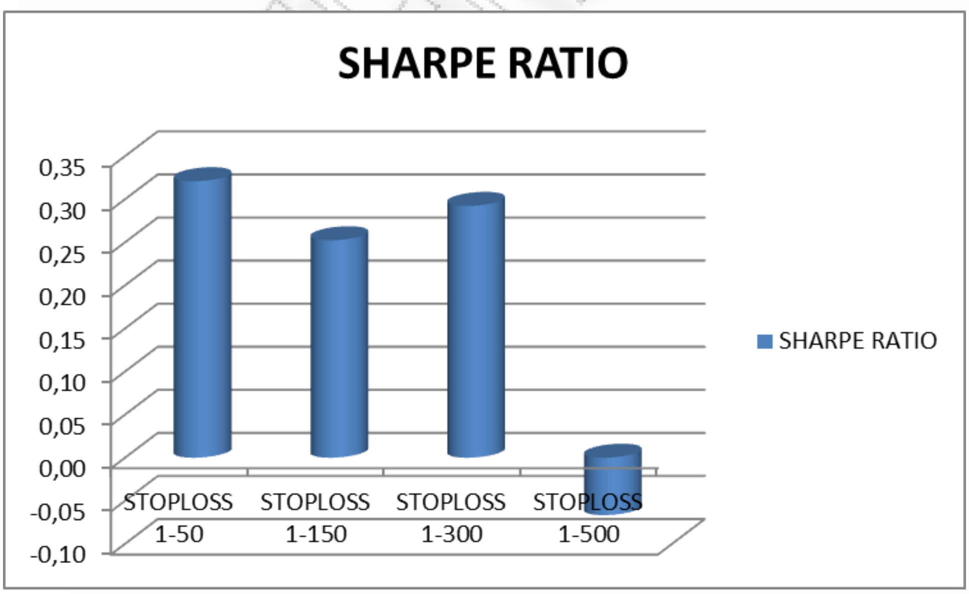
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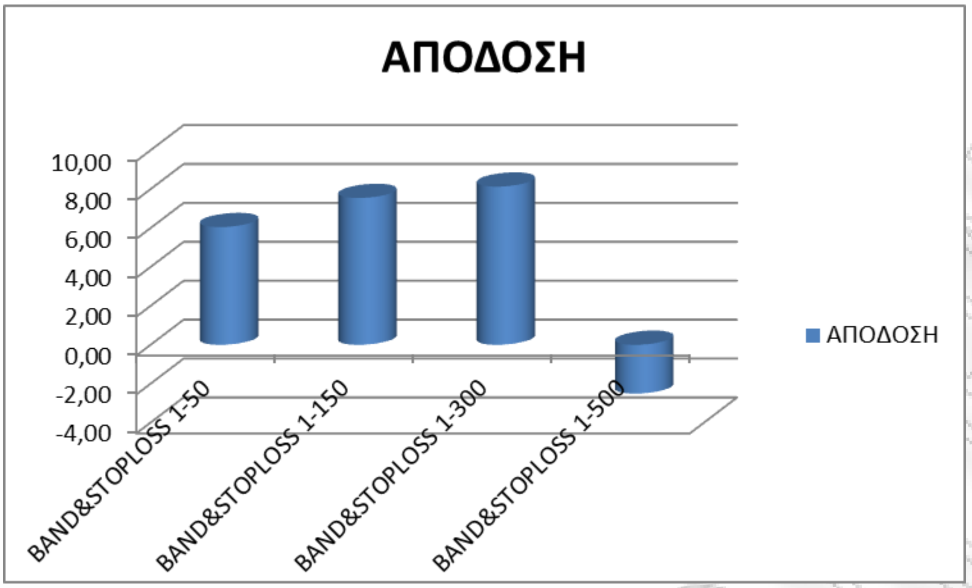
SHARPE RATIO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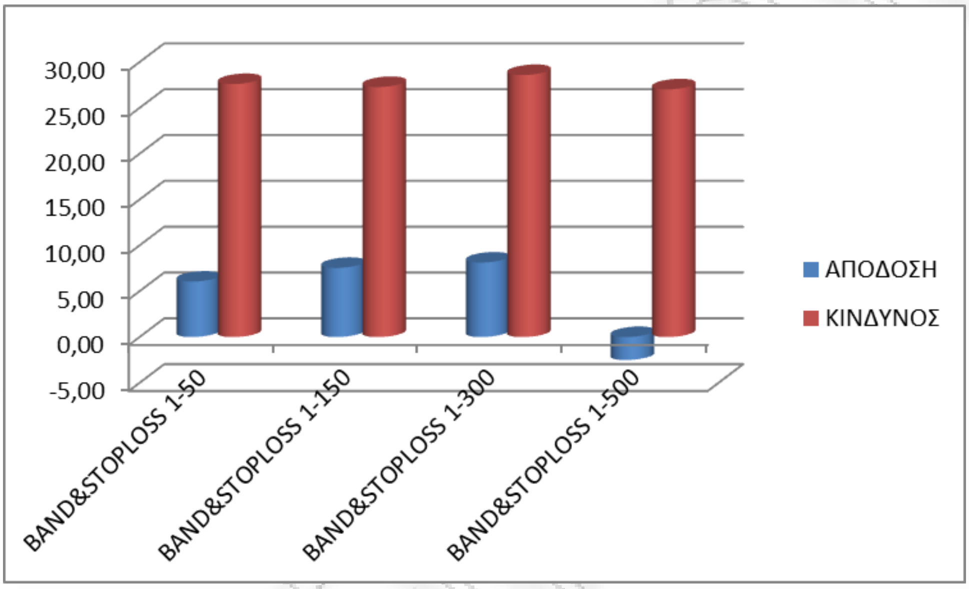
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ΑΠΟΔΟΣΗ
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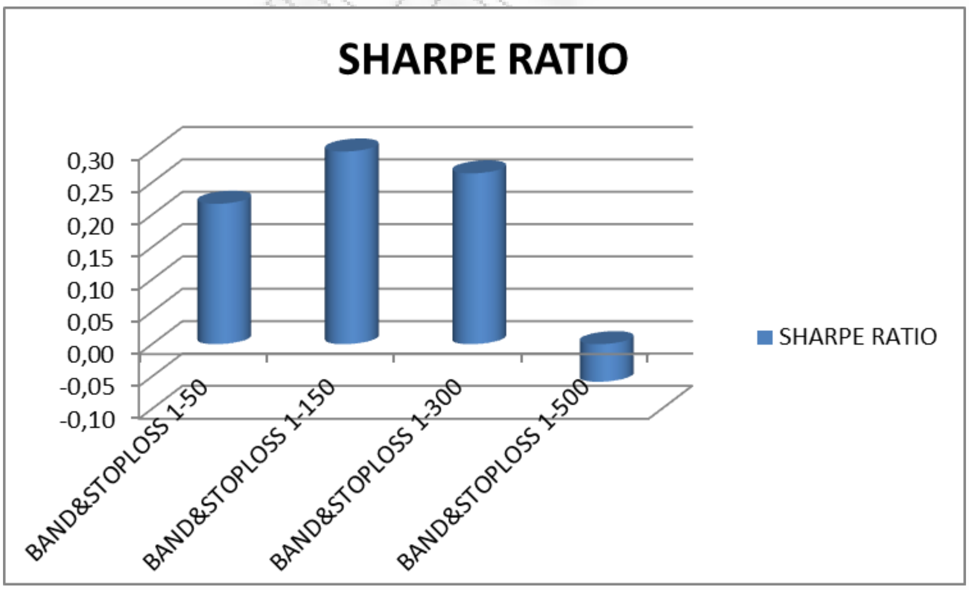
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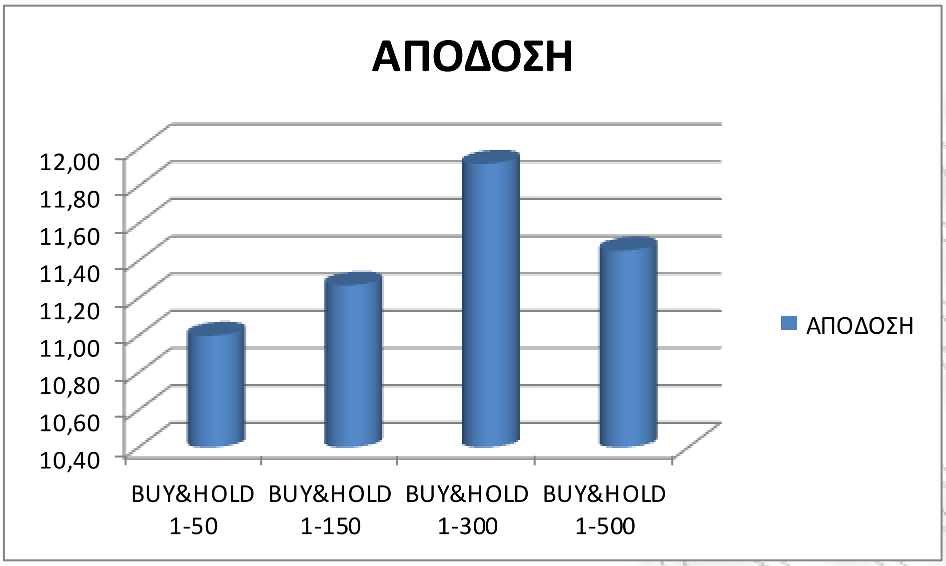
BAND&STOPLOSS 1-500
SHARPE RATIO

ΠΑΡΑΡΤΗΜΑ 6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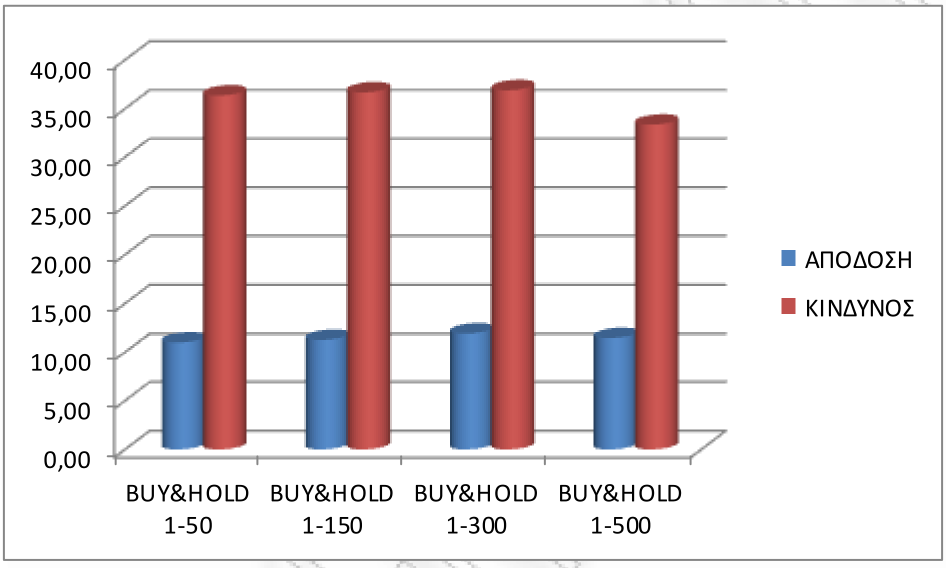
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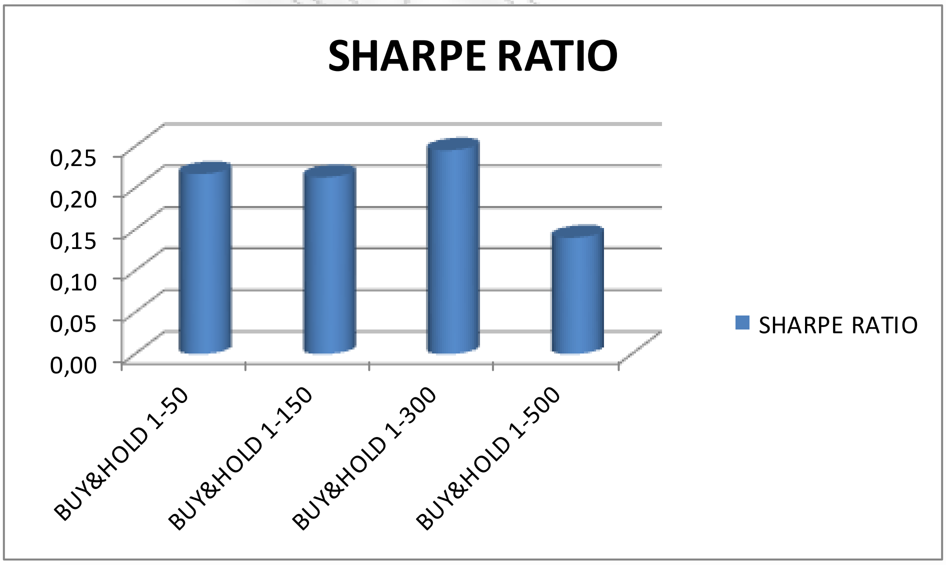
ΚΙΝΔΥΝΟΣ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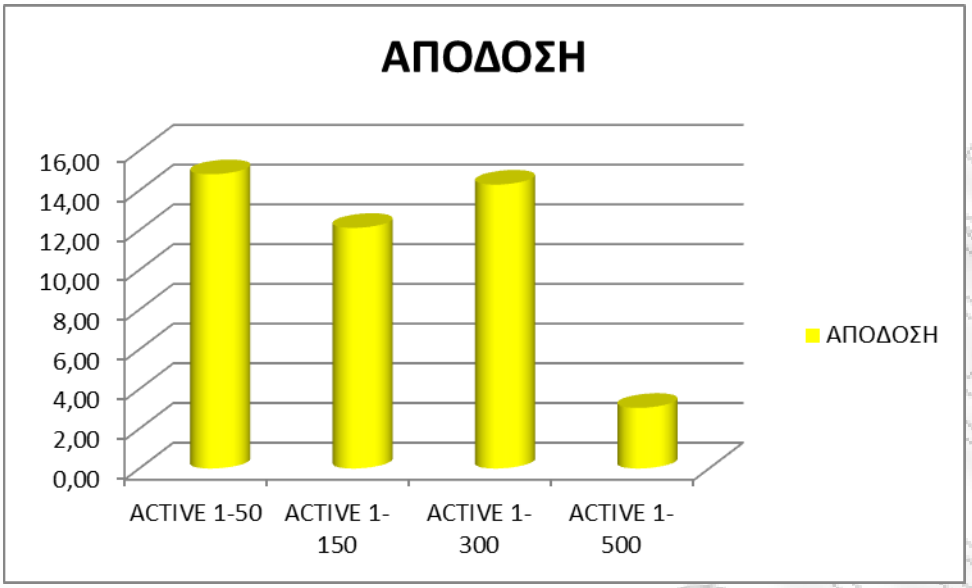
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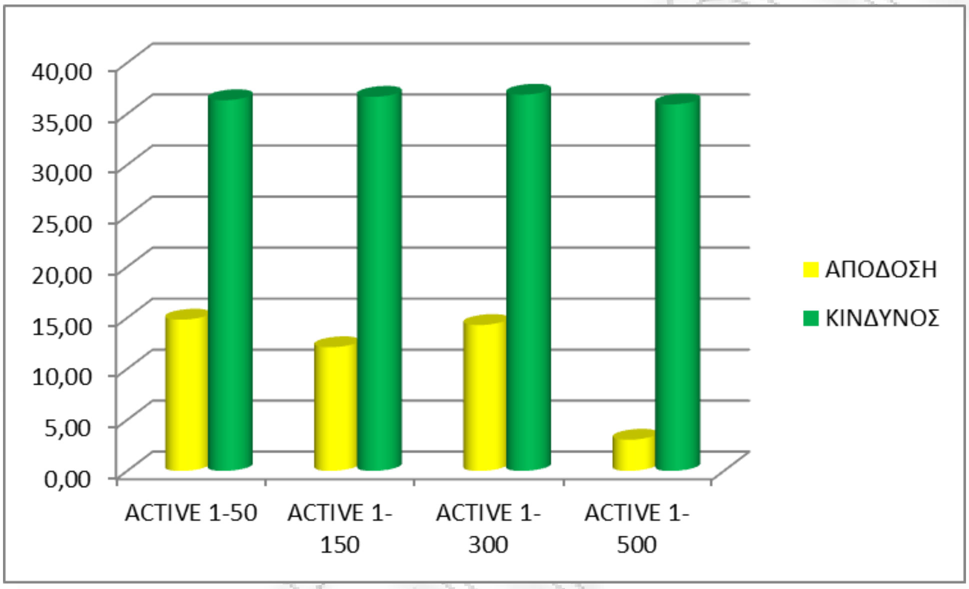
ΑΠΟΔΟΣΗ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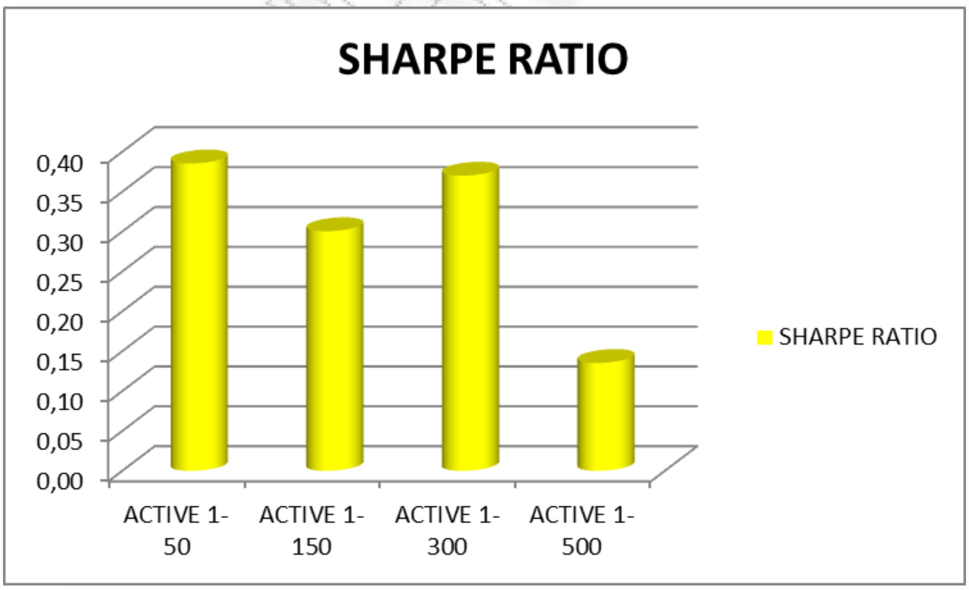
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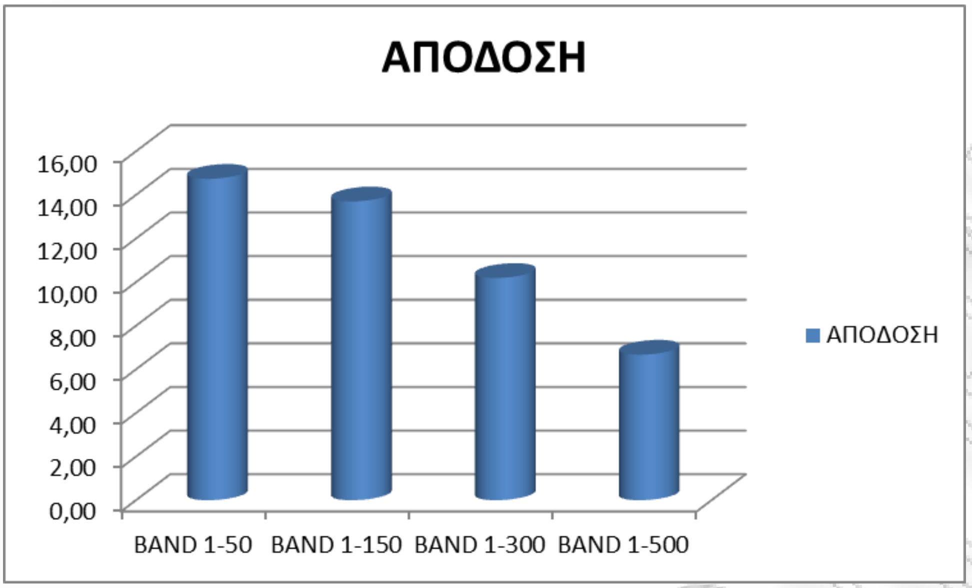
SHARPE RATIO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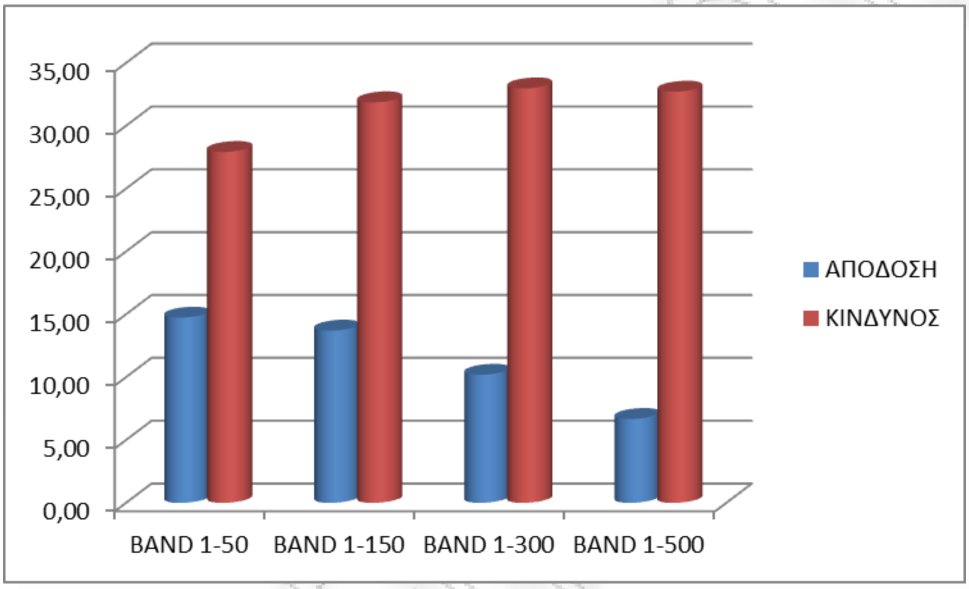
ΑΠΟΔΟΣΗ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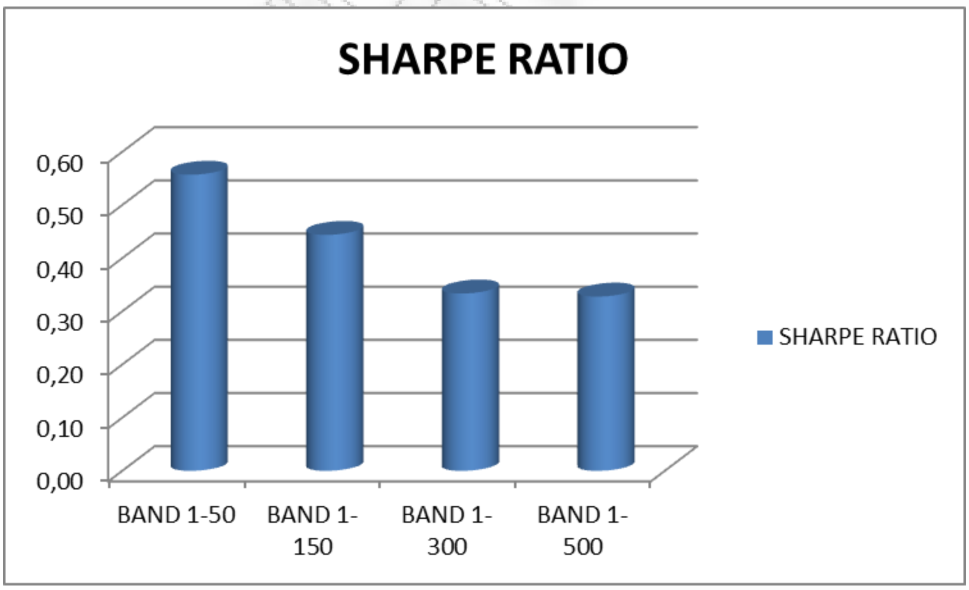
ΑΠΟΔΟΣΗ
ΚΙΝΔΥΝΟΣ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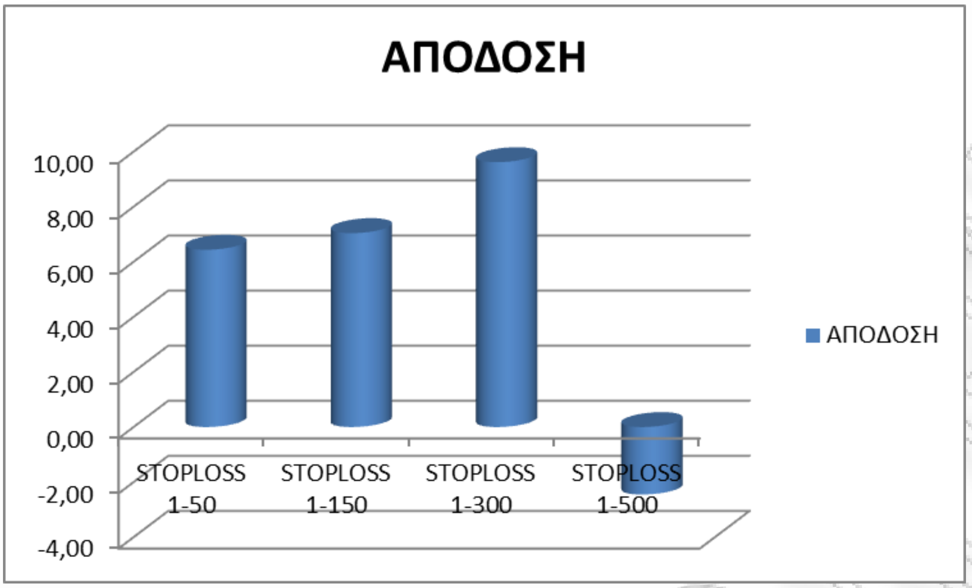
SHARPE RATIO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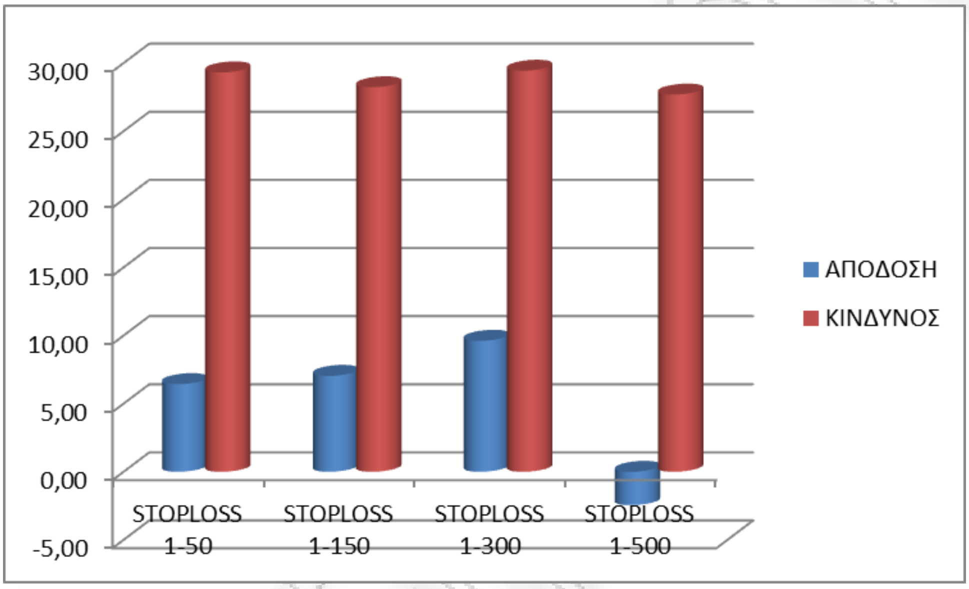
ΑΠΟΔΟΣΗ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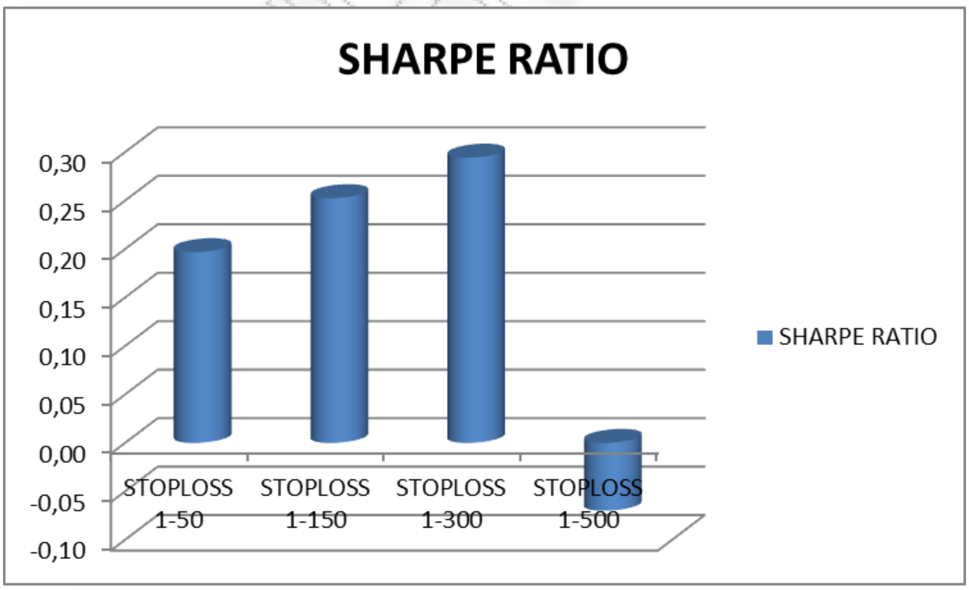
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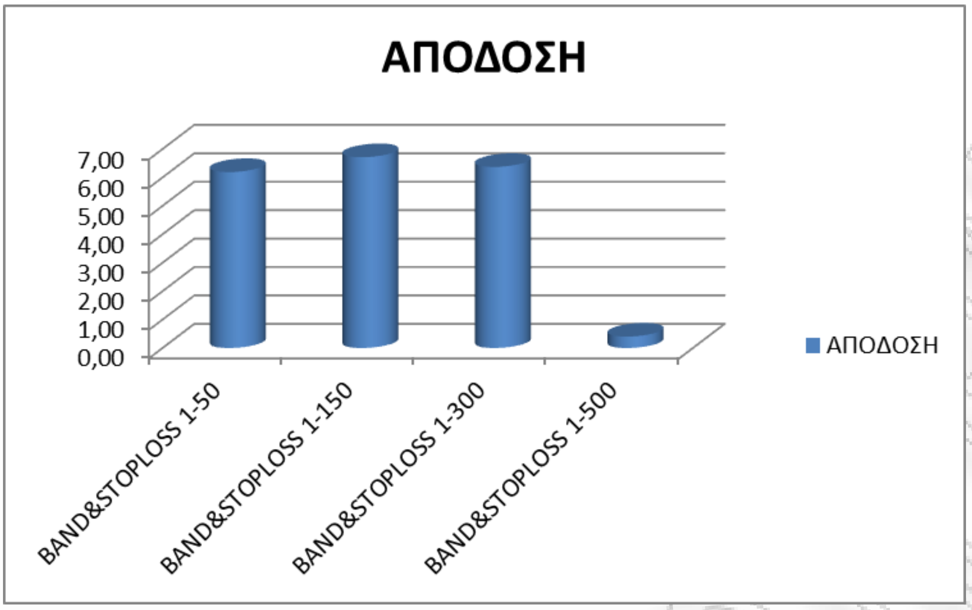
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1,00
0,00
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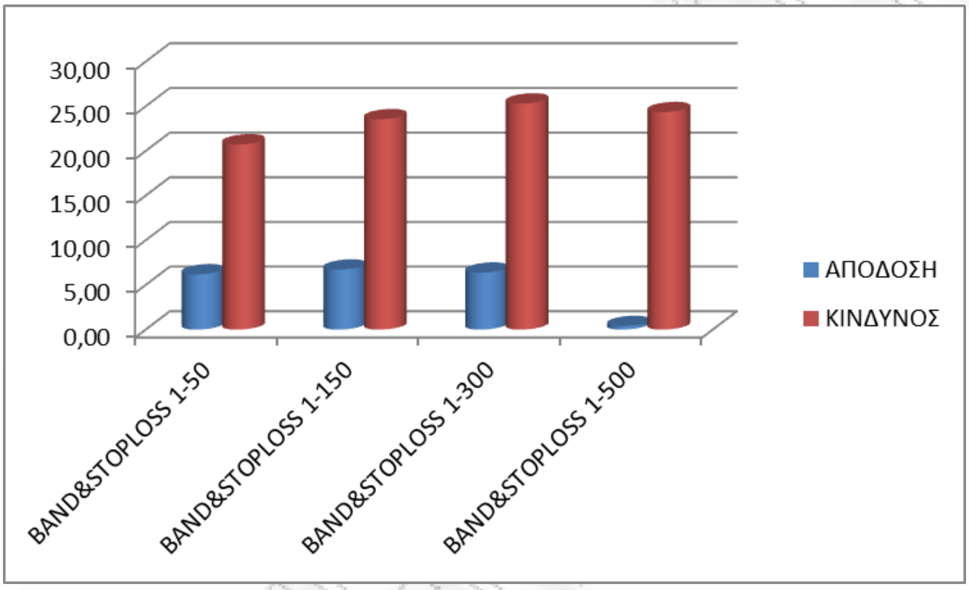
ΑΠΟΔΟΣΗ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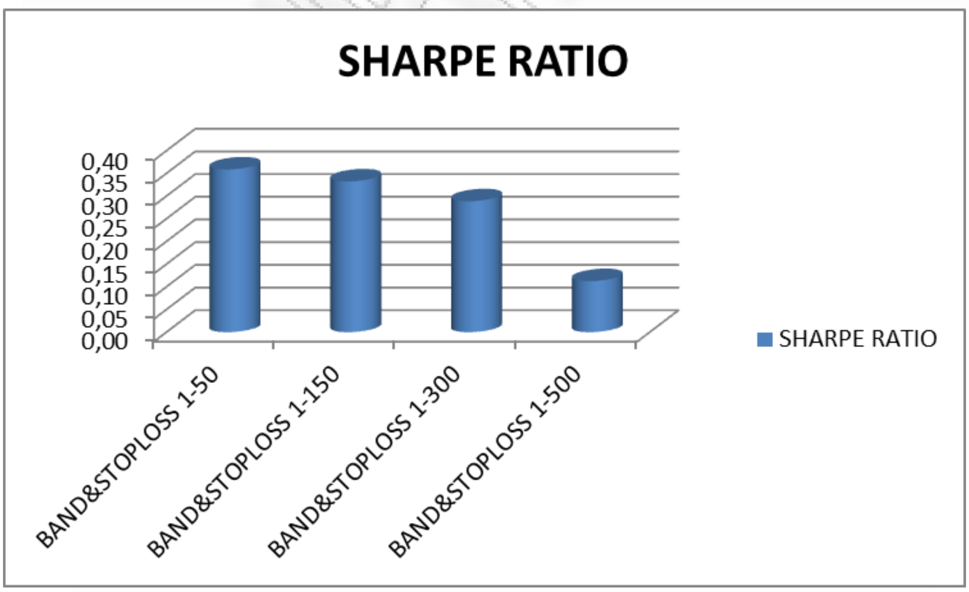
ΑΠΟΔΟΣΗ
ΚΙΝΔΥΝΟΣ


SHARPE RATIO
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0,10
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BAND&STOPLOSS 1-150
BAND&STOPLOSS 1-300
BAND&STOPLOSS 1-500
SHARPE RATIO