UNIVERSITY OF PIREAUS DEPARTEMENT OF BANKING AND FINANCIAL MANAGEMENT

THESIS:
STOCK RETURNS AND VOLATILITY

THE EUROPEAN BIG THREE BEFORE AND DURING THE CRISIS

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1. INTRODUCTION

This paper examines the relationship between stock returns and volatility for the three largest stock markets in Europe, the British, the French and the German. The reason for choosing these markets is the various and long term data that are provided. Moreover, the large impact of the crisis at a multitude of traded European firms resulted in severe alternation of firm and industry level of financial leverage. Gathering data from a period including the major burst of the financial crisis and ending after the major interest rate cuts and the generous market and liquidity strengthen packages, I am to use that in order to monitor the changes among the relationship between stock returns and volatility. Specifically, the data is divided in two segments of daily stock returns. The first covers the 8/1990 to 8/2007 period and the second covers the 9/2007 to 9/2009 period. This division is selected in order to pinpoint the crisis effect on stock returns. Three general questions are raised:

1. Did the crisis eject a period of persisting high volatility (volatility clustering)?
2. Have the risk premium changed radically due to bad news arrivals (serial autocorrelation)?
3. Can we detect asymmetric reaction due to price falls (leverage effect)?

2. THE THEORY

A lot of academic papers can be found researching the relationship between stock returns and volatility. To acknowledge them we must firstly trace back the theoretical basis which is commonly conscripted in these papers.

The single-index model (SIM) is a simple asset pricing model commonly used in the finance industry to measure risk and return of a stock. Mathematically the SIM is expressed as:

$$r_{it} - r_f = \alpha_i + \beta_i(r_{mt} - r_f) + \epsilon_{it}$$

$$\epsilon_{it} \sim N(0, \sigma_i)$$

where:

r_{it} is return to stock i in period t

r_f is the risk free rate (i.e. the interest rate on treasury bills)

r_{mt} is the return to the market portfolio in period t

α_i is the stock's alpha, or abnormal return

β_i is the stocks's beta, or responsiveness to the market return

Note that $r_{it} - r_f$ is called the excess return on the stock, $r_{mt} - r_f$ the excess return on the market

ε_{it} is the residual (random) return, which is assumed normally distributed with mean zero and standard deviation σ_i

These equations show that the stock return is influenced by the market (beta), has a firm specific expected value (alpha) and firm-specific unexpected component (residual).

Each stock's performance is in relation to the performance of a market index. Security analysts often use the SIM for such functions as computing stock betas, evaluating stock selection skills, and conducting event studies. To simplify analysis, the single-index model assumes that there is only one macroeconomic factor that causes the systematic risk affecting all stock returns and this factor can be represented by the rate of return on a market index. According to this model, the return of any stock can be decomposed into the expected excess return of the individual stock due to firm-specific factors, commonly denoted by its alpha coefficient (α), the return due to macroeconomic events that affect the market, and the unexpected microeconomic events that affect only the firm. The term $\beta_i(r_m - r_f)$ represents the movement of the market modified by the stock's beta, while ei represents the unsystematic risk of the security due to firm-specific factors. Macroeconomic events, such as changes in interest rates or the cost of labor, causes the systematic risk that affects the returns of all stocks, and the firm-specific events are the unexpected microeconomic events that affect the returns of specific firms, such as the death of key people or the lowering of the firm's credit rating, that would affect the firm, but would have a negligible effect on the economy. In a portfolio, the non-systematic risk due to firm-specific factors can be reduced to zero by diversification. The index model is based on the following:

• Most stocks have a positive covariance because they all respond similarly to macroeconomic factors. However, some firms are more sensitive to these factors than others, and this firm-specific variance is typically denoted by its beta (β), which measures its variance compared to the market for one or more economic factors.

• Covariance among securities result from differing responses to macroeconomic factors. Hence, the covariance of each stock can be found by multiplying their betas and the market variance:

• $Cov(R_i, R_j) = \beta_i \cdot \beta_j \cdot \sigma^2_m$. This last equation greatly reduces the computations required to

determine covariance because otherwise the covariance of the securities within a portfolio must be calculated using historical returns, and the covariance of each possible pair of securities in the portfolio must be calculated independently. With this equation, only the betas of the individual securities and the market variance need to be estimated to calculate covariance. Hence, the index model greatly reduces the number of calculations that would otherwise have to be made to model a large portfolio of thousands of securities.

1. Modern portfolio theory (MPT) is a theory of investment which attempts to explain how investors can maximize return and minimize risk. Although MPT is widely used in practice in the financial industry and several of its creators won a Nobel prize for the theory, in recent years the basic assumptions of MPT have been widely challenged by fields such as behavioral economics, and many companies using variants of MPT have gone bankrupt in various financial crises.MPT is a mathematical formulation of the concept of diversification in investing, with the aim of selecting a collection of investment assets that has collectively lower risk than any individual asset. This is possible, in theory, because different types of assets often change in value in opposite ways. For example, when the prices in the stock market fall, the prices in the bond market often increase, and vice versa. A collection of both types of assets can therefore have lower overall risk than either individually. More technically, MPT models an asset's return as a random variable, and models a portfolio as a weighted combination of assets so that the return of a portfolio is the weighted combination of the assets' returns. Risk, in this model, is the standard deviation of return. By combining different assets whose returns are not correlated, MPT seeks to reduce the total variance of the portfolio.

MPT also assumes that investors are rational and markets are efficient. MPT was developed in the late 1960s and early 1970s and was considered an important advance in the mathematical modeling of finance. Since then, many theoretical and practical criticisms have been leveled against it. These include the fact that financial returns do not follow a Gaussian distribution and that correlations between asset classes are not fixed but can vary depending on external events (especially in crises). Further, there is growing evidence that investors are not rational and markets are not efficient. Perhaps the most spectacular example of MPT's shortcomings was the failure of Long Term Capital Management in 1998. The model assumes that investors are risk averse, meaning that given two assets that offer the same expected return, investors will prefer the less risky one. Thus, an investor will take on increased risk only if compensated by higher expected returns. Conversely, an investor who wants higher returns must accept more risk. The exact trade-off will differ by investor based on individual risk aversion characteristics. The implication is that a rational investor will not invest in a portfolio if a second portfolio exists with a more favorable risk-return profile – i.e., if for that level of risk an alternative portfolio exists which has better expected returns. It is further assumed that the investor's risk / reward preference can be described via a quadratic utility function. The effect of this assumption is that only the expected return and the volatility (i.e., mean return and standard deviation) matter to the investor. The investor is indifferent to other characteristics of the distribution of returns, such as its skew (measures the level of asymmetry in the distribution) or kurtosis (measure of the thickness or so-called "fat tail"). Note that the theory uses a parameter, volatility, as a proxy for risk, while return is an expectation on the future. This is in line with the efficient market hypothesis and most of the classical findings in finance such as Black and Scholes European Option Pricing (martingale measure: in short means that the best forecast for tomorrow is the price of today).

Recent innovations in portfolio theory, particularly under the rubric of Post-Modern Portfolio Theory (PMPT), have exposed several flaws in this reliance on variance as the investor's risk proxy: The theory uses a historical parameter, volatility, as a proxy for risk, while return is an expectation on the future. (It is noted though that this is in line with the Efficiency Hypothesis and most of the classical findings in finance such as Black and Scholes which make use of the martingale measure, i.e. the assumption that the best forecast for tomorrow is the price of today). The statement that "the investor is indifferent to other characteristics" seems not to be true given that skewness risk appears to be priced by the market. Portfolio return is the proportion-weighted combination of the constituent assets' returns.

- **Expected return:**

$$\mathrm{E}(R_p) = \sum_i w_i \mathrm{E}(R_i)$$

Where R_i is return and w_i is the weighting of component asset i.

- **Portfolio variance:**

$$\sigma_p^2 = \sum_i w_i^2 \sigma_i^2 + 2 \sum_i \sum_j w_i w_j \sigma_i \sigma_j \rho_{ij}$$

,

where i<j. Alternatively the expression can be written as:

$$\sigma_p^2 = \sum_i \sum_j w_i w_j \sigma_i \sigma_j \rho_{ij}$$

,

where $\rho_{ij} = 1$ for i=j.

- **Portfolio volatility:**

$$\sigma_p = \sqrt{\sigma_p^2}$$

Two asset portfolio:-

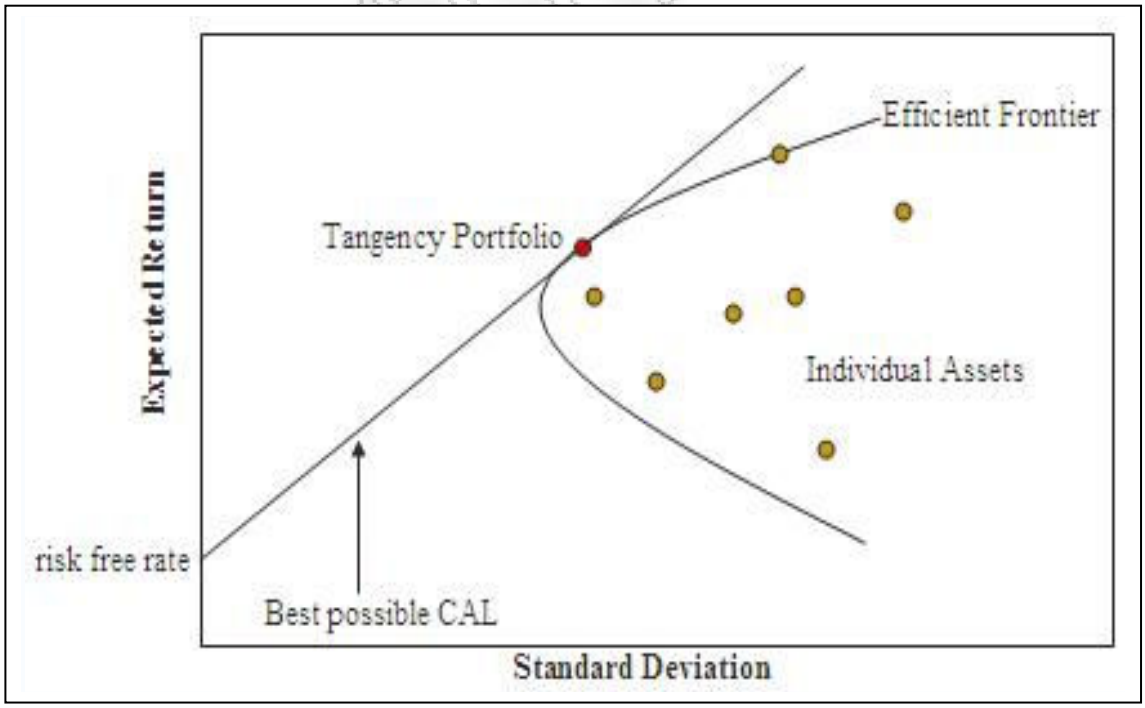
- **Portfolio return:**
$$\mathrm{E}(R_p) = w_A\mathrm{E}(R_A) + (1 - w_A)\mathrm{E}(R_B) = w_A\mathrm{E}(R_A) + w_B\mathrm{E}($$
- **Portfolio variance:** $\sigma_p^2 = w_A^2\sigma_A^2 + w_B^2\sigma_B^2 + 2w_Aw_B\sigma_A\sigma_B\rho_{AB}$

Portfolio volatility is a function of the correlation ρ of the component assets. The change in volatility is non-linear as the weighting of the component assets changes. An investor can reduce portfolio risk simply by holding combinations of instruments which are not perfectly positively correlated (correlation coefficient -1<(r)<1)). In other words, investors can reduce their exposure to individual asset risk by holding a diversified portfolio of assets. Diversification will allow for the same portfolio return with reduced risk. If all the assets of a portfolio have a correlation of +1, i.e., perfect positive correlation, the portfolio volatility (standard deviation) will be equal to the weighted sum of the individual asset volatilities. Hence the portfolio variance will be equal to the square of the total weighted sum of the individual asset volatilities. If all the assets have a correlation of 0, i.e., perfectly uncorrelated, the portfolio variance is the sum of the individual asset weights squared times the individual asset variance (and volatility is the square root of this sum). If correlation coefficient is less than zero (r=0), i.e., the assets are inversely correlated, the portfolio variance and hence volatility will be less than if the correlation coefficient is 0. Every possible asset combination can be plotted in risk-return space, and the collection of all such possible portfolios defines a region in this

space. The line along the upper edge of this region is known as the efficient frontier (sometimes "the Markowitz frontier").

Combinations along this line represent portfolios (explicitly excluding the risk-free alternative) for which there is lowest risk for a given level of return. Conversely, for a given amount of risk, the portfolio lying on the efficient frontier represents the combination offering the best possible return. Mathematically the Efficient Frontier is the intersection of the Set of Portfolios with Minimum Variance (MVS) and the Set of Portfolios with Maximum Return. Formally, the efficient frontier is the set of maximal elements with respect to the partial order of product order on risk and return, the set of portfolios for which one cannot improve both risk and return.

The efficient frontier is illustrated bellow, with return μ_p on the y-axis, and risk σ_p on the x-axis.



The efficient frontier will be convex – this is because the risk-return characteristics of a portfolio change in a non-linear fashion as its component weightings are changed. (As

described above, portfolio risk is a function of the correlation of the component assets, and thus changes in a non-linear fashion as the weighting of component assets changes.)

The efficient frontier is a parabola (hyperbola) when expected return is plotted against variance (standard deviation). The region above the frontier is unachievable by holding risky assets alone. No portfolios can be constructed corresponding to the points in this region. Points below the frontier are suboptimal. A rational investor will hold a portfolio only on the frontier. The risk-free asset is the (hypothetical) asset which pays a risk-free rate. It is usually provided by an investment in short-dated Government securities. The risk-free asset has zero variance in returns (hence is risk-free); it is also uncorrelated with any other asset (by definition: since its variance is zero). As a result, when it is combined with any other asset, or portfolio of assets, the change in return and also in risk is linear. Because both risk and return change linearly as the risk-free asset is introduced into a portfolio, this combination will plot a straight line in risk-return space. The line starts at 100% in the risk-free asset and weight of the risky portfolio = 0 (i.e., intercepting the return axis at the risk-free rate) and goes through the portfolio in question where risk-free asset holding = 0 and portfolio weight = 1. An investor adds leverage to the portfolio by borrowing the risk-free asset. The addition of the risk-free asset allows for a position in the region above the efficient frontier. Thus, by combining a risk-free asset with risky assets, it is possible to construct portfolios whose risk-return profiles are superior to those on the efficient frontier. An investor holding a portfolio of risky assets, with a holding in cash, has a positive risk-free weighting (a de-leveraged portfolio). The return and standard deviation will be lower than the portfolio alone, but since the efficient frontier is convex, this combination will sit above the efficient frontier – i.e., offering a higher return for the same risk as the point below it on the frontier. The investor who borrows money to fund his/her purchase of the risky assets

has a negative risk-free weighting – i.e., a leveraged portfolio. Here the return is geared to the risky portfolio.

This combination will again offer a return superior to those on the frontier. The efficient frontier is a collection of portfolios, each one optimal for a given amount of risk. A quantity known as the Sharpe ratio represents a measure of the amount of additional return (above the risk-free rate) a portfolio provides compared to the risk it carries. The portfolio on the efficient frontier with the highest Sharpe Ratio is known as the market portfolio, or sometimes the super-efficient portfolio; it is the tangency-portfolio in the above diagram. This portfolio has the property that any combination of it and the risk-free asset will produce a return that is above the efficient frontier—offering a larger return for a given amount of risk than a portfolio of risky assets on the frontier would. When the market portfolio is combined with the risk-free asset, the result is the Capital Market Line. All points along the CML have superior risk-return profiles to any portfolio on the efficient frontier. Just the special case of the market portfolio with zero cash weighting is on the efficient frontier. Additions of cash or leverage with the risk-free asset in combination with the market portfolio are on the Capital Market Line. All of these portfolios represent the highest possible Sharpe ratio.

$$\mathrm{CML} : E(r_C) = r_F + \sigma_C \frac{E(r_M) - r_F}{\sigma_M}.$$

Specific risk is the risk associated with individual assets - within a portfolio these risks can be reduced through diversification (specific risks "cancel out"). Specific risk is also

called diversifiable, unique, unsystematic, or idiosyncratic risk. Systematic risk (a.k.a. portfolio risk or market risk) refers to the risk common to all securities - except for selling short as noted below, systematic risk cannot be diversified away (within one market).

Within the market portfolio, asset specific risk will be diversified away to the extent possible. Systematic risk is therefore equated with the risk (standard deviation) of the market portfolio. Since a security will be purchased only if it improves the risk / return characteristics of the market portfolio, the risk of a security will be the risk it adds to the market portfolio. In this context, the volatility of the asset, and its correlation with the market portfolio, is historically observed and is therefore a given (there are several approaches to asset pricing that attempt to price assets by modeling the stochastic properties of the moments of assets' returns - these are broadly referred to as conditional asset pricing models). The (maximum) price paid for any particular asset (and hence the return it will generate) should also be determined based on its relationship with the market portfolio. The CAPM is a model which derives the theoretical required return (i.e., discount rate) for an asset in a market, given the risk-free rate available to investors and the risk of the market as a whole. The CAPM is a model for pricing an individual security or a portfolio. For individual securities, we make use of the security market line (SML) and its relation to expected return and systematic risk (beta) to show how the market must price individual securities in relation to their security risk class. The SML enables us to calculate the reward-to-risk ratio for any security in relation to that of the overall market. Therefore, when the expected rate of return for any security is deflated by its beta coefficient, the reward-to-risk ratio for any individual security in the market is equal to the market reward-to-risk ratio.

The CAPM is usually expressed:

$$\mathrm{E}(R_i) = R_f + \beta_i(\mathrm{E}(R_m) - R_f)$$

$$(\mathrm{E}(R_m) - R_f)$$

The model was introduced by Jack Treynor (1961, 1962),[1] William Sharpe (1964), John Lintner (1965a,b) and Jan Mossin (1966) independently, building on the earlier work of Harry Markowitz on diversification and modern portfolio theory. Sharpe, Markowitz and Merton Miller jointly received the Nobel Memorial Prize in Economics for this contribution to the field of financial economics. The CAPM assumes that the risk-return profile of a portfolio can be optimized - an optimal portfolio displays the lowest possible level of risk for its level of return. Additionally, since each additional asset introduced into a portfolio further diversifies the portfolio, the optimal portfolio must comprise every asset, (assuming no trading costs) with each asset value-weighted to achieve the above (assuming that any asset is infinitely divisible). All such optimal portfolios, i.e., one for each level of return, comprise the efficient frontier. Because the unsystematic risk is diversifiable, the total risk of a portfolio can be viewed as beta. Beta, is the measure of asset sensitivity to a movement in the overall market; Beta is usually found via regression on historical data. Betas exceeding one signify more than average "riskiness"; betas below one indicate lower than average. Once the expected return, $E(r_i)$, is calculated using CAPM, the future cash flows of the asset can be discounted to their present value using this rate to establish the correct price for the asset. A more risky stock will have a higher beta and will be discounted at a higher rate; less sensitive stocks will have lower betas and be discounted at a lower rate. In theory, an asset is correctly priced when its observed price is the same as its value calculated using the CAPM derived discount rate. If the observed price is higher than the

valuation, then the asset is overvalued; it is undervalued for a too low price. An investor might choose to invest a proportion of his or her wealth in a portfolio of risky assets with the remainder in cash - earning interest at the risk free rate (or indeed may borrow money to fund his or her purchase of risky assets in which case there is a negative cash weighting).

Here, the ratio of risky assets to risk free asset does not determine overall return - this relationship is clearly linear. It is thus possible to achieve a particular return in one of two ways:

-by investing all of one's wealth in a risky portfolio,

-or by investing a proportion in a risky portfolio and the remainder in cash.

For a given level of return, however, only one of these portfolios will be optimal (in the sense of lowest risk). Since the risk free asset is, by definition, uncorrelated with any other asset, the second option will generally have the lower variance and hence be the more efficient of the two. This relationship also holds for portfolios along the efficient frontier: a higher return portfolio plus cash is more efficient than a lower return portfolio alone for that lower level of return. For a given risk free rate, there is only one optimal portfolio which can be combined with cash to achieve the lowest level of risk for any possible return. This is the market portfolio.

Assumptions of CAPM

-All investors:

-Aim to maximize economic utility.

-Are rational and risk-averse.

-Are price takers, i.e., they cannot influence prices.

-Can lend and borrow unlimited under the risk free rate of interest.

-Trade without transaction or taxation costs.

-Deal with securities that are all highly divisible into small parcels.

-Assume all information is at the same time available to all investors.

-Perfect Competitive Markets

-The model assumes that asset returns are (jointly) normally distributed random variables. It is however frequently observed that returns in equity and other markets are not normally distributed. As a result, large swings (3 to 6 standard deviations from the mean) occur in the market more frequently than the normal distribution assumption would expect.

-The model assumes that the variance of returns is an adequate measurement of risk.

This might be justified under the assumption of normally distributed returns, but for general return distributions other risk measures will likely reflect the investors' preferences more adequately. Indeed risk in financial investments is not variance in itself; rather it is the probability of losing: it is asymmetric in nature.

-The model assumes that all investors have access to the same information and agree about the risk and expected return of all assets (homogeneous expectations assumption).

-The model assumes that the probability beliefs of investors match the true distribution of returns. A different possibility is that investors' expectations are biased, causing market prices to be informationally inefficient. This possibility is studied in the field of behavioral finance, which uses psychological assumptions to provide alternatives to the CAPM such as the overconfidence-based asset pricing model of Kent Daniel, David Hirshleifer, and Avanidhar Subrahmanyam (2001)

-The model does not appear to adequately explain the variation in stock returns. Empirical studies show that low beta stocks may offer higher returns than the model would predict. Some data to this effect was presented as early as a 1969 conference in Buffalo, New York in a paper by Fischer Black, Michael Jensen, and Myron Scholes.

Either that fact is itself rational (which saves the efficient-market hypothesis but makes CAPM wrong), or it is irrational (which saves CAPM, but makes the EMH wrong – indeed, this possibility makes volatility arbitrage a strategy for reliably beating the market).

-The model assumes that given a certain expected return investors will prefer lower risk (lower variance) to higher risk and conversely given a certain level of risk will prefer higher returns to lower ones. It does not allow for investors who will accept lower returns for higher risk. Casino gamblers clearly pay for risk, and it is possible that some stock traders will pay for risk as well.

-The model assumes that there are no taxes or transaction costs, although this assumption may be relaxed with more complicated versions of the model.

-The market portfolio consists of all assets in all markets, where each asset is weighted by its market capitalization. This assumes no preference between markets and assets for individual investors, and that investors choose assets solely as a function of their risk-return profile. It also assumes that all assets are infinitely divisible as to the amount which may be held or transacted.

-The market portfolio should in theory include all types of assets that are held by anyone as an investment (including works of art, real estate, human capital...) In

practice, such a market portfolio is unobservable and people usually substitute a stock index as a proxy for the true market portfolio. Unfortunately, it has been shown that this substitution is not innocuous and can lead to false inferences as to the validity of the CAPM, and it has been said that due to the inobservability of the true market portfolio, the CAPM might not be empirically testable. This was presented in greater depth in a paper by Richard Roll in 1977, and is generally referred to as Roll's critique.

-The model assumes just two dates, so that there is no opportunity to consume and rebalance portfolios repeatedly over time. The basic insights of the model are extended and generalized in the intertemporal CAPM (ICAPM) of Robert Merton, and the consumption CAPM (CCAPM) of Douglas Breeden and Mark Rubinstein.

-CAPM assumes that all investors will consider all of their assets and optimize one portfolio. This is in sharp contradiction with portfolios that are held by investors: humans tend to have fragmented portfolios (or rather multiple portfolios: for each goal one portfolio - see behavioral portfolio theory and Maslowian Portfolio Theory.

2. The debt-to-equity ratio (D/E) is a financial ratio indicating the relative proportion of equity and debt used to finance a company's assets.[1] This ratio is also known as Risk, Gearing or Leverage. It is equal to total debt divided by shareholders' equity. The two components are often taken from the firm's balance sheet or statement of financial position (so-called book value), but the ratio may also be calculated using market values for both, if the company's debt and equity are publicly traded, or using a combination of book value for debt and market value for equity.

3. The Modigliani-Miller theorem (of Franco Modigliani, Merton Miller) forms the basis for modern thinking on capital structure. The basic theorem states that, under a certain market price process (the classical random walk), in the absence of taxes, bankruptcy costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed. It does not matter if the firm's capital is raised by issuing stock or selling debt. It does not matter what the firm's dividend policy is. Therefore, the Modigliani-Miller theorem is also often called the capital structure irrelevance principle.

Modigliani was awarded the 1985 Nobel Prize in Economics for this and other contributions. Miller was awarded the 1990 Nobel Prize in Economics, along with Harry Markowitz and William Sharpe, for their "work in the theory of financial economics," with Miller specifically cited for "fundamental contributions to the theory of corporate finance." The theorem was originally proven under the assumption of no taxes. It is made up of two propositions which can also be extended to a situation with taxes. Consider two firms which are identical except for their financial structures. The first (Firm U) is unlevered: that is, it is financed by equity only. The other (Firm L) is levered: it is financed partly by equity, and partly by debt. The Modigliani-Miller theorem states that the value of the two firms is the same.

Proposition I: $V_U = V_L$ where V_U is the value of an unlevered firm = price of buying a firm composed only of equity, and V_L is the value of a levered firm = price of buying a firm that is composed of some mix of debt and equity. To see why this should be true, suppose an investor is considering buying one of the two firms U or L. Instead of purchasing the shares of the levered firm L, he could purchase the shares of firm U and borrow the same amount of money B that firm L does. The eventual returns to either of

these investments would be the same. Therefore the price of L must be the same as the price of U minus the money borrowed B, which is the value of L's debt. This discussion also clarifies the role of some of the theorem's assumptions. We have implicitly assumed that the investor's cost of borrowing money is the same as that of the firm, which need not be true in the presence of asymmetric information or in the absence of efficient markets.

Proposition II

$$k_e = k_0 + \frac{D}{E}(k_0 - k_d)$$

k_e is the required rate of return on equity, or cost of equity.

k_0 is the cost of capital for an all equity firm.

k_d is the required rate of return on borrowings, or cost of debt.

D / E is the debt-to-equity ratio.

A higher debt-to-equity ratio leads to a higher required return on equity, because of the higher risk involved for equity-holders in a company with debt. The formula is derived from the theory of weighted average cost of capital (WACC).

These propositions are true assuming the following assumptions:

no taxes exist, no transaction costs exist, and individuals and corporations borrow at the same rates.

These results might seem irrelevant (after all, none of the conditions is met in the real world), but the theorem is still taught and studied because it tells us something very important. That is, capital structure matters precisely because one or more of these

assumptions is violated. It tells us where to look for determinants of optimal capital structure and how those factors might affect optimal capital structure.

4. Hamada's equation is used to separate the financial risk of a levered firm from its business risk. The equation combines the Modigliani-Miller theorem with the capital asset pricing model. It is used to help determine the levered beta and, through this, the optimal capital structure of corporate firms. Hamada's equation relates the beta of a levered firm to that of its unlevered counterpart.

It has proved useful in several areas of finance, including capital structuring, portfolio management and risk management.

$\beta_L = \beta_U[1 + (1 - T)\varphi]$

where: β_L and β_U are the levered and unlevered betas, respectively, T the tax rate and φ the leverage, defined here as the ratio of debt, D, to equity, E, of the firm. The importance of Hamada's equation is that it separates the risk of the business, reflected here by the beta of an unlevered firm, β_U, from that of its levered part, β_L, which contains the financial risk of leverage. Apart from the effect of the tax rate, which is generally taken as constant, the discrepancy between the two betas can be attributed solely to how the business is financed.

5. **Autoregressive conditional heteroskedasticity** (ARCH, Engle (1982)) model considers the variance of the current error term to be a function of the variances of the previous time periods' error terms. ARCH relates the error variance to the square of a previous period's error. It is employed commonly in modeling financial time series that

exhibit time-varying volatility clustering, i.e. periods of swings followed by periods of relative calm.

let ϵ_t denote the returns (or return residuals, net of a mean process) and assume that $\epsilon_t = \sigma_t z_t$, where $z_t \overset{\text{iid}}{\sim} N(0,1)$ and where the series σ_t^2 are modeled by

$$\sigma_t^2 = \alpha_0 + \alpha_1 \epsilon_{t-1}^2 + \cdots + \alpha_q \epsilon_{t-q}^2 = \alpha_0 + \sum_{i=1}^{q} \alpha_i \epsilon_{t-i}^2$$

where $\alpha_0 > 0$ and $\alpha_i \geq 0,\ i > 0$.

An ARCH(q) model can be estimated using ordinary least squares. A methodology to test for the lag length of ARCH errors using the Lagrange multiplier test was proposed by Engle (1982). These steps show us how to do it:

a) Estimate the best fitting AR(q) model.

$$y_t = a_0 + a_1 y_{t-1} + \cdots + a_q y_{t-q} + \epsilon_t = a_0 + \sum_{i=1}^{q} a_i y_{t-i} + \epsilon_t$$

b) Obtain the squares of the error $\hat{\epsilon}^2$ and regress them on a constant and q lagged values:

$$\hat{\epsilon}_t^2 = \hat{\alpha}_0 + \sum_{i=1}^{q} \hat{\alpha}_i \hat{\epsilon}_{t-i}^2$$

where q is the length of ARCH lags.

c) The null hypothesis is that, in the absence of ARCH components, we have $\alpha_i = 0$ for all $i = 1, \cdots, q$. The alternative hypothesis is that, in the presence of ARCH

components, at least one of the estimated α_i coefficients must be significant. In a sample of T residuals under the null hypothesis of no ARCH errors, the test statistic TR^2 follows χ^2 distribution with q degrees of freedom. If TR^2 is greater than the Chi-square table value, we reject the null hypothesis and conclude there is an ARCH effect in the ARMA model. If TR^2 is smaller than the Chi-square table value, we do not reject the null hypothesis.

If an autoregressive moving average model (ARMA model) is assumed for the error variance, the model is a generalized autoregressive conditional heteroskedasticity (GARCH, Bollerslev(1986)) model. In that case, the GARCH(p, q) model (where p is the order of the GARCH terms σ^2 and q is the order of the ARCH terms ϵ^2) is given by

$$\sigma_t^2 = a_0 + a_1 e_{t-1}^2 + \cdots + a_q e_{t-q}^2 + \beta_1 \sigma_{t-1}^2 + \cdots + \beta_p \sigma_{t-p}^2$$

When testing for heteroskedasticity in econometric models, the best test is the White test. However, when dealing with time series data, the means to test for ARCH errors (as described above) and GARCH errors (below):

The lag length p of a GARCH(p, q) process is established in three steps:

a) Estimate the best fitting AR(q) model

$$y_t = a_0 + a_1 y_{t-1} + \cdots + a_q y_{t-q} + \epsilon_t = a_0 + \sum_{i=1}^{q} a_i y_{t-i} + \epsilon_t$$

b) Compute and plot the autocorrelations of ε^2 by

$$\rho = \frac{\sum_{t=i+1}^{T} (\hat{\epsilon}_t^2 - \hat{\sigma}_t^2)(\hat{\epsilon}_{t-1}^2 - \hat{\sigma}_{t-1}^2)}{\sum_{t=1}^{2} (\hat{\epsilon}_t^2 - \hat{\sigma}_t^2)^2}$$

c) The asymptotic, that is for large samples, standard deviation of ρ(i) is $1/\sqrt{T}$.

Individual values that are larger than this indicate GARCH errors. To estimate the total number of lags, use the Ljung-Box test until the value of these are less than, say, 10% significant. The Ljung-Box Q-statistic follows χ^2 distribution with n degrees of

freedom if the squared residuals ϵ_t^2 are uncorrelated. It is recommended to consider up to T/4 values of n. The null hypothesis states that there are no ARCH or GARCH errors. Rejecting the null thus means that there do exist such errors in the conditional variance.

Nonlinear GARCH (NGARCH) also known as Nonlinear Asymmetric GARCH(1,1) (NAGARCH) introduced by Engle and Ng in 1993.

$$\sigma_t^2 = \omega + \alpha(\epsilon_{t-1} - \theta\,\sigma_{t-1})^2 + \beta\,\sigma_{t-1}^2$$

$$\alpha,\ \beta \geq 0;\ \omega > 0.$$

For stock returns, parameter θ is usually estimated to be positive; in this case, it reflects the leverage effect, signifying that negative returns increase future volatility by a larger amount than positive returns of the same magnitude.

Integrated Generalized Autoregressive Conditional Heteroskedasticity IGARCH is a restricted version of the GARCH model, where the sum of the persistent parameters sum up to one, and therefore there is a unit root in the GARCH process. The condition

$$\sum_{i=1}^{p} \beta_i + \sum_{i=1}^{q} \alpha_i = 1$$

for this is:

Exponential general autoregressive conditional heteroskedastic (EGARCH) model by Nelson (1991) is another form of the GARCH model. Formally, an EGARCH(p,q):

$$\log \sigma_t^2 = \omega_t + \sum_{k=1}^{p} \beta_k g(Z_{t-k}) + \sum_{k=1}^{q} \alpha_k \log \sigma_{t-k}^2$$

where $g(Z_t) = \theta Z_t + \lambda(| Z_t | - E(| Z_t |))$, σ_t^2 is the conditional variance, ω, β, α, θ and λ are coefficients, and Z_t is a standard normal variable.

Since $\log \sigma_t^2$ may be negative there are no (fewer) restrictions on the parameters.

GARCH-in-mean (GARCH-M) model adds a heteroskedasticity term into the mean equation. It has the specification:

$$y_t = \beta x_t + \lambda \sigma_t + \epsilon_t$$

The residual ϵ_t is defined as

$$\epsilon_t = \sigma_t \times z_t$$

Quadratic GARCH (QGARCH) model by Sentana (1995) is used to model asymmetric effects of positive and negative shocks.

In the example of a GARCH(1,1) model, the residual process σ_t is

$$\epsilon_t = \sigma_t z_t$$

where z_t is i.i.d. and

$$\sigma_t^2 = K + \alpha \epsilon_{t-1}^2 + \beta \sigma_{t-1}^2 + \phi \epsilon_{t-1}$$

Similar to QGARCH, The Glosten-Jagannathan-Runkle GARCH (GJR-GARCH) model by Glosten, Jagannathan and Runkle (1993) also models asymmetry in GARCH process.

The suggestion is to model $\epsilon_t = \sigma_t z_t$ where z_t is i.i.d., and

$$\sigma_t^2 = K + \delta\, \sigma_{t-1}^2 + \alpha\, \epsilon_{t-1}^2 + \phi\, \epsilon_{t-1}^2 I_{t-1}$$

where $I_{t-1} = 0$ if $\epsilon_{t-1} \geq 0$, and $I_{t-1} = 1$ if $\epsilon_{t-1} < 0$.

Finally, the Threshold GARCH (TGARCH) model by Zakoian (1994) is similar to GJR GARCH, and the specification is on conditional standard deviation instead of conditional variance:

$$\sigma_t = K + \delta\, \sigma_{t-1} + \alpha_1^+\, \epsilon_{t-1}^+ + \alpha_1^-\, \epsilon_{t-1}^-$$

where $\epsilon_{t-1}^+ = \epsilon_{t-1}$ if $\epsilon_{t-1} > 0$, and $\epsilon_{t-1}^+ = 0$ if $\epsilon_{t-1} \leq 0$. Likewise, $\epsilon_{t-1}^- = \epsilon_{t-1}$ if $\epsilon_{t-1} \leq 0$, and $\epsilon_{t-1}^- = 0$ if $\epsilon_{t-1} > 0$.

3. PREVIOUS RESEARCH

1. Black (1976) and Christie (1982) found that when stock prices decline financial leverage raises, which results in an increase in equity's volatility. They observed a negative relationship between the level of volatility and stock returns. Black (1976) argued that a fall in a firm's stock value causes a rise in its debt-equity ratio and increases stock volatility. Black and Christie argued that variation over time in a firm's financial leverage could partially explain the negative correlation between returns and volatility. However, this leverage effect induces a negative correlation between returns and future volatility. The leverage effect implies that firms with high debt/equity ratios should exhibit a stronger negative relation between current returns and future volatility than firms with low debt/equity

ratios. Although Black found evidence supporting this implication, latter tests suggested controversial evidence: firms with high debt/equity ratios also exhibit a strong negative relation between returns and contemporaneous volatility. Because this following evidence cannot be explained by the leverage effect, there must be some other unknown force at work linking firm debt/equity ratios with the relation between returns and volatility. Many have suggested that the positive relation between returns and volatility can be explained by substituting a stock portfolio by a portfolio consisting of options. Since an option's price rises when the underlying asset volatility is reinforced, also the stock price should rise. However, this explanation implies that firms with higher debt/equity ratios should exhibit stronger positive correlations between stock returns and volatility than firms with lower debt/equity ratios. This implication was inconsistent with the results. At the aggregate return index level, there is a well-known negative contemporaneous relation between returns and volatility. The most important question raised by the results in this paper was why firm level and aggregate-level returns behave so differently.

2. French, Schwert and Stambaugh (1987) examined the inter-temporal relationship between volatility and expected returns for the U.S. market and found evidence that the expected market risk premium is positively related to volatility of stock returns. They found evidence that the expected market risk premium, the expected return on a stock portfolio minus the Treasury bill yield, is positively related to the future volatility of stock returns. Evidence also suggested that unexpected stock market returns are negatively related to the unexpected change in the volatility of stock returns. The negative relation provided indirect evidence of a positive relation between expected risk premiums and volatility. They used daily values of the Standard and Poor's (S&P) composite portfolio to

estimate the monthly standard deviation of stock market returns from January 1928 through December 1984. Firstly, by sampling the return process more frequently, they increased the accuracy of the standard deviation estimate for any particular interval. Secondly, they obtained a more precise estimate of the standard deviation for each month by using only returns within that month. Finally, they used non-overlapping samples of returns in order to estimate standard deviation, whereas adjacent rolling twelve-month estimators share eleven returns. Their paper suggests evidence of a positive relation between the expected risk premium on common stocks and the predictable level of volatility. The variability of realized stock returns is so large, however, that it is difficult to discriminate among alternate specification of this relation. They presented several estimates of the relation between the expected risk premium and the predicted volatility of NYSE common stocks using data from 1928 to1984. There is also strong negative relation between the unpredicted component of stock market volatility and excess holding period returns.

If expected risk premium is positively related to predictable volatility, then a positive change in contemporaneous volatility (and an upward revision in predicted volatility) increases expected risk premiums and lowers current stock prices. The magnitude of the negative relation between contemporaneous returns and changes in volatility is too large to be attributed solely to the effects of leverage discussed by Black (1976) and Christie (1982), so they interpreted this negative relation as evidence of a positive relation between expected risk premiums and ex-ante volatility.

3. Cheung and Ng (1992) using E-GARCH models also found evidence of negative relationship between the logarithmic change of one-day-ahead conditional volatility and stock returns. This effect is commonly known in the literature as the "leverage effect". Cheung and Ng (1992) analyzed the relation between stock price dynamics and firm size and found evidence that conditional future volatility of equity returns is negatively related to the level of stock price and that this effect is stronger for small firms with high financial leverage.

4. Duffee (1995) claims that positive stock returns correspond to an increase in current volatility. He tested this hypothesis and found a strong positive relation between firm stock returns and contemporaneous volatility, both using daily and monthly data. Two of the most popular explanations for this well-known relation are the leverage effect and time-varying risk premia. The leverage effect posits that a firm's stock price decline raises the firm's financial leverage, resulting in an increase in the volatility of equity (Black, Christie).

The popularity of this explanation is such that the term 'leverage effect' is often applied to the statistical relation itself, rather than the hypothesized explanation. The positive contemporaneous correlation between stock returns and stock return volatility, at firm level, stands in contrast to the well-known negative contemporaneous correlation between aggregate stock returns and aggregate stock return volatility (French, Schwert, and Stambaugh, 1987; Campbell and Hentschel, 1992). He examined this issue in the context of a multifactor model for stock returns. His results (which should be regarded as exploratory) show that stand-alone firm

returns are positively skewed, a market factor is negatively skewed, and a separate factor associated with small firms appears to be positively skewed. In his paper he followed much of the previous work in this area by using daily stock returns from the CRSP tape. One feature common to Black, Christie, Cheung and Ng was that they examined only firms that exist throughout their sample periods, with two effects that are relevant in this study. First, their samples were, on average, larger firms. Second, their samples could not capture the behavior of firm stock returns near the time that firms exit the CRSP tape. Firms disappear from the CRSP tape for reasons that may have implications for the relation between stock returns and volatility. Two examples are takeovers and bankruptcy. A company that is subject to a takeover could experience both a few large positive stock returns and high stock return volatility when news about the takeover is revealed. Stock returns of companies that go bankrupt could be characterized by large negative stock returns and high stock return volatility surrounding the events that drive the firm to bankruptcy. If so, a survivorship bias would remove firms with highly positively skewed returns and/or firms with highly negatively skewed returns. For his paper, Duffee, came up with a broader set of firms.

There are 2,617 firms with stock returns for January 3, 1977 on the CRSP Amex/NYSE daily tape. Of these firms, 2,494 have at least 12 months of observations after this date. For each firm, he constructed monthly stock returns and estimates of the standard deviation of monthly stock returns from January 1977 through the last month in which the firm appeared on the 1991 version of the CRSP tape (no later than December 1991). Monthly returns were defined as the sum of log daily returns in the month minus the one-month Treasury bill return. Standard deviations were estimated by the square root of the

sum of squared log daily returns in the month. (Results using demeaned daily returns were not materially different.) For the 3,600 cases (1.1% of all observations) in which a firm had more than 15 missing daily returns in a given month, the firm's return and standard deviation for that month were set to missing values. For the 23 cases in which firm daily returns through month were all zero, the firm's standard deviation for that month was set to missing instead of zero because he worked with log standard deviations. In this paper Duffee documents strong positive contemporaneous relation between firm stock returns and volatility. The relation between firm returns and one-period-ahead volatility is much weaker. It is positive at the daily frequency and negative at the monthly frequency. These relations largely explain the finding of Black, Christie, and Cheung and Ng that firm stock returns and changes in volatility are negatively correlated. Smaller firms exhibit a greater positive contemporaneous relation between returns and volatility than do larger firms. In addition, this contemporaneous relation is much greater for firms that are eventually delisted. Therefore, a survivorship bias has an important effect on the results of earlier empirical work. The behavior of returns near the time that a firm is delisted is responsible for much of the difference between delisted firms and survivors.

5. Theodossiou and Lee (1995) research the intertemporal relationship between risk and expected return for ten industrialized countries. The 2 authors use a GARCH in mean model and test for the conditional variance and expected market return relationship. They found no significant relationship between conditional volatility and expected return for any of these countries. The object of their paper was to provide additional

insight into the nature of stock market volatility and its relation to expected returns for ten industrialized countries. These countries were Australia, Belgium, Canada, France, Italy, Japan, Switzerland, The United Kingdom, the United States and (West) Germany. Significant conditional heteroskedasticity was found to be present in the return series of all ten markets, indicating the presence of volatility clustering, that is, the tendency of large stock price changes to be followed by large stock price changes, but unpredictable sign. No relationship is found between conditional volatility and expected returns in any of the ten national stock markets. Stock prices for markets of Australia, Belgium, Canada, France and Italy violated the Martingale model.

6. Mougoni and Whyte (1996) studied the relation between stock returns and volatility for the German and French equity markets. They found that the impact of volatility on stock returns is insignificant. This study utilized daily stock return data for the German and French equity markets. The data on the stock market indices were obtained from Morgan Stanley Capital International and span the period from December 31, 1979, to July 7, 1991, for a total of 3,023 observations.

The market coverage of the German and French indices was 61.2% and 56.3%, respectively. The empirical study used a version of the GARCH model Bollerslev (1986). Under the assumption of a conditional student t density function, the results indicated that stock returns in both countries might be described by the GARCH (1,1) model. The paper also examined the possibility that the

1987 US stock market crash affected the mean-variance relationship. Results indicated that the stock market crash affected the mean-variance relationship in both countries, and the model's fit insignificantly improved by explicitly taking the crash into account. Interestingly, the index of relative risk aversion is positive in both countries but is only significant in Germany when the stock market crash is incorporated into the analysis. Additionally, the impact of settlement procedures on returns and volatility is assessed. The results show that returns are significantly affected by delays resulting from settlement procedures in both countries, but volatility is only significantly affected by delays in France. The results also suggested that accounting for structural shifts is important in ascertaining the relationship between stock returns and volatility.

7. De Santis and Imrohoroglu (1997), studying the dynamics of expected returns and volatility for emerging markets, found that the level of volatility in emerging markets is considerably higher than that of mature markets. They found evidence suggesting that country-specific risk does not play any role in explaining conditional expected returns. They found clustering, predictability and persistence in conditional volatility. However, emerging markets exhibit higher conditional volatility and large price changes are more frequent than in mature markets (fat-tailed distribution).

Exposure to high country-specific risk does not appear to be rewarded with higher expected returns. They detected a risk-reward relation in Latin America but not in Asia, a point that controverts to relaxation of their full market segmentation. De Santis and Imrohoroglu focused their attention on the following questions. Does

stock return volatility change over time? If so, are volatility changes predictable? In addition, how frequent are large price changes in emerging stock markets? Third, what is the relation between market risk and expected returns? Fourth, has the liberalization of emerging financial markets affected return volatility? They proceeded in steps. First, they estimated a model that assumed full market segmentation while allowing time-varying volatility. In this assumption, they tested whether investors can successfully predict future changes in volatility and if they are rewarded with higher expected returns for being exposed to higher level of anticipated risk. Second, they relaxed the assumption of full segmentation and analyze a number of models that assumed different degrees of market integration. Also in this case they focused their attention on the relation between expected returns and market risk. Finally, they evaluated the claim that liberalization is not necessarily beneficial for many developing countries, because it may increase the volatility of their financial markets. The main results in the paper can be summarized as follows. They found strong evidence of time-varying volatility. From a qualitative point of view, their results resemble those of many studies on developed markets: periods of high or low volatility tend to cluster; volatility shows high persistence and is predictable. However, they found that volatility is considerably higher in emerging markets, both at the conditional and unconditional level. This implies that any prediction interval for future expected returns has very little information content. They also found support for a fat-tailed conditional distribution of returns, which implies that large changes in speculative prices are expected relatively often.

This evidence is much stronger for emerging markets than for developed markets. They did not find any relation between expected returns and countryspecific risk. This is surprising, since many of the markets that they analyzed were legally segmented, at

least for part of the sampling period. When they relaxed the assumption of segmentation, they found that systematic risk is priced in the Latin American markets, but not in the Asian markets.

8. Thomas C. Chiang and Shuh-Chyi Doong (2001) study the time-series behavior of stock returns for seven Asian stock markets. In most cases, higher average returns appeared to be associated with a higher level of volatility. Testing the relationship between stock returns and unexpected volatility, the evidence showed that four out of seven Asian stock markets have significant results. Further analyzing the relationship between stock returns and time-varying volatility by using Threshold Autoregressive GARCH(1,1)-in-mean specification indicated that the null hypothesis of no asymmetric effect on the conditional volatility is rejected for the daily data. However, the null cannot be rejected for the monthly data. The data used in this study were the daily stock-price indexes for seven Asian stock markets from January 1988 through June 1998. The data consisted of the Hang Seng Index (Hong Kong), the Kuala Lumpur Composite Price Index (Malaysia), the Manila SE CompositePrice Index (the Philippines), the Straits Times Industrial Index (Singapore), the Korea Composite Price Index (South Korea), the Stock Exchange of Thailand Daily Index (Thailand), the Taiwan Stock Exchange Weighted Stock Index (Taiwan), the Nikkei 225 Index (Japan), and the S&P 500 Index (United States).

The U.S. and Japan stock returns are included for comparison with the major developed markets. Daily stock returns were obtained by taking the logarithmic

difference of the daily stock index times 100. That is, Rt = 100 (log Pt,log Pt.1). To avoid a possible weekend effect, weekly indexes were derived by utilizing closing prices quoted on Thursday. If Thursday price data are not available, then Wednesday's closing prices are used. With respect to monthly data, the stock indexes were measured by the last trading day of each month. In this paper, they examined the empirical relationship between the market stock returns and volatility based on seven Asian stock market

indexes. Employing the methodology proposed by French et al. (1987), they found that four out of seven Asian stock markets have a significant relationship between stock returns and unexpected volatility. In general, unexpected volatility has a more significant effect on stock returns than does the expected component. Further analyzing the relationship between stock returns and time-varying volatility by using a TAR-GARCH (1,1)-in-mean model indicated that the GARCH parameters are highly significant in the daily return series for all of the Asian stock markets studied. With few exceptions, the evidence showed very little GARCH effect on monthly data. An important finding from their study was that the hypothesis of no asymmetric effect is strongly rejected at a high level of significance. Since the sum of estimated coefficients in the variance equation is close to unity, volatility evolution appears to display a persistent fashion. The evidence showed that the asymmetric effect disappeared if low frequency data were used.

9. Apergis and Eleptheriou (2001) investigate the volatility of the Athens Stock excess stock returns over the period 1990-1999 through the comparison of various conditional heteroskedasticity models. Empirical results indicate that there is significant evidence of asymmetry in stock returns, which is captured by using a quadratic GARCH specification model, while there is strong persistence of shocks into volatility. In their study they examined the behavior of the emerging Greek stock market volatility over the period 1990-1999. Various conditional volatility models were compared with regard to their ability to explain certain characteristics of the unconditional distribution of excess stock returns, such as leptokurtosis, skewness, and volatility clustering. When applied to daily ASE excess returns data, the asymmetric Q-GARCH(1,2) model provided a satisfactory description of the returns volatility. Moreover, the presence of persistence in volatility clustering implied the inefficiency of the ASE market, despite the large improvements in the Greek market over the recent years. Potential determinants of this inefficiency could be the lack of technical organization, resulting in the gradual spread of information reflected in stock prices, as well as the low daily trading volume (Dockery and Kavussanos 1996). This study considered daily stock prices (SP) of companies traded on the ASE. The ASE index is used as a proxy to measure stock prices. The time interval for this study has been chosen so as to concentrate on the behavior of the ASE market over the period January 1990 - July 1999, yielding 2,391 observations. Returns were calculated as the difference in the natural logarithm of the index value for two consecutive days.

10. Benjamin Miranda Tabak and Solange Maria Guerra (2002) examine the relationship between stock returns and volatility over the period of June 1990 to April 2002 for the Brazilian stock market. They studied firm-level relationship between stock returns and volatility for a sample of 25 time series for Brazilian stocks. Using Seemingly Unrelated Regressions(SUR) empirical evidence suggested that contemporaneous returns and volatilities are significantly and positively correlated while there is a negative relationship between changes in volatility and stock returns. Finally, the "leverage effect" seemed to hold for Brazilian stocks as shown by the results from an AR(1)-EGARCH(1,1) estimation. In this paper they tested whether there is a contemporaneous relation between stock returns and current and future volatility for Brazilian stocks, employing Seemingly Unrelated Regressions. The data covered the period of June 1990 to April 2002. A robustness test has been done analyzing two sub-periods. The first sub-period covers June 1990 to August 1994 while the second August 1994 to April 2002, to account for changes in stock market due to the Real stabilization plan, which has been successful in reducing inflation in Brazil. Empirical evidence suggested that as in the U.S. case studied by Duffee (1995) Brazilian stocks have a positive relationship between stock returns and contemporaneous volatility. Furthermore, using nonparametric techniques they tested for firm size, market capitalization and debt/equity ratios as potential explanatory variables for results found. This paper focused on this relationship using two methodologies. The relationship between stock returns and volatility was tested using single regressions methods for the most liquid stocks and Nelson's (1991) exponential GARCH, basically an AR(1)-E-GARCH(1,1) estimation.

Results found provide evidence that for the Brazilian stock market there is a strong relationship between stock returns and current volatility. They have tested the relationship between stock returns and current and future volatility. In line with the findings of Cheung and Ng (1992) and Duffee (1995) they found evidence suggesting that stock returns are significantly related to current volatility while the relation with future volatility is much weaker. They also found that there is a structural break in 1994 in the behavior of stock series dynamics. As coefficients on their regressions are unstable and this period has been identified as the major cause of instability. Therefore, they presented results for the period prior to August 1994 and afterwards. Evidence presented using both a SUR methodology and an AR(1)-EGARCH(1,1) estimation suggests that changes in volatility are negatively related to stock returns, a result that has been found in the literature examining this relationship since Black (1976). Many explanations have been given for this phenomenon. Duffee (1995) has argued that this relationship has been found to be negative due to a positive relation between current volatility and stock returns. This test has been applied to 25 Brazilian stocks and was found evidence that Duffee's hypothesis cannot be rejected. They finally used Spearman rank correlation (nonparametric statistic) to check whether the magnitude of the coefficients in the regressions relating volatility and stock returns and in the AR(1)-EGARCH(1,1) were related to variables such as firm size (measured by market capitalization and total assets) and debt/equity ratios. These correlations were not significant for the entire sample and for sub periods analyzed.

11. Hassan, Basher and Islam(2004) investigated the return behavior of the Dhaka Stock Exchange Index (DSEI), the time-varying risk-return relationship within a GARCH-type framework, and the persistence of shocks to volatility. The Bangladesh capital market has gone through major changes since 1990s during which the stock market was opened to foreign investment. The DSE returns show negative skewness, excess kurtosis and deviation from normality. DSE volatility tends to change over time, and is serially correlated. The results also show a significant relationship between conditional volatility and the DSE stock returns, but the risk-return parameter is found to be both negative and positive. While the negative sign of risk-return coefficient is not consistent with portfolio theory, it is theoretically possible in emerging markets as investors may not demand higher risk premia if they are better able to bear risk at times of particular volatility (Glosten et al., 1993). While the lock-in did not have any overall impact on stock volatility, the imposition of the circuit breakers seems to have significant influence over the volatility of realized returns. The negative risk-return relationship in the DSEI may result from the additional tax treatment of interest income and dividend income, and weak corporate profit performance. Besides, information asymmetry may play a crucial in influencing the distribution of returns among investors. Also, a number of companies do not hold annual general meetings as stipulated in company guidelines, nor they do declare regular dividends or invest the retained earnings in value maximizing investments. To them, the processing of new information in Bangladesh is rather weak, and may result from the persistently large number of non-actively traded shares, and the limited role of mutual funds and professionally managed investment and broker houses. To improve the operation of capital market the government should emphasize a policy of timely disclosure and dissemination of information to the stockholders and investors on the performance of listed companies.

4. EMPIRICAL METHODS

Many models of asset pricing relate expected return to some measure of risk. This implies that there is a linear relation between stock return and risk. Such a model is the Market Model:

$$R_i = a_i + b_i R_m + e_i \ , \ e_i \sim N(0,\sigma^2)$$

The Market Model is a less restrictive form of the previously mentioned SIM (the $cov(e_i, e_j) = 0$ assumption is relaxed which means that each stock's performance is not only related to the performance of a market index). The Market model has found increased usage in finance. In this dissertation the R_i is the logarithmic return of the stock ($\log \Delta(P - P_{(-1)})$ the R_m is represented by the logarithmic return of its index (dax30 or ftse100uk or frcac40) in order to overcome the fact that daily stock returns exhibit non normal distribution. I proceed with the least squares method to estimate the coefficients a_i and b_i. Ordinary least squares (OLS) is a technique for estimating the unknown parameters in a linear regression model. This method minimizes the sum of squared distances between the observed responses in a set of data, and the fitted responses from the regression model. The linear least squares computational technique provides simple expressions for the estimated parameters in an OLS analysis, and hence for associated statistical values such as the standard errors of the parameters.

OLS can mathematically be shown to be an optimal estimator in certain situations. OLS can be derived as a maximum likelihood estimator under the assumption that the data are normally distributed, however the method has good statistical properties for a much broader class of distributions.

Hence, $\Delta = \sum_{i=1}^{n}(R_i - \hat{a}_i - \hat{b}_i R_m)^2$ the least squares estimators of the Market Model parameters are the values $\hat{a}_i, \hat{b}_i$ that minimizeΔ. Also a good estimator for the error variance σ^2 is the mean square error: $s_e^2 = \sum_{i=1}^{n}(R_i - \hat{R}_m)^2/(n-2)$.

Assuming that the results of these OLS regressions exhibit evidence of heteroskedasticity I test the residuals in order to reject the null hypothesis of homoskedasticity by:

1. Estimating the AR(q) model.

2. Obtain the squares of the error $\widehat{e_t^2}$ and regress them on a constant and q lagged values:

$\widehat{e_t^2} = \hat{\alpha}_o + \sum_{i=1}^{q} \hat{\alpha}_i \hat{\epsilon}_{t-i}^2$ where q is the length of ARCH lags.

The null hypothesis is that, in the absence of ARCH components, we have $\alpha_i = 0$ for all $i = 1, \ldots, q$. The alternative hypothesis is that, in the presence of ARCH components, at least one of the estimated α_i coefficients must be significant. In a sample of T residuals under the null hypothesis of no ARCH errors, the test statistic TR^2 follows χ^2 distribution with q degrees of freedom. If TR^2 is greater than the Chi-square table value, we reject the null hypothesis and conclude there is an ARCH effect in the ARMA model. If TR^2 is smaller than the Chi-square table value, we do not reject the null hypothesis. During the testing the different number of lags varying from 4 to 36 did not change dramatically the result of always rejecting the null hypothesis, so only the results of the ten-lagged Arch-LM test is provided in the appendix in order to avoid prolixity.

Hence a GARCH modeling approach is suggested. This conclusion is strongly supported by a variety of well known stylized facts:

1. Time varying risk premia
2. Non constant variance
3. News tend to cluster in time
4. Asymmetric reactions (leverage effects)
5. Non linearity in the model
6. Leptokurtic distribution

The suggested model can be described as followed:

$R_t = a_t + b_t R_{m,t} + u_t$.. Market Model

$\mathrm{Var}(u_t|\Omega_{t-1}) = h_t$ ..conditional variance of u_t where $\Omega_{t-1}$is the information set available at t-1 and $h_t = \omega + \alpha_1 u^2_{t-1} + b_1 h_{t-1}$.

Moreover, the mean equation can be altered to an AR(1) form. Assuming that stock returns exhibit serial autocorrelation and one lag is sufficient to test volatility features due to GARCH model robustness, I remodel as followed:

$R_t = c + \Phi R_{t-1} + u_t$.. Ar(1) Model

$\mathrm{Var}(u_t|\Omega_{t-1}) = h_t$ ..conditional variance of u_t where $\Omega_{t-1}$is the information set available at t-1 and $h_t = \omega + \alpha_1 u^2_{t-1} + b_1 h_{t-1}$.

For both cases (MM and AR(1) I use the Maximum likelihood Estimation (MLE) to estimate the GARCH model. Using the Levenberg–Marquardt algorithm (LMA) which provides a numerical solution to the problem of minimizing a function, generally nonlinear, over a space of parameters of the function, I search for optimal parameter values while maximizing the log likelihood function.

$Log\ Lik = \sum_{t=1}^{T} log f(yt|\Omega_{t-1})$ where f(.) is the density function

These minimization problems arise especially in least squares curve fitting and nonlinear programming. The above mentioned models provides the values of the conditional volatility that we need in order to suggest volatility clustering and persistence and change in the level of volatility before and during the crisis period. So answers are given to the first question raised back in the dissertation introduction.

To answer the second question raised in the introduction, I find myself in need of another model specification. My goal is to search the relation between stock mean return and conditional variance as far as time varying risk premia are concerned.

Hence, I introduce an extended version of the GARCH model, the GARCH-M model (M=in mean):

Adding h_t in the mean equation where h_t: $\mathrm{Var}(u_t|\Omega_{t-1}) = h_t$ ..conditional variance of u_t where $\Omega_{t-1}$is the information set available at t-1 and $h_t = \omega + \alpha_1 u^2_{t-1} + b_1 h_{t-1}$.

and the mean equation in each case (MM or AR(1) changes to

$R_t = a_t + b_t R_{m,t} + \delta h_t + u_t$.. for the Market Model and

$R_t = c + \Phi R_{t-1} + \delta h_t + u_t$.. for the Ar(1) Model.

If δ>0 and statistically significant (t-test), there is a trade-off between stock return and conditional variance due to time varying risk premium that should change rapidly due to global crisis. That is what I expect from the data.

Last but not least, I want to capture any asymmetric effects recognized alongside the crisis. **Leverage effect**: Negative returns imply a larger proportion of debt through a reduced market value of the firm, which leads to a higher volatility. The risk, i.e. the volatility reacts first to larger changes of the market value, nevertheless it is empirically shown that there is a high volatility after smaller changes. On the other hand, Black said nothing about the effect of positive returns on the volatility. Although the positive returns cause smaller increases, they do cause an increase in the volatility. From an empirical point of view the volatility reacts asymmetrically to the sign of the shocks and therefore a number of parameterized extensions of the standard GARCH model have been suggested recently. One of the most important ones is the threshold GARCH (TGARCH) model. To model that effect I import the Leverage-GARCH (or Threshold-GARCH) which was introduced by Glosten,Jaganathan and Runkle in 1993.

I add an additional term to the GARCH model which appears only when $u_{t-1} < 0$ (negative shock):

$$h_t = \omega + \alpha_1 u^2_{t-1} + \beta_1 h_{t-1} + \Theta I_{t-1} u^2_{t-1}$$

$$where\ I_{t-1} = 1\ if\ \ u_{t-1} < 0\ and\ I_{t-1} = 0\ otherwise.$$

If $\Theta > 0$, we say that there is a leverage effect:

-Bad news ($u_{t-1} < 0$) has an effect of $(\alpha_1 + \Theta)\ u^2_{t-1}$ on the variance

-Good news ($u_{t-1} \geq 0$) has an effect of $\alpha_1 u^2_{t-1}$ on the variance

If $\Theta < 0$, vice versa.

One can test If $\Theta = 0$ or If $\Theta > 0$ (t-test).

Using the above mentioned methodology I am able to provide an answer to whether we can find asymmetric reaction due to price falls that the economic crisis has widely launched.

The above mentioned econometric models are programmed and executed via Eviews programming. The programming code is provided in the Appendix.

5. DATA

The goal is to examine the three major European markets as far as volatility persistence , time varying risk premium and leverage effects are concerned. Using the DataStream data base I gather the daily prices for both the stocks and the index of the most important and representative indexes of the three markets: the British FTSE100, the Deutsch DAX30 and the French FRCAC40. The period chosen is 1/8/1990 to 30/9/2009 and the sample is divided in two sub-periods:

A long period from 1/8/1990 to 31/10/2009 through which the economy appears to go upwards on average and a short period from 1/09/2007 to 30/09/2009 through which the economic crisis is triggered and the prices exhibit great drop. The indexes are needed to regress the market model. FRCAC40 in DataStream includes 39 stocks and FTSE100 contains 102 stocks.

THE FTSE 100 UK

The FTSE 100 Index, also called FTSE 100, FTSE, or, informally, the "footsie" is a share index of the 100 most highly capitalized UK companies listed on the London Stock Exchange. The index began on 3 January 1984 with a base level of 1000 the highest value reached to date is 6950.6, on 30 December 1999. It is the most widely used of the FTSE Group's indices, and is frequently reported (e.g. on UK news bulletins) as a measure of business prosperity. The index is maintained by the FTSE Group, an independent company which originated as a joint venture between the Financial Times and the London Stock Exchange. It is calculated real time and published every 15 seconds. FTSE 100 companies represent about 81% of the market capitalization of the whole London Stock Exchange. Even though the FTSE All-Share Index is more comprehensive, the FTSE 100 is by far the most widely used UK stock market indicator. Other related indices are the FTSE 250 Index (which lists the next largest 250 companies after the FTSE 100), the FTSE 350 Index (which is the aggregation of the FTSE 100 and 250), FTSE Small Cap Index and FTSE Fledgling Index. The FTSE All-Share aggregates the FTSE 100, FTSE 250 and FTSE Small Cap. As of 30 September 2008, the net market capitalization of FTSE 100 Index was £1,171 billion. The constituents of the index are determined quarterly, the largest companies in the FTSE 250 Index are promoted if their market capitalization would place them in the top ninety firms of the FTSE 100 Index.

As of December 2008, the threshold for inclusion is about £1.7 billion. As of December 2008, the five largest constituents of the index were BP, HSBC Holdings, Vodafone Group, GlaxoSmithKline, and Royal Dutch Shell which were each valued at more than £60 billion. Component companies must meet a number of requirements set out by the FTSE Group, including having a full listing on the London Stock Exchange with a Sterling or Euro denominated price on SETS, and meeting certain tests on nationality, free float, and liquidity. With only historical exceptions, the companies listed on this index must by law include the abbreviation 'plc' at the end of their name, indicating their status of public limited company. Trading lasts from 08:00–16:29 (when the closing auction starts), and closing values are taken at 16:35.

FTSE 100 *Weighting*

They involve the total market capitalization of the companies weighted by their effect on the index, so the larger stocks would make more of a difference to the index as compared to a smaller market cap company. This is also called the free float method. The basic formula for any index is (be it capitalization weighted or any other stock index): Index level= Σ(Price of stock* Number of shares)*Free float factor/ Index Divisor. The Free float Adjustment factor represents the proportion of shares that is floated as a percentage of issued shares and then its rounded up to the nearest multiple of 5% for calculation purposes. To find the free-float capitalization of a company, first find its market cap (number of outstanding shares x share price) then multiply its free-float factor. The free-float method, therefore, does not include restricted stocks, such as those held by company insiders.

FTSE 100 *Constituents*

There are 100 companies in the index, but a total of 102 listings as two classes of shares are included for Royal Dutch Shell and Schroders.3i,Admiral Group, Aggreko, Alliance Trust, AMEC, Anglo American, Antofagasta, Associated British Foods, AstraZeneca, Autonomy Corporation, Aviva, BAE Systems, BG Group, BHP Billiton, BP, BT Group, Barclays, British Airways, British American Tobacco, British Land Company ,British Sky Broadcasting Group, Bunzl, Burberry Group, Cable & Wireless, Cadbury, Cairn Energy, Capita Group, Carnival, Centrica, Cobham, Compass Group, Diageo, Eurasian Natural Resources Corporation, Experian, Fresnillo, G4S, GlaxoSmithKline, HSBC, Hammerson, Home Retail Group, ICAP, Imperial Tobacco, Inmarsat, InterContinental Hotels Group, International Power, Intertek Group, Invensys, Johnson Matthey, Kazakhmys, Kingfisher, Land Securities Group, Legal & General, Liberty International, Lloyds Banking Group, London Stock Exchange Group, Lonmin, Man Group, Marks & Spencer, Wm Morrison Supermarkets, National Grid, Next, Old Mutual, Pearson, Petrofac, Prudential, RSA Insurance Group, Randgold Resources, Reckitt Benckiser, Reed Elsevier, Resolution, Rexam, Rio Tinto Group, Rolls-Royce Group, Royal Bank of Scotland Group, Royal Dutch Shell, SABMiller, Sage Group, J Sainsbury, Schroders, Scottish and Southern Energy, SEGRO, Serco Group, Severn Trent, Shire Pharmaceuticals Group, Smith & Nephew, Smiths Group, Standard Chartered Bank, Standard Life, Tesco, Thomas Cook Group, TUI Travel, Tullow Oil, Unilever, United Utilities, Vedanta Resources, Vodafone ,WPP Group, Whitbread, Wolseley, Xstrata.

The CAC 40

is a benchmark French stock market index. The index represents a capitalization-weighted measure of the 40 most significant values among the 100 highest market caps on the Paris Bourse (now Euronext Paris).

It is one of the main national indices of the pan-European stock exchange group Euronext alongside Brussels' BEL20, Lisbon's PSI-20 and Amsterdam's AEX. The CAC 40 takes its name from the Paris Bourse's early automation system Cotation Assistée en Continu (Continuous Assisted Quotation). Its base value of 1,000 was set on 31 December 1987, equivalent to a market capitalization of 370,437,433,957.70 French francs. In common with many major world stock markets, its all-time high to date (6922.33 points) was reached at the peak of the dot-com bubble in September 2000. In 1 December 2003, the index's weighting system switched from being dependent on total market capitalization to free float market cap only, in line with other leading indices. The CAC 40 index composition is reviewed quarterly by an independent Index Steering Committee (French: Conseil Scientifique). If any changes are made, they are effected a minimum of two weeks after the review meeting. At each review date, the companies listed on Euronext Paris are ranked according to free float market capitalization and share turnover over the prior 12 months. From the top 100 companies in this ranking, forty are chosen to enter the CAC 40 such that it is "a relevant benchmark for portfolio management" and "a suitable underlying asset for derivatives products". If a company has more than one class of shares traded on the exchange, only the most actively traded of these will be accepted into the index (generally this will be the ordinary share).

FR CAC 40 *Weighting*

The CAC 40 is a market value-weighted index. The number of issued shares (used to calculate the market cap and hence the index weight) of a company is reviewed quarterly, on the third Friday of March, June, September and December. Since December 2003, the index weightings of companies in the index have been capped at 15% at each quarterly index review, but these range freely with share price subsequently. A capping factor is used to limit the weights to 15% (if necessary), and is reviewed annually by the Index Steering Committee on the third Friday of September.

Although the CAC 40 is almost exclusively composed of French-domiciled companies, about 45% of its listed shares are owned by foreign investors, more than any other main European index. German, Japanese, American and British investors are amongst the most significant holders of CAC 40 shares. This large percentage is due to the fact that CAC 40 companies are more international, or multinational, than any other European market. CAC 40 companies conduct over two thirds of their business and employ over two thirds of their workforce outside France. The index consists of the following companies as of the quarterly update effective 21 September, 2009. The index was left unchanged at the December 2009 review: Accor, Air Liquide, Alcatel-Lucent, Alstom, , ArcelorMittal, AXA, BNP Paribas, Bouygues, Capgemini, Carrefour, Crédit Agricole, Dexia, EADS, EDF, Essilor, France Télécom, GDF Suez, Groupe Danone, L'Oréal, Lafarge, Lagardère, LVMH, ,Michelin, Pernod Ricard, PSA Peugeot Citroën, PPR, Renault, Saint-Gobain, Sanofi-Aventis, Schneider Electric, Société Générale, STMicroelectronics, Suez Environnement, Technip, Total, Unibail-Rodamco, Vallourec, Veolia Environnement, Vinci, Vivendi.

DAX 30

The DAX (Deutscher Aktien IndeX, formerly Deutscher Aktien-Index (German stock index)) is a blue chip stock market index consisting of the 30 major German companies trading on the Frankfurt Stock Exchange. Prices are taken from the electronic Xetra trading system. According to Deutsche Boerse, the operator of Xetra, DAX measures the performance of the Prime Standard's 30 largest German companies in terms of order book volume and market capitalization. The L-DAX Index is an indicator of the German benchmark DAX index's performance after the Xetra electronic-trading system closes based on the floor trading at the Frankfurt Stock Exchange. The L-DAX Index basis is the "floor" trade (Parketthandel) at the Frankfurt stock exchange; it is computed daily between 09:00 and 17:30 Hours CET.

The L-DAX index (Late DAX) is calculated from 17:30 to 20:00 CET. The Eurex, a European electronic futures and options exchange based in Zurich, Switzerland with a subsidiary in Frankfurt, Germany, offers options (ODAX) and Futures (FDAX) on the DAX from 08:00 to 22:00 CET. The Base date for the DAX is 30 December, 1987 and it was started from a base value of 1,000. The Xetra system calculates the index after every 1 second since January 1, 2006.

Components

Adidas, Allianz, BASF, Bayer, Beiersdorf, BMW, Commerzbank, Daimler, Deutsche Bank, Deutsche Börse, Deutsche Lufthansa , Deutsche Post, Deutsche Telekom, E.ON, Fresenius, Fresenius Medical Care, Henkel, Infineon Technologies, K+S, Linde, MAN, Merck, Metro, Munich Re,RWE, Salzgitter SAP , Siemens, ThyssenKrupp, Volkswagen Group.

Using the Eviews econometric program, the day to day prices are switched to logarithmic daily returns creating a sample of 5001 observations. Due to insufficient data some stocks should be excluded from the sample.

Specifically, during the Arch-LM test in the Eviews programming environment the stock of SUEZ ENVIRONNEMENT which goes public at 21/07/2008 the stock of EURASIAN NATRES.CORP with obs. starting on 6/12/2007 and the stock of FRESNILLO starting 8/05/2008 could not be tested for heteroskedasticity because there were no residuals during the first sub period. In order to ensure symmetry between the two sup-periods I excluded these stocks from the sample.

6. RESULTS

1. I am to answer the question of whether the crisis ejected a period of persisting high volatility or not. Firstly, I should present the results of the ARCH LM test in which I seek evidence for heteroskedasticity. The test is applied for both sub-periods and mean models (Market model and AR(1) and for each market. Bellow I demonstrate the results of the ARCH LM test:

F-PROB=probability measure of F-statistic

OBS*RSQ=observations R-squared

R-SQ=R squared

SSR=sum squared residuals

LOGL=log likelihood

TABLE 1: ARCH LM TEST

STOCK	GREAT BRITAIN MARKET (FTSE100UK) MARKET MODEL									
	GB BEFORE CRISIS LEAST SQUARES					GB BEFORE CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADMIRAL GROUP	0.000000	0.000000	0.113618	0.000249	4.576.277	0.137336	0.137663	0.019616	2.984.641	-1.593.390
ALLIANCE TRUST	0.000000	0.000000	0.089226	4.58E-05	34584.48	0.411607	0.411246	0.002325	23216.83	-9.984.682
AMEC	0.000000	0.000000	0.028420	0.011495	22297.23	0.004675	0.004730	0.005699	38125.91	-11087.57
ANGLO AMERICAN	0.000000	0.000000	0.200494	0.014933	21134.56	0.061710	0.061848	0.004059	34206.74	-10636.31
ANTOFAGASTA	0.000000	0.000000	0.039577	0.002851	25397.50	0.898843	0.898520	0.001099	40257.13	-11208.52
ASSOCIATED BRIT.FOODS	0.000000	0.000000	0.089611	0.001965	26224.40	0.009983	0.010066	0.005215	30357.78	-10580.97
ASTRAZENECA	0.000000	0.000000	0.035419	0.001577	21950.65	0.685569	0.684933	0.002001	29254.88	-9.094.864
AUTONOMY CORP.	0.013205	0.013446	0.012595	0.166373	5.709.299	0.987091	0.986930	0.001544	31532.98	-5.069.803
AVIVA	0.000000	0.000000	0.075839	0.001604	26675.99	0.107529	0.107623	0.003537	21732.61	-9.837.790
BAE SYSTEMS	0.002691	0.002730	0.006042	0.117184	17134.55	0.765098	0.764599	0.001479	62743.54	-12195.24
BARCLAYS	0.000000	0.000000	0.087787	0.001058	27602.08	0.308854	0.308636	0.002621	23953.92	-10054.18
BG GROUP	0.000000	0.000000	0.075794	0.001463	26881.14	0.103269	0.103368	0.003569	18811.65	-9.516.855
BHP BILLITON	0.000000	0.000000	0.076875	0.003064	14205.19	0.801246	0.800451	0.002352	9.910.756	-5.468.422
BP	0.000000	0.000000	0.042785	0.001125	27464.71	0.144791	0.144834	0.003297	28994.82	-10478.83
BRITISH AIRWAYS	0.000000	0.000000	0.083439	0.004741	24266.41	0.000692	0.000707	0.006860	25733.88	-10213.55
BRITISH AMERICAN TOBACCO	0.000000	0.000000	0.011361	0.013953	21866.35	0.986699	0.986633	0.000619	97939.10	-13185.34
BRITISH LAND	0.000000	0.000000	0.076855	0.002399	25781.18	0.599401	0.598882	0.001868	29307.18	-10502.66

RITISH SKY BCAST.GROUP	0.000000	0.000000	0.090472	0.005839	17240.09	0.997934	0.997917	0.000529	65664.67	-9.646.011
BT GROUP	0.000000	0.000000	0.065609	0.003689	24824.16	0.790748	0.790269	0.001415	26774.26	-10301.67
BUNZL	0.000000	0.000000	0.063782	0.002540	25653.77	0.000053	0.000055	0.008338	33163.19	-10777.50
BURBERRY GROUP	0.000000	0.000000	0.217407	0.000651	7.781.088	0.481335	0.479873	0.007183	7.802.226	-3.065.530
CABLE & WIRELESS	0.000101	0.000105	0.007970	0.123562	17016.72	0.989857	0.989805	0.000578	97368.81	-13172.35
CADBURY	0.000000	0.000000	0.065881	0.000939	27866.04	0.918231	0.917951	0.001028	31985.73	-10697.12
CAIRN ENERGY	0.000000	0.000000	0.015308	0.049118	19067.95	0.995431	0.995405	0.000475	198384.5	-14754.82
CAPITA GROUP	0.000000	0.000000	0.112122	0.005887	23785.03	0.350304	0.350025	0.002495	36499.47	-10990.64
CARNIVAL	0.000000	0.000000	0.219485	0.003369	9.202.321	0.996626	0.996578	0.001106	19007.81	-4.633.441
CENTRICA	0.000000	0.000000	0.072270	0.001756	15648.56	0.498357	0.497622	0.003419	17142.00	-6.399.888
COBHAM	0.000000	0.000000	0.027480	0.001401	26977.22	0.695828	0.695299	0.001645	49927.89	-11687.22
COMPASS GROUP	0.984336	0.984138	0.001687	0.007473	8.103.867	0.999991	0.999991	0.000316	119588.4	-6.045.878
DIAGEO	0.000000	0.000000	0.062509	0.001640	26626.48	0.987020	0.986956	0.000615	52394.04	-11794.42
EURASIAN NATRES.CORP.	NA (INSUFFICIENT DATA)									
EXPERIAN	0.029825	0.032519	0.087428	1.35E-05	1.551.634	0.932041	0.926969	0.019599	4.637.192	-4.006.188
FRESNILLO	NA (INSUFFICIENT DATA)									
FRIENDS PROVIDENT GROUP	0.000000	0.000000	0.083879	0.000859	9.248.071	0.316297	0.315660	0.007247	11345.33	-3.827.848
G4S	0.000000	0.000000	0.038847	0.009270	14335.36	0.999700	0.999697	0.000388	67581.09	-8.727.758
GLAXOSMITHKLINE	0.000000	0.000000	0.011449	0.001841	26370.09	0.713810	0.713285	0.001603	34933.76	-10893.15
HAMMERSON	0.000000	0.000000	0.041446	0.001228	27269.42	0.035601	0.035735	0.004357	24769.25	-10128.60
HOME RETAIL GROUP	0.000000	0.000000	0.028463	0.005101	24103.75	0.219453	0.219378	0.002941	38077.54	-11084.75
HSBC HDG. (ORD $0.50)	0.000000	0.000000	0.067430	0.000552	25504.46	0.002127	0.002164	0.006980	21216.72	-8.909.088
ICAP	0.000000	0.000000	0.025312	0.001331	13152.73	0.797421	0.796500	0.002723	21028.56	-5.776.042
IMPERIAL TOBACCO GP.	0.000000	0.000000	0.067045	0.000928	17169.71	0.818421	0.817715	0.002103	18300.86	-6.673.600
INMARSAT	0.010637	0.011332	0.040363	0.000113	3.562.266	0.717508	0.713363	0.012593	2.333.322	-1.203.976
ICTL.HTLS.GP.	0.018708	0.019142	0.018596	0.000193	7.304.883	0.862097	0.860573	0.004743	7.680.678	-2.714.326
INTERNATIONAL POWER	0.209413	0.209353	0.003092	0.013065	21152.85	1.000.000	1.000.000	0.000057	248951.9	-14795.08
INTERTEK GROUP	0.000277	0.000303	0.023956	0.000226	8.726.083	0.892102	0.891000	0.003662	6.331.531	-2.985.757
INVENSYS	0.000516	0.000528	0.007034	0.216659	15768.04	0.999966	0.999966	0.000159	115851.9	-13558.81
JOHNSON MATTHEY	0.000000	0.000000	0.073732	0.001868	26337.40	0.382332	0.382009	0.002404	35675.03	-10939.84
KAZAKHMYS	0.000000	0.000001	0.097729	0.000175	2.916.220	0.874715	0.871284	0.010876	1.351.174	-9.380.766
KINGFISHER	0.000000	0.000000	0.082329	0.002110	26066.28	0.244230	0.244115	0.002844	18543.20	-9.484.897
LAND SECURITIES GROUP	0.000000	0.000000	0.015035	0.000447	29514.73	0.979946	0.979853	0.000689	27334.19	-10347.69
LEGAL & GENERAL	0.000000	0.000000	0.055883	0.001399	26980.78	0.071098	0.071227	0.003855	21359.91	-9.799.327
LIBERTY INTL.	0.000000	0.000000	0.018555	0.000467	25736.08	0.500274	0.499759	0.002380	39370.20	-10098.30
LLOYDS BANKING GROUP	0.000000	0.000000	0.084224	0.000880	18544.26	0.078270	0.078452	0.005540	14179.96	-6.647.574
LONDON STOCK EX.GROUP	0.984228	0.984044	0.001563	0.009173	8.647.425	0.999212	0.999200	0.000762	65508.12	-5.910.985
LONMIN	0.000000	0.000000	0.058698	0.017538	21357.87	0.117988	0.118069	0.003464	37796.78	-11068.30
MAN GROUP	0.000000	0.000000	0.049329	0.001130	20247.59	0.720297	0.719605	0.002104	19181.39	-7.687.032
MARKS & SPENCER GROUP	0.000000	0.000000	0.040169	0.003757	24783.80	0.177571	0.177564	0.003126	48113.40	-11604.91
MORRISON(WM)SPMKTS.	0.000000	0.000000	0.021914	0.004409	24427.61	0.962753	0.962597	0.000816	69802.55	-12432.30
NATIONAL GRID	0.000000	0.000000	0.024239	0.001173	18197.96	0.942670	0.942353	0.001347	23936.20	-7.469.644
NEXT	0.000000	0.000000	0.120037	0.023409	20715.79	0.759433	0.758930	0.001493	54525.95	-11883.10
OLD MUTUAL	0.000000	0.000000	0.063462	0.000708	12765.69	0.881891	0.881140	0.002434	10148.00	-4.659.450
PEARSON	0.000000	0.000000	0.126106	0.002720	25502.21	0.003484	0.003529	0.005883	19677.01	-9.616.856
PETROFAC	0.428187	0.424725	0.020821	0.000364	2.755.956	0.866844	0.863312	0.011032	2.607.425	-1.103.094

PRUDENTIAL	0.000000	0.000000	0.040922	0.002147	26027.92	0.114024	0.114110	0.003491	25926.92	-10230.17
RANDGOLD RESOURCES	0.000000	0.000000	0.077065	0.126540	9.398.587	0.000996	0.001029	0.011162	57669.91	-7.826.663
RECKITT BENCKISER GROUP	0.000000	0.000000	0.052226	0.003813	24750.51	0.596376	0.595859	0.001875	32101.60	-10705.16
REED ELSEVIER	0.000000	0.000000	0.027115	0.003618	24867.42	0.829949	0.829512	0.001311	41103.70	-11254.79
RENTOKIL INITIAL	0.000000	0.000000	0.041908	0.006481	23571.17	0.624542	0.624015	0.001810	69382.16	-12418.86
REXAM	0.000000	0.000000	0.050210	0.002748	25478.72	0.958821	0.958653	0.000839	80662.49	-12753.82
RIO TINTO	0.000000	0.000000	0.110747	0.001197	27326.07	0.001412	0.001437	0.006435	18574.22	-9.488.613
ROLLS-ROYCE GROUP	0.000000	0.000000	0.013402	0.008770	22898.88	0.735285	0.734768	0.001552	56354.50	-11956.45
ROYAL BANK OF SCTL.GP.	0.000000	0.000000	0.057047	0.002104	26073.28	0.071734	0.071863	0.003849	32463.16	-10730.06
ROYAL DUTCH SHELL A(LON)	0.539671	0.535671	0.016536	4.50E-06	4.273.448	0.575270	0.571088	0.015855	1.338.859	-1.014.132
ROYAL DUTCH SHELL B	0.000000	0.000000	0.118913	0.000600	28863.08	0.001858	0.001888	0.006269	21640.57	-9.828.352
RSA INSURANCE GROUP	0.000000	0.000000	0.046696	0.010863	22422.85	0.889673	0.889331	0.001131	56794.26	-11973.73
SABMILLER	0.000000	0.000000	0.083670	0.000926	13091.62	0.941973	0.941532	0.001867	18057.44	-5.456.979
SAGE GROUP	0.000000	0.000000	0.047838	0.012388	22130.74	0.976044	0.975935	0.000723	134839.6	-13896.28
SAINSBURY (J)	0.000000	0.000000	0.084232	0.002323	25852.86	0.931845	0.931599	0.000972	56181.05	-11949.59
SCHRODERS	0.000000	0.000000	0.096081	0.003154	25172.47	0.082370	0.082491	0.003744	28401.73	-10432.88
SCHRODERS NV	0.000000	0.000000	0.116381	0.005012	24142.80	0.285599	0.285418	0.002697	41218.36	-11260.98
SCOT.& SOUTHERN ENERGY	0.000000	0.000000	0.063989	0.000915	26380.58	0.477674	0.477216	0.002273	26844.42	-9.890.047
SEGRO	0.000000	0.000000	0.056645	0.001909	26289.51	0.994458	0.994428	0.000498	45314.48	-11471.65
SERCO GROUP	0.000000	0.000000	0.088116	0.004396	24434.18	0.634731	0.634203	0.001787	81374.11	-12773.35
SEVERN TRENT	0.000000	0.000000	0.040603	0.001672	26583.32	0.029948	0.030077	0.004478	30716.58	-10607.10
SHIRE	0.000000	0.000000	0.047949	0.035277	12779.05	1.000.000	1.000.000	0.000071	186149.2	-10454.69
SMITH & NEPHEW	0.000000	0.000000	0.060643	0.001746	26487.73	0.294479	0.294284	0.002668	28406.21	-10433.23
SMITHS GROUP	0.000000	0.000000	0.060846	0.002211	25962.22	0.679064	0.678533	0.001684	43335.47	-11372.36
STANDARD CHARTERED	0.000000	0.000000	0.050577	0.002723	25499.01	0.057259	0.057395	0.004016	26552.30	-10283.16
STANDARD LIFE	0.000000	0.000000	0.198369	1.64E-05	2.007.957	0.128864	0.129942	0.051926	7.757.286	-5.541.608
TESCO	0.000000	0.000000	0.071875	0.000961	27815.79	0.024605	0.024727	0.004614	18846.60	-9.520.982
THOMAS COOK GROUP	0.999923	0.999920	0.001236	0.004411	3.127.042	0.999069	0.999031	0.002140	28242.74	-2.248.568
TUI TRAVEL	0.003441	0.003486	0.005891	0.041851	19423.92	0.999940	0.999939	0.000180	172075.5	-14438.48
TULLOW OIL	0.000000	0.000000	0.056532	0.029880	20173.07	0.016865	0.016972	0.004869	43871.20	-11399.67
UNILEVER (UK)	0.000000	0.000000	0.039687	0.001551	26751.49	0.040671	0.040807	0.004263	39029.18	-11139.64
UNITED UTILITIES GROUP	0.000000	0.000000	0.031476	0.002077	26101.22	0.992707	0.992668	0.000532	65090.41	-12276.89
VEDANTA RESOURCES	0.000104	0.000122	0.036298	0.000597	5.534.917	0.920317	0.919040	0.004712	3.350.977	-1.971.471
VODAFONE GROUP	0.000000	0.000000	0.058183	0.002196	25977.29	0.548812	0.548320	0.001986	24408.80	-10096.00
WHITBREAD	0.000000	0.000000	0.056391	0.001042	27635.72	0.050634	0.050771	0.004106	27157.24	-10333.25
WOLSELEY	0.000000	0.000000	0.058763	0.002961	25313.07	0.263316	0.263170	0.002774	27909.44	-10394.00
WPP	0.000000	0.000000	0.035584	0.715702	13111.09	0.000000	0.000000	0.107223	73418.83	-12544.60

	GB DURING CRISIS LEAST SQUARES					GB DURING CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADMIRAL GROUP	0.000000	0.000000	0.104298	0.003402	2.431.553	0.991810	0.991443	0.004616	5.751.966	-1.390.238
ALLIANCE TRUST	0.000000	0.000000	0.183788	3.60E-05	3.644.033	0.061125	0.062272	0.033003	1.613.533	-1.051.486
AMEC	0.000000	0.000000	0.127902	0.000592	2.897.447	0.671567	0.667099	0.014273	1.701.254	-1.065.594
ANGLO AMERICAN	0.021084	0.022073	0.039142	0.001666	2.621.880	0.975331	0.974384	0.006132	3.114.875	-1.226.779
ANTOFAGASTA	0.000000	0.000001	0.089982	0.001668	2.621.543	0.706710	0.702281	0.013590	1.433.265	-1.019.913
ASSOCIATED BRIT.FOODS	0.070682	0.071786	0.032117	0.000102	3.365.121	0.095402	0.096321	0.030239	1.946.987	-1.101.549

ASTRAZENECA	0.000000	0.000000	0.116557	0.000195	3.193.260	0.603562	0.599201	0.015579	2.062.967	-1.116.970
AUTONOMY CORP.	0.711370	0.706951	0.013498	0.001433	2.662.062	0.989657	0.989206	0.004893	3.388.472	-1.249.216
AVIVA	0.000034	0.000048	0.070150	0.018613	1.978.643	0.970138	0.969031	0.006458	3.567.801	-1.262.960
BAE SYSTEMS	0.000013	0.000019	0.074398	0.000162	3.243.537	0.614204	0.609812	0.015375	1.379.787	-1.009.779
BARCLAYS	0.000000	0.000000	0.131599	0.062033	1.657.825	0.076447	0.077516	0.031633	2.380.885	-1.155.166
BG GROUP	0.001160	0.001355	0.053986	0.000414	2.993.044	0.872986	0.869837	0.009955	2.190.696	-1.132.980
BHP BILLITON	0.000000	0.000000	0.126204	0.000840	2.804.295	0.426629	0.423469	0.019129	1.334.453	-1.000.876
BP	0.310986	0.309153	0.021858	5.85E-05	3.514.477	0.996632	0.996468	0.003721	2.195.019	-1.133.505
BRITISH AIRWAYS	0.049679	0.050850	0.034245	0.001816	2.598.848	0.895958	0.893172	0.009325	1.488.462	-1.029.984
BRITISH AMERICAN TOB	0.000000	0.000000	0.238130	0.000309	3.071.126	0.969515	0.968389	0.006494	1.742.228	-1.071.936
BRITISH LAND	0.000000	0.000000	0.105101	0.000873	2.794.065	0.759061	0.754822	0.012542	1.200.446	-9.726.728
BRITISH SKY BCAST.GROUP	0.000000	0.000000	0.120046	0.000281	3.095.714	0.961349	0.959988	0.006936	1.987.162	-1.106.993
BT GROUP	0.692640	0.688187	0.013865	0.003516	2.422.777	0.422456	0.419337	0.019220	6.637.497	-1.428.399
BUNZL	0.068556	0.069671	0.032305	0.000268	3.108.359	0.021985	0.022989	0.038910	3.026.083	-1.219.072
BURBERRY GROUP	0.238422	0.237554	0.023935	0.002361	2.528.927	0.918304	0.915931	0.008641	2.717.373	-1.190.396
CABLE & WIRELESS	0.689166	0.684709	0.013932	0.000325	3.057.742	0.995735	0.995531	0.003936	4.087.847	-1.299.222
CADBURY	1.000.000	1.000.000	0.000229	0.009330	2.162.693	0.999979	0.999977	0.001215	30639.01	-1.836.021
CAIRN ENERGY	0.000009	0.000014	0.075894	0.001772	2.605.370	0.491976	0.488236	0.017766	1.391.326	-1.011.999
CAPITA GROUP	0.016277	0.017173	0.040559	0.000103	3.364.177	0.858329	0.854978	0.010329	2.324.652	-1.148.797
CARNIVAL	0.005415	0.005932	0.046352	0.001118	2.728.090	0.986595	0.986030	0.005226	2.188.380	-1.132.698
CENTRICA	0.000000	0.000000	0.159213	0.000301	3.077.394	0.218416	0.217821	0.024589	1.707.682	-1.066.599
COBHAM	0.000001	0.000001	0.086477	0.000116	3.331.476	0.672747	0.668279	0.014251	1.315.351	-9.970.337
COMPASS GROUP	0.021043	0.022031	0.039152	0.000306	3.073.193	0.986948	0.986396	0.005191	2.607.807	-1.179.428
DIAGEO	0.000005	0.000008	0.078499	5.34E-05	3.538.703	0.018241	0.019179	0.039938	1.716.482	-1.067.969
EURASIAN NATRES.CORP.	NA (INSUFFICIENT DATA)									
EXPERIAN	0.157865	0.158079	0.026903	0.000590	2.898.510	0.968705	0.967555	0.006541	3.319.836	-1.243.763
FRESNILLO	NA (INSUFFICIENT DATA)									
FRIENDS PROVIDENT GROUP	0.000000	0.000000	0.146280	0.005400	2.308.446	0.977913	0.977049	0.005953	3.864.890	-1.284.275
G4S	0.005452	0.005970	0.046318	0.000113	3.337.767	0.915712	0.913288	0.008725	2.079.865	-1.119.144
GLAXOSMITHKLINE	0.000015	0.000023	0.073648	0.000112	3.340.651	0.995946	0.995751	0.003889	2.326.601	-1.149.020
HAMMERSON	0.000181	0.000232	0.062697	0.001104	2.731.471	0.914601	0.912155	0.008760	1.632.464	-1.054.594
HOME RETAIL GROUP	0.000208	0.000265	0.062048	0.001119	2.727.944	0.993967	0.993688	0.004281	1.495.176	-1.031.183
HSBC HDG.	0.000000	0.000000	0.139824	0.000742	2.837.541	0.954945	0.953411	0.007243	2.419.555	-1.159.460
ICAP	0.000000	0.000000	0.145022	0.003920	2.393.819	0.951867	0.950253	0.007382	3.921.205	-1.288.130
IMPERIAL TOBACCO GP.	0.000834	0.000989	0.055571	0.000184	3.208.459	0.781509	0.777405	0.012075	1.628.682	-1.053.976
INMARSAT	0.000000	0.000000	0.102747	0.000639	2.877.055	0.733038	0.728683	0.013069	3.314.364	-1.243.323
ICTL.HTLS.GP.	0.001894	0.002164	0.051608	0.000267	3.109.883	0.583771	0.579482	0.015960	1.658.218	-1.058.766
INTERNATIONAL POWER	0.000572	0.000690	0.057359	0.000353	3.035.411	0.664906	0.660438	0.014402	1.853.241	-1.088.398
INTERTEK GROUP	0.000000	0.000001	0.090595	0.000378	3.016.867	0.473972	0.470377	0.018133	2.465.197	-1.164.441
INVENSYS	0.480284	0.476637	0.018003	0.001699	2.616.574	0.939197	0.937274	0.007903	2.618.161	-1.180.484
JOHNSON MATTHEY	0.032614	0.033734	0.036692	0.000794	2.819.306	0.998695	0.998627	0.002983	4.314.489	-1.313.602
KAZAKHMYS	0.000000	0.000000	0.113794	0.002894	2.474.621	0.822379	0.818616	0.011182	1.491.772	-1.030.576
KINGFISHER	0.093837	0.094771	0.030344	0.000606	2.891.375	0.762027	0.757804	0.012481	1.382.924	-1.010.384
LAND SECURITIES GROUP	0.000000	0.000000	0.144200	0.000917	2.780.956	0.928166	0.925997	0.008307	1.741.395	-1.071.809
LEGAL & GENERAL	0.000000	0.000000	0.171883	0.011254	2.112.727	0.632419	0.627985	0.015026	2.269.544	-1.142.403
LIBERTY INTL.	0.044256	0.045424	0.034926	0.001625	2.628.519	0.984512	0.983872	0.005424	2.797.260	-1.198.118
LLOYDS BANKING GR	0.000000	0.000000	0.141357	0.085843	1.571.251	0.993679	0.993387	0.004330	3.333.665	-1.244.870

LONDON STOCK EX	0.026972	0.028041	0.037769	0.002218	2.545.500	0.999184	0.999140	0.002681	3.866.880	-1.284.412
LONMIN	0.999934	0.999930	0.001544	0.026975	1.879.755	0.999911	0.999906	0.001646	11111.61	-1.565.714
MAN GROUP	0.000000	0.000000	0.211359	0.009230	2.165.549	0.684957	0.680496	0.014014	4.087.848	-1.299.222
MARKS & SPENCER GROUP	0.988552	0.988059	0.005020	0.007334	2.226.847	0.999071	0.999022	0.002761	12173.37	-1.590.035
MORRISON(WM)SPMKTS.	0.295385	0.293754	0.022273	0.000157	3.251.245	0.586696	0.582396	0.015903	1.832.309	-1.085.371
NATIONAL GRID	0.000000	0.000000	0.141910	0.000180	3.214.360	0.761077	0.756849	0.012501	1.865.763	-1.090.193
NEXT	0.000012	0.000019	0.074573	0.000544	2.920.032	0.324379	0.322377	0.021512	1.582.475	-1.046.306
OLD MUTUAL	0.000000	0.000000	0.183049	0.005756	2.291.413	0.992583	0.992247	0.004504	3.776.996	-1.278.145
PEARSON	0.972332	0.971291	0.006325	0.000239	3.139.783	0.655824	0.651360	0.014577	2.321.226	-1.148.404
PETROFAC	0.003757	0.004173	0.048208	0.000915	2.781.399	0.994011	0.993734	0.004274	1.984.663	-1.106.657
PRUDENTIAL	0.000000	0.000000	0.124702	0.004342	2.366.517	0.846008	0.842503	0.010630	1.781.148	-1.077.824
RANDGOLD RESOURCES	0.000006	0.000009	0.077743	0.003228	2.445.558	0.185866	0.185712	0.025758	1.816.581	-1.083.074
RECKITT BENCKISER GR	0.000149	0.000193	0.063570	0.000152	3.259.915	0.929026	0.926875	0.008277	2.470.644	-1.165.029
REED ELSEVIER	0.989431	0.988972	0.004920	0.000639	2.877.139	0.794348	0.790338	0.011801	4.339.152	-1.315.121
RENTOKIL INITIAL	0.999999	0.999999	0.000646	0.024563	1.904.719	0.999969	0.999967	0.001319	15791.83	-1.659.390
REXAM	0.203336	0.202947	0.025112	0.001210	2.706.942	0.064407	0.065541	0.032686	5.128.213	-1.359.648
RIO TINTO	0.766752	0.762556	0.012383	0.050310	1.713.647	0.996565	0.996398	0.003738	9.610.081	-1.527.025
ROLLS-ROYCE GROUP	0.000020	0.000029	0.072497	0.000220	3.161.839	0.318758	0.316826	0.021656	1.617.262	-1.052.101
ROYAL BANK OF SCTL.GP.	0.988010	0.987497	0.005080	1.401.115	8.270.497	0.692830	0.688377	0.013861	4.628.412	-1.332.320
ROYAL DUTCH SHELL A	0.025647	0.026701	0.038051	5.28E-05	3.541.452	0.924456	0.922208	0.008435	1.425.016	-1.018.375
ROYAL DUTCH SHELL B	0.000068	0.000092	0.067133	7.94E-05	3.432.886	0.767693	0.763502	0.012364	1.543.679	-1.039.691
RSA INSURANCE GROUP	0.024525	0.025565	0.038302	0.000680	2.860.818	0.521305	0.517354	0.017178	1.983.208	-1.106.462
SABMILLER	0.001318	0.001530	0.053374	0.000200	3.187.193	0.973587	0.972585	0.006246	2.383.068	-1.155.411
SAGE GROUP	0.000083	0.000111	0.066231	0.000230	3.149.768	0.648761	0.644303	0.014712	1.713.050	-1.067.435
SAINSBURY (J)	0.999986	0.999985	0.001112	0.002861	2.477.742	0.950558	0.948911	0.007439	8.966.044	-1.508.538
SCHRODERS	0.000000	0.000000	0.236752	0.001632	2.627.290	0.015710	0.016594	0.040751	2.099.627	-1.121.664
SCHRODERS NV	0.000000	0.000000	0.107013	0.002702	2.492.989	0.248893	0.247882	0.023609	4.042.024	-1.296.218
SCOT.SOUTHERN ENERGY	0.000000	0.000000	0.111283	0.000177	3.219.494	0.019114	0.020069	0.039682	1.927.064	-1.098.808
SEGRO	0.000000	0.000000	0.129851	0.007783	2.211.016	0.807562	0.803661	0.011513	2.052.134	-1.115.567
SERCO GROUP	0.000003	0.000005	0.080779	0.000168	3.233.040	0.184455	0.184320	0.025812	1.900.821	-1.095.154
SEVERN TRENT	0.008928	0.009606	0.043763	0.000249	3.128.665	0.848094	0.844614	0.010580	3.204.348	-1.234.327
SHIRE	0.019900	0.020869	0.039460	0.000195	3.192.908	0.860319	0.856994	0.010279	1.574.632	-1.044.982
SMITH & NEPHEW	0.978564	0.977721	0.005906	0.000573	2.906.143	0.858629	0.855282	0.010321	2.549.269	-1.173.378
SMITHS GROUP	0.621654	0.617242	0.015232	0.000659	2.868.847	0.898175	0.895427	0.009260	3.806.506	-1.280.219
STANDARD CHARTERED	0.000000	0.000000	0.198512	0.002663	2.496.855	0.605160	0.600794	0.015548	1.915.885	-1.097.258
STANDARD LIFE	0.000000	0.000000	0.108956	0.001244	2.699.599	0.874284	0.871154	0.009921	1.979.598	-1.105.976
TESCO	0.172074	0.172104	0.026303	0.000317	3.063.831	0.981145	0.980388	0.005710	2.065.789	-1.117.334
THOMAS COOK GROUP	0.116974	0.117678	0.028920	0.003049	2.460.779	0.994124	0.993851	0.004254	2.345.944	-1.151.226
TUI TRAVEL	0.000004	0.000006	0.079631	0.002304	2.535.426	0.899629	0.896906	0.009218	1.853.615	-1.088.452
TULLOW OIL	0.995996	0.995803	0.003877	0.003666	2.411.667	0.999991	0.999990	0.001012	7.483.345	-1.460.364
UNILEVER (UK)	0.553297	0.549152	0.016550	0.000255	3.122.486	0.951073	0.949439	0.007417	3.050.596	-1.221.222
UNITED UTILITIES GROUP	0.000002	0.000003	0.082556	9.38E-05	3.388.656	0.979970	0.979174	0.005801	2.150.202	-1.128.007
VEDANTA RESOURCES	0.000000	0.000000	0.091789	0.003812	2.401.253	0.801283	0.797329	0.011651	1.411.581	-1.015.850
VODAFONE GROUP	0.383923	0.381213	0.020079	0.000567	2.909.165	0.977790	0.976922	0.005962	4.310.594	-1.313.362
WHITBREAD	0.603444	0.599083	0.015581	0.001004	2.756.783	0.999975	0.999973	0.001256	6.839.775	-1.436.399
WOLSELEY	0.985377	0.984768	0.005344	0.029795	1.853.259	0.999297	0.999259	0.002593	15218.70	-1.649.538
WPP	0.000000	0.000001	0.089279	0.000251	3.125.853	0.322893	0.320909	0.021550	1.934.700	-1.099.862

	GREAT BRITAIN MARKET FTSE100 UK AR1 MODEL									
	GB BEFORE CRISIS LEAST SQUARES					GB BEFORE CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADMIRAL GROUP	0.000000	0.000000	0.147751	0.000254	4.562.361	0.747273	0.744253	0.008994	2.814.987	-1.569.663
ALLIANCE TRUST	0.000000	0.000000	0.130239	0.000176	31578.29	0.815327	0.814873	0.001351	22587.73	-9.921.870
AMEC	0.000000	0.000000	0.032235	0.012613	22085.36	0.022940	0.023059	0.004663	38407.51	-11101.94
ANGLO AMERICAN	0.000000	0.000000	0.170973	0.015716	21018.44	0.065778	0.065914	0.004012	29548.16	-10316.82
ANTOFAGASTA	0.000000	0.000000	0.048676	0.003056	25236.41	0.887621	0.887275	0.001138	42373.70	-11320.41
ASSOCIATED BRIT.FOODS	0.000000	0.000000	0.102699	0.002190	25977.10	0.038697	0.038833	0.004299	25225.23	-10167.37
ASTRAZENECA	0.000000	0.000000	0.075042	0.001906	21592.98	0.325127	0.324837	0.003082	22374.84	-8.595.704
AUTONOMY CORP.	0.006761	0.006931	0.013685	0.208856	5.503.978	0.989179	0.989041	0.001477	29354.40	-5.003.979
AVIVA	0.000000	0.000000	0.164392	0.003600	24872.56	0.258376	0.258238	0.002792	17293.16	-9.328.116
BAE SYSTEMS	0.000038	0.000040	0.008516	0.119411	17088.35	0.845846	0.845430	0.001266	64073.94	-12239.64
BARCLAYS	0.000000	0.000000	0.120898	0.002866	25379.06	0.400328	0.399981	0.002356	15632.91	-9.103.741
BG GROUP	0.000000	0.000000	0.079325	0.001843	26361.14	0.780681	0.780194	0.001441	16494.83	-9.223.048
BHP BILLITON	0.000000	0.000000	0.071023	0.004158	13798.67	0.852273	0.851584	0.002115	9.691.233	-5.437.451
BP	0.000000	0.000000	0.056042	0.001564	26726.04	0.255460	0.255327	0.002803	18512.65	-9.479.598
BRITISH AIRWAYS	0.000000	0.000000	0.134546	0.008565	22945.70	0.000001	0.000001	0.010389	23857.29	-10043.43
BRITISH AMERICAN TOB	0.000000	0.000000	0.012210	0.013901	21869.23	0.989185	0.989130	0.000588	68562.37	-12390.15
BRITISH LAND	0.000000	0.000000	0.092757	0.002997	25279.92	0.497414	0.496962	0.002109	25756.53	-10213.71
BRITISH SKY BCAST	0.000000	0.000000	0.117545	0.007083	16914.56	0.997852	0.997834	0.000534	53796.10	-9.313.558
BT GROUP	0.000000	0.000000	0.098575	0.004773	24245.52	0.223171	0.223090	0.002926	18533.16	-9.482.059
BUNZL	0.000000	0.000000	0.059042	0.002872	25374.56	0.001529	0.001556	0.006388	28282.44	-10421.68
BURBERRY GROUP	0.000000	0.000000	0.170546	0.000757	7.674.685	0.554651	0.552991	0.006602	6.025.787	-2.891.916
CABLE & WIRELESS	0.034701	0.034834	0.004376	0.148839	16598.64	0.995116	0.995089	0.000483	66292.91	-12315.32
CADBURY	0.000000	0.000000	0.068053	0.001178	27356.29	0.389213	0.388880	0.002386	21619.81	-9.824.509
CAIRN ENERGY	0.000000	0.000000	0.012812	0.046584	19180.91	0.987225	0.987162	0.000613	190442.1	-14661.18
CAPITA GROUP	0.000000	0.000000	0.137211	0.006693	23493.78	0.205078	0.205026	0.003002	39973.23	-11190.76
CARNIVAL	0.000000	0.000000	0.193981	0.003994	9.045.280	0.774172	0.772938	0.003646	11966.63	-4.219.741
CENTRICA	0.000000	0.000000	0.076413	0.002074	15414.72	0.914398	0.913928	0.001694	14581.19	-6.176.467
COBHAM	0.000000	0.000000	0.035547	0.001469	26865.14	0.797954	0.797482	0.001396	53628.96	-11844.06
COMPASS GROUP	0.350934	0.350205	0.006507	0.008371	8.001.879	1.000.000	1.000.000	0.000109	105132.5	-5.933.002
DIAGEO	0.000000	0.000000	0.059278	0.002249	25917.81	0.999914	0.999913	0.000194	44226.14	-11415.52
EURASIAN NATRES.COR.	NA (INSUFFICIENT DATA)									
EXPERIAN	0.000000	0.000000	0.264691	4.18E-05	1.417.396	0.961839	0.958532	0.016672	5.137.145	-4.108.047
FRESNILLO	NA (INSUFFICIENT DATA)									
FRIENDS PROVIDENT	0.000000	0.000000	0.159223	0.002335	8.444.787	0.730339	0.728889	0.004369	7.289.360	-3.473.363
G4S	0.000000	0.000000	0.043995	0.010576	14137.57	0.999262	0.999255	0.000474	61346.15	-8.584.043
GLAXOSMITHKLINE	0.000000	0.000000	0.020222	0.003114	25195.13	0.402710	0.402360	0.002349	24374.43	-10091.10
HAMMERSON	0.000000	0.000000	0.052087	0.001247	27228.87	0.020311	0.020425	0.004745	24314.63	-10085.64
HOME RETAIL GROUP	0.000000	0.000000	0.036748	0.005386	23977.11	0.206459	0.206406	0.002996	38717.46	-11119.81
HSBC HDG. (ORD $0.50)	0.000000	0.000000	0.079955	0.002066	22897.39	0.693414	0.692816	0.001863	16862.65	-8.454.841
ICAP	0.000000	0.000000	0.044127	0.001694	12871.77	0.909911	0.909327	0.002066	22895.73	-5.871.119
IMPERIAL TOBACCO GP.	0.000000	0.000000	0.066069	0.001024	17023.82	0.842820	0.842162	0.001998	17887.13	-6.639.301
INMARSAT	0.190155	0.189954	0.024145	0.000184	3.417.701	0.949178	0.947593	0.007070	2.277.260	-1.195.478
ICTL.HTLS.GP.	0.000387	0.000426	0.027829	0.000246	7.159.151	0.987267	0.987019	0.002389	6.008.619	-2.572.021

INTERNATIONAL POWER	0.039216	0.039357	0.004448	0.014514	20921.93	0.999999	0.999999	0.000079	217570.6	-14503.26
INTERTEK GROUP	0.000000	0.000000	0.036143	0.000271	8.596.710	0.769435	0.767813	0.004793	6.541.494	-3.006.336
INVENSYS	0.000000	0.000000	0.011223	0.221988	15709.97	0.999984	0.999984	0.000135	100838.0	-13247.72
JOHNSON MATTHEY	0.000000	0.000000	0.072390	0.002501	25682.01	0.875951	0.875584	0.001175	41086.77	-11251.84
KAZAKHMYS	0.000000	0.000000	0.165974	0.000662	2.586.567	0.687447	0.682542	0.015358	1.255.982	-9.189.298
KINGFISHER	0.000000	0.000000	0.074126	0.003131	25182.44	0.102496	0.102596	0.003576	18149.97	-9.435.615
LAND SECURITIES GROUP	0.000000	0.000000	0.025208	0.000589	28895.12	0.908988	0.908687	0.001063	23807.37	-10038.77
LEGAL & GENERAL	0.000000	0.000000	0.093720	0.003403	24997.72	0.816374	0.815921	0.001348	19288.71	-9.570.887
LIBERTY INTL.	0.000000	0.000000	0.024974	0.000516	25532.43	0.562196	0.561629	0.002214	40383.40	-10146.11
LLOYDS BANKING GROUP	0.000000	0.000000	0.118582	0.002264	17103.46	0.038918	0.039117	0.006290	11570.58	-6.337.279
LONDON STOCK EX.GROUP	0.985551	0.985380	0.001528	0.009899	8.571.979	0.998372	0.998348	0.000900	49563.15	-5.651.111
LONMIN	0.000000	0.000000	0.057626	0.018964	21178.76	0.258918	0.258779	0.002790	33465.33	-10795.74
MAN GROUP	0.000000	0.000000	0.076272	0.001354	19937.52	0.891692	0.891245	0.001490	19247.08	-7.690.976
MARKS & SPENCER GROUP	0.000000	0.000000	0.038263	0.004378	24437.79	0.064659	0.064792	0.003927	30647.52	-10600.21
MORRISON(WM)SPMKTS.	0.000000	0.000000	0.027049	0.004583	24335.62	0.873469	0.873097	0.001183	55626.76	-11925.36
NATIONAL GRID	0.000000	0.000000	0.030365	0.001482	17835.09	0.996265	0.996234	0.000660	25478.35	-7.562.880
NEXT	0.000000	0.000000	0.121618	0.026260	20455.13	0.631076	0.630548	0.001795	41379.60	-11267.63
OLD MUTUAL	0.000000	0.000000	0.109307	0.001580	11910.89	0.889970	0.889251	0.002379	7.352.518	-4.317.145
PEARSON	0.000000	0.000000	0.121682	0.004693	24283.11	0.044354	0.044491	0.004202	17319.70	-9.331.524
PETROFAC	0.009266	0.010024	0.047546	0.000708	2.587.793	0.578522	0.573860	0.017550	2.615.198	-1.102.064
PRUDENTIAL	0.000000	0.000000	0.095953	0.005428	23959.64	0.964307	0.964157	0.000806	21663.82	-9.829.030
RANDGOLD RESOURCES	0.000000	0.000000	0.082247	0.123293	9.428.885	0.025876	0.026085	0.007701	62401.82	-7.928.414
RECKITT BENCKISER GROUP	0.000000	0.000000	0.046115	0.004298	24478.72	0.431390	0.431005	0.002274	29295.95	-10499.94
REED ELSEVIER	0.000000	0.000000	0.039532	0.004403	24424.72	0.894670	0.894338	0.001114	28745.66	-10457.79
RENTOKIL INITIAL	0.000000	0.000000	0.044154	0.006541	23544.94	0.874397	0.874027	0.001180	60972.14	-12129.33
REXAM	0.000000	0.000000	0.049097	0.002980	25292.41	0.943844	0.943630	0.000918	52952.76	-11815.85
RIO TINTO	0.000000	0.000000	0.096713	0.001951	26233.82	0.003964	0.004013	0.005804	13845.40	-8.833.814
ROLLS-ROYCE GROUP	0.000000	0.000000	0.023787	0.009576	22697.67	0.792101	0.791624	0.001411	50504.89	-11710.64
ROYAL BANK OF SCTL.GP.	0.000000	0.000000	0.096624	0.003786	24760.71	0.944555	0.944344	0.000914	23663.58	-10025.31
ROYAL DUTCH SHELL A(LON)	0.000003	0.000005	0.079732	2.25E-05	3.829.998	0.662836	0.658435	0.014227	1.308.839	-1.006.626
ROYAL DUTCH SHELL B	0.000000	0.000000	0.134849	0.001110	27488.84	0.764964	0.764464	0.001480	16310.59	-9.198.077
RSA INSURANCE GROUP	0.000000	0.000000	0.107896	0.012643	22079.94	0.998597	0.998588	0.000360	39379.93	-11157.52
SABMILLER	0.000000	0.000000	0.079554	0.001367	12654.89	0.845709	0.844872	0.002551	13654.43	-5.146.308
SAGE GROUP	0.000000	0.000000	0.072496	0.017066	21413.22	0.997108	0.997091	0.000426	187266.7	-14623.80
SAINSBURY (J)	0.000000	0.000000	0.073378	0.002810	25423.34	0.693835	0.693305	0.001650	41695.29	-11284.53
SCHRODERS	0.000000	0.000000	0.137935	0.005777	23821.10	0.128868	0.128934	0.003393	29870.64	-10543.13
SCHRODERS NV	0.000000	0.000000	0.136990	0.010431	22507.56	0.227470	0.227382	0.002909	36305.41	-10976.82
SCOT.& SOUTHERN ENERGY	0.000000	0.000000	0.067574	0.001025	26135.99	0.315722	0.315482	0.002741	24395.03	-9.686.416
SEGRO	0.000000	0.000000	0.058623	0.002267	25900.53	0.933434	0.933192	0.000965	45256.53	-11466.72
SERCO GROUP	0.000000	0.000000	0.092767	0.004820	24223.66	0.824401	0.823957	0.001326	85046.48	-12869.10
SEVERN TRENT	0.000000	0.000000	0.030441	0.002081	26090.42	0.024140	0.024261	0.004628	28305.39	-10423.48
SHIRE	0.000000	0.000000	0.056731	0.039065	12621.23	0.999712	0.999709	0.000374	145431.4	-10081.31
SMITH & NEPHEW	0.000000	0.000000	0.058232	0.001972	26210.47	0.209005	0.208947	0.002985	26408.70	-10269.29
SMITHS GROUP	0.000000	0.000000	0.069760	0.002868	25377.86	0.736067	0.735551	0.001550	41327.76	-11264.84
STANDARD CHARTERED	0.000000	0.000000	0.076607	0.005726	23840.97	0.123631	0.123705	0.003427	20911.32	-9.750.440
STANDARD LIFE	0.000000	0.000000	0.229479	7.82E-05	1.775.202	0.998765	0.998642	0.005487	1.734.491	-6.690.234
TESCO	0.000000	0.000000	0.079296	0.001318	27106.11	0.104560	0.104658	0.003560	17021.06	-9.292.859
THOMAS COOK GROUP	0.999999	0.999999	0.000478	0.004184	3.140.085	0.999995	0.999995	0.000696	21455.12	-2.151.646

TUI TRAVEL	0.000000	0.000000	0.013272	0.041906	19416.17	0.999961	0.999960	0.000164	172873.3	-14446.01
TULLOW OIL	0.000000	0.000000	0.063248	0.031452	20054.06	0.006436	0.006501	0.005498	42002.69	-11300.86
UNILEVER (UK)	0.000000	0.000000	0.056047	0.001932	26256.13	0.796304	0.795830	0.001401	28353.12	-10427.22
UNITED UTILITIES GROUP	0.000000	0.000000	0.019122	0.003127	25185.49	0.932900	0.932656	0.000968	50216.04	-11697.89
VEDANTA RESOURCES	0.000000	0.000000	0.098017	0.001412	5.112.914	0.948489	0.947559	0.004140	2.934.788	-1.905.942
VODAFONE GROUP	0.000000	0.000000	0.100529	0.004690	24284.72	0.725189	0.724668	0.001576	20055.83	-9.657.584
WHITBREAD	0.000000	0.000000	0.063621	0.001322	27100.29	0.502899	0.502442	0.002095	21202.92	-9.781.225
WOLSELEY	0.000000	0.000000	0.048832	0.003645	24845.10	0.096387	0.096494	0.003624	24514.23	-10103.82
WPP	0.000000	0.000000	0.062405	0.556686	13666.20	0.000000	0.000000	0.115248	63861.65	-12232.26

	GB DURING CRISIS LEAST SQUARES					GB DURING CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADMIRAL GROUP	0.000000	0.000000	0.122081	0.005032	2.327.253	0.989852	0.989408	0.004870	3.743.225	-1.275.751
ALLIANCE TRUST	0.000000	0.000000	0.278090	0.000837	2.805.143	0.802022	0.798074	0.011635	1.495.136	-1.031.176
AMEC	0.000000	0.000000	0.295280	0.002057	2.565.700	0.887795	0.884873	0.009556	1.252.913	-9.840.732
ANGLO AMERICAN	0.000000	0.000000	0.181467	0.009647	2.153.789	0.739048	0.734716	0.012948	1.756.828	-1.074.161
ANTOFAGASTA	0.000000	0.000000	0.111769	0.008095	2.200.529	0.638857	0.634412	0.014902	1.360.837	-1.006.094
ASSOCIATED BRIT.FOODS	0.000000	0.000000	0.127660	0.000216	3.166.722	0.643377	0.638926	0.014816	1.711.966	-1.067.267
ASTRAZENECA	0.000000	0.000000	0.174585	0.000471	2.958.279	0.863917	0.860641	0.010188	1.873.142	-1.091.245
AUTONOMY CORP.	0.000173	0.000223	0.062883	0.003063	2.459.487	0.869173	0.865970	0.010054	3.610.448	-1.266.126
AVIVA	0.000148	0.000192	0.063614	0.034870	1.811.340	0.566007	0.561797	0.016303	1.878.244	-1.091.970
BAE SYSTEMS	0.000000	0.000000	0.223479	0.000475	2.956.266	0.955372	0.953849	0.007224	1.327.510	-9.994.858
BARCLAYS	0.000071	0.000096	0.066937	0.117434	1.487.741	0.222927	0.222271	0.024437	1.872.767	-1.091.192
BG GROUP	0.000000	0.000000	0.248251	0.001247	2.699.032	0.980976	0.980214	0.005723	1.454.725	-1.023.874
BHP BILLITON	0.000000	0.000000	0.232620	0.004688	2.346.129	0.791427	0.787395	0.011864	1.181.304	-9.683.890
BP	0.000000	0.000000	0.296486	0.000575	2.905.279	0.521993	0.518037	0.017165	1.476.385	-1.027.813
BRITISH AIRWAYS	0.000000	0.000000	0.132401	0.002885	2.475.515	0.135330	0.135824	0.027951	1.029.947	-9.318.489
BRITISH AMERICAN TOBACCO	0.000000	0.000000	0.246836	0.000621	2.884.926	0.598263	0.593920	0.015681	1.257.298	-9.850.041
BRITISH LAND	0.000000	0.000000	0.110744	0.001648	2.624.764	0.604792	0.600427	0.015556	1.131.515	-9.569.131
BRITISH SKY BCAST.GROUP	0.000000	0.000000	0.138375	0.000907	2.783.944	0.990042	0.989606	0.004847	1.767.195	-1.075.728
BT GROUP	0.010893	0.011642	0.042714	0.003490	2.424.742	0.931851	0.929762	0.008176	3.956.668	-1.290.530
BUNZL	0.000000	0.000000	0.104001	0.000397	3.004.105	0.437672	0.434404	0.018892	2.735.799	-1.192.197
BURBERRY GROUP	0.006018	0.006566	0.045812	0.003141	2.452.812	0.437601	0.434334	0.018894	2.076.592	-1.118.724
CABLE & WIRELESS	0.000000	0.000000	0.093709	0.000735	2.839.920	0.998514	0.998437	0.003074	3.302.638	-1.242.378
CADBURY	1.000.000	1.000.000	0.000148	0.010730	2.125.440	0.999342	0.999306	0.002554	31964.09	-1.847.304
CAIRN ENERGY	0.000000	0.000000	0.300628	0.003347	2.435.919	0.316268	0.314368	0.021720	1.355.715	-1.005.089
CAPITA GROUP	0.001198	0.001397	0.053833	0.000196	3.192.815	0.792868	0.788847	0.011833	1.754.377	-1.073.788
CARNIVAL	0.000000	0.000000	0.114689	0.001794	2.602.056	0.832076	0.828413	0.010959	1.367.900	-1.007.473
CENTRICA	0.000000	0.000000	0.176040	0.000660	2.868.423	0.647046	0.642591	0.014745	1.386.580	-1.011.088
COBHAM	0.000000	0.000000	0.097030	0.000292	3.085.459	0.795127	0.791123	0.011784	1.294.816	-9.928.403
COMPASS GROUP	0.000000	0.000000	0.190611	0.000768	2.828.281	0.972576	0.971544	0.006310	1.910.608	-1.096.523
DIAGEO	0.000000	0.000000	0.233584	0.000251	3.126.178	0.670743	0.666275	0.014289	1.563.062	-1.043.016
EURASIAN NATRES.CORP.	NA (INSUFFICIENT DATA)									
EXPERIAN	0.000000	0.000000	0.159052	0.001026	2.751.054	0.950568	0.948921	0.007439	2.211.655	-1.135.517
FRESNILLO	NA (INSUFFICIENT DATA)									

FRIENDS PROVIDENT GROUP	0.000000	0.000000	0.126516	0.010441	2.132.718	0.989088	0.988616	0.004960	3.831.680	-1.281.975
G4S	0.000000	0.000000	0.179639	0.000361	3.029.089	0.907788	0.905213	0.008973	1.879.936	-1.092.210
GLAXOSMITHKLINE	0.000000	0.000000	0.187302	0.000274	3.102.483	0.997965	0.997861	0.003305	2.197.533	-1.133.810
HAMMERSON	0.000264	0.000331	0.060965	0.001678	2.619.966	0.860522	0.857200	0.010274	1.286.502	-9.911.236
HOME RETAIL GROUP	0.016345	0.017243	0.040536	0.002353	2.529.848	0.882123	0.879111	0.009711	1.568.519	-1.043.945
HSBC HDG. (ORD $0.50)	0.000000	0.000000	0.121355	0.003636	2.413.826	0.719351	0.714952	0.013341	2.689.575	-1.187.656
ICAP	0.000000	0.000000	0.134591	0.010437	2.132.812	0.029602	0.030697	0.037243	2.609.869	-1.179.639
IMPERIAL TOBACCO GP.	0.000000	0.000000	0.213736	0.000335	3.049.031	0.689978	0.685521	0.013917	1.637.138	-1.055.356
INMARSAT	0.000000	0.000000	0.221499	0.001427	2.663.173	0.860797	0.857479	0.010267	2.761.464	-1.194.685
ICTL.HTLS.GP.	0.003377	0.003767	0.048743	0.000881	2.791.590	0.884452	0.881477	0.009648	1.317.278	-9.974.238
INTERNATIONAL POWER	0.000000	0.000000	0.141401	0.001070	2.739.897	0.948515	0.946817	0.007527	1.600.000	-1.049.241
INTERTEK GROUP	0.002730	0.003072	0.049804	0.000892	2.788.211	0.620920	0.616510	0.015246	2.038.559	-1.113.798
INVENSYS	0.000518	0.000628	0.057822	0.005408	2.308.018	0.868985	0.865779	0.010059	1.947.408	-1.101.607
JOHNSON MATTHEY	0.000000	0.000000	0.139749	0.001456	2.657.691	0.826024	0.822298	0.011099	2.240.694	-1.138.993
KAZAKHMYS	0.000000	0.000000	0.176329	0.029465	1.856.224	0.606344	0.601974	0.015526	1.429.607	-1.019.232
KINGFISHER	0.000986	0.001160	0.054770	0.001287	2.690.628	0.716284	0.711877	0.013402	1.085.983	-9.459.674
LAND SECURITIES GROUP	0.000000	0.000000	0.139598	0.001528	2.644.927	0.440243	0.436950	0.018838	1.404.965	-1.014.598
LEGAL & GENERAL	0.000000	0.000000	0.151542	0.021676	1.938.040	0.952556	0.950960	0.007351	2.141.015	-1.126.866
LIBERTY INTL.	0.003916	0.004343	0.047998	0.002388	2.525.840	0.968777	0.967629	0.006537	1.739.044	-1.071.449
LLOYDS BANKING GROUP	0.000000	0.000000	0.153606	0.097855	1.536.348	0.547295	0.543184	0.016667	2.152.479	-1.128.289
LONDON STOCK EX.GROUP	0.000000	0.000000	0.100975	0.004404	2.362.743	0.882722	0.879720	0.009695	2.249.796	-1.140.074
LONMIN	0.873337	0.870194	0.009945	0.032565	1.829.562	0.998316	0.998229	0.003163	6.383.843	-1.418.015
MAN GROUP	0.000000	0.000000	0.158652	0.028150	1.868.392	0.780189	0.776077	0.012103	2.236.289	-1.138.469
MARKS & SPENCER GROUP	0.997382	0.997252	0.003506	0.008506	2.187.319	0.995554	0.995341	0.003976	7.495.211	-1.460.786
MORRISON(WM)SPMKTS.	0.000002	0.000003	0.082505	0.000335	3.049.412	0.770404	0.766229	0.012308	1.885.903	-1.093.055
NATIONAL GRID	0.000000	0.000000	0.302237	0.000678	2.861.313	0.484245	0.480566	0.017923	2.015.919	-1.110.822
NEXT	0.000043	0.000060	0.069150	0.001549	2.641.154	0.472829	0.469244	0.018156	1.298.564	-9.936.105
OLD MUTUAL	0.000000	0.000000	0.287738	0.014008	2.054.379	0.669075	0.664606	0.014321	1.233.692	-9.799.531
PEARSON	0.010902	0.011651	0.042710	0.000375	3.019.159	0.980126	0.979335	0.005789	1.857.892	-1.089.066
PETROFAC	0.000000	0.000000	0.162846	0.002076	2.563.227	0.744954	0.740647	0.012829	1.856.062	-1.088.804
PRUDENTIAL	0.000000	0.000000	0.157780	0.016012	2.018.759	0.483236	0.479565	0.017943	1.717.937	-1.068.195
RANDGOLD RESOURCES	0.000000	0.000000	0.132004	0.004626	2.349.674	0.002720	0.003061	0.049823	1.878.569	-1.092.016
RECKITT BENCKISER	0.000000	0.000000	0.163222	0.000288	3.089.549	0.883217	0.880222	0.009681	2.105.273	-1.122.380
REED ELSEVIER	0.000265	0.000333	0.060943	0.000800	2.817.368	0.995130	0.994900	0.004064	4.142.741	-1.302.777
RENTOKIL INITIAL	1.000.000	1.000.000	0.000437	0.027567	1.873.973	1.000.000	1.000.000	0.000513	12834.80	-1.604.136
REXAM	0.268648	0.267371	0.023021	0.002069	2.564.137	0.985371	0.984762	0.005345	4.537.908	-1.327.057
RIO TINTO	0.036393	0.037535	0.036063	0.051435	1.707.753	0.991480	0.991100	0.004661	3.245.477	-1.237.725
ROLLS-ROYCE GROUP	0.000000	0.000000	0.116616	0.001135	2.724.190	0.982769	0.982068	0.005577	1.546.720	-1.040.215
ROYAL BANK OF SCTL.GP.	0.943646	0.941828	0.007728	1.389.253	8.293.155	0.820713	0.816934	0.011220	5.657.815	-1.385.840
ROYAL DUTCH SHELL A	0.000000	0.000000	0.235699	0.000799	2.817.694	0.912608	0.910123	0.008823	1.466.618	-1.026.044
ROYAL DUTCH SHELL B	0.000000	0.000000	0.236702	0.000917	2.780.996	0.968642	0.967490	0.006545	1.376.104	-1.009.067
RSA INSURANCE GROUP	0.000064	0.000087	0.067379	0.001136	2.723.891	0.731229	0.726868	0.013105	1.701.710	-1.065.665
SABMILLER	0.000000	0.000000	0.171677	0.000525	2.929.383	0.960204	0.958812	0.006993	1.429.420	-1.019.197
SAGE GROUP	0.000000	0.000000	0.095336	0.000474	2.956.532	0.814353	0.810513	0.011363	1.707.483	-1.066.568
SAINSBURY (J)	0.471797	0.468220	0.018178	0.003840	2.399.293	0.999971	0.999970	0.001293	14856.24	-1.643.114
SCHRODERS	0.000000	0.000000	0.227375	0.010407	2.133.569	0.729423	0.725056	0.013141	4.744.981	-1.338.949

SCHRODERS NV	0.000001	0.000002	0.085026	0.015208	2.032.488	0.526779	0.522792	0.017070	2.483.468	1.166.408
SCOT.& SOUTHERN GY	0.000000	0.000000	0.276126	0.000609	2.889.898	0.772071	0.767906	0.012273	1.600.162	-1.049.268
SEGRO	0.000000	0.000000	0.154676	0.011439	2.108.373	0.026065	0.027124	0.037961	1.597.218	-1.048.777
SERCO GROUP	0.000026	0.000037	0.071384	0.000296	3.082.513	0.562671	0.558478	0.016368	1.697.293	-1.064.973
SEVERN TRENT	0.000000	0.000000	0.134814	0.000701	2.852.341	0.966623	0.965412	0.006658	2.001.959	-1.108.970
SHIRE	0.000337	0.000418	0.059830	0.000436	2.978.863	0.970964	0.969881	0.006409	1.682.703	-1.062.672
SMITH & NEPHEW	0.000041	0.000057	0.069389	0.000793	2.819.584	0.885188	0.882225	0.009628	2.390.289	-1.156.217
SMITHS GROUP	0.000000	0.000000	0.124057	0.001152	2.720.039	0.170953	0.170997	0.026349	2.427.520	-1.160.336
STANDARD CHARTERED	0.000000	0.000000	0.210740	0.009634	2.154.142	0.811243	0.807375	0.011432	1.872.213	-1.091.113
STANDARD LIFE	0.000000	0.000000	0.117455	0.005184	2.319.309	0.953412	0.951838	0.007313	1.581.462	-1.046.135
TESCO	0.000002	0.000004	0.082071	0.000518	2.932.900	0.772305	0.768142	0.012268	1.498.135	-1.031.710
THOMAS COOK GROUP	0.033542	0.034668	0.036532	0.006595	2.255.157	0.950586	0.948939	0.007438	2.136.549	-1.126.310
TUI TRAVEL	0.000000	0.000000	0.140194	0.005793	2.289.681	0.602701	0.598342	0.015596	2.328.997	-1.149.294
TULLOW OIL	0.000019	0.000028	0.072743	0.005197	2.318.630	0.999929	0.999925	0.001569	5.363.653	-1.371.611
UNILEVER (UK)	0.000000	0.000000	0.140043	0.000374	3.020.126	0.985947	0.985358	0.005290	2.643.398	-1.183.040
UNITED UTILITIES GROUP	0.000000	0.000000	0.312115	0.000292	3.085.739	0.793580	0.789564	0.011818	1.849.594	-1.087.874
VEDANTA RESOURCES	0.000000	0.000000	0.240953	0.010188	2.139.236	0.355617	0.353234	0.020741	1.044.975	-9.357.092
VODAFONE GROUP	0.000295	0.000369	0.060438	0.001030	2.750.045	0.994707	0.994459	0.004147	2.772.684	-1.195.766
WHITBREAD	0.000014	0.000022	0.073910	0.001587	2.634.842	0.965124	0.963870	0.006740	3.902.371	-1.286.847
WOLSELEY	0.481915	0.478254	0.017970	0.021274	1.943.030	0.998378	0.998294	0.003136	4.002.477	-1.293.598
WPP	0.000000	0.000000	0.184024	0.000864	2.796.880	0.345542	0.343279	0.020985	1.298.559	-9.936.095

FRENCH (EURONEXT) MARKET FRCAC40

MARKET MODEL

	FR BEFORE CRISIS LEAST SQUARES					FR BEFORE CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
AIR LIQUIDE	0.000000	0.000000	0.121426	0.000522	29173.80	0.032536	0.032667	0.004420	15010.07	-9.014.889
ALCATEL-LUCENT	0.000000	0.000000	0.012930	0.040523	19495.64	0.717901	0.717377	0.001593	71859.03	-12496.86
ALSTOM	0.003531	0.003617	0.010918	0.227637	7.673.304	0.997722	0.997697	0.000750	29432.85	-6.391.690
ARCELORMITTAL	0.000000	0.000000	0.068434	0.032632	11057.82	0.178309	0.178295	0.005308	16303.10	-6.105.203
AXA	0.000000	0.000000	0.120106	0.000808	28201.90	0.107244	0.107339	0.003539	14547.67	-8.945.314
BNP PARIBAS	0.000000	0.000000	0.089280	0.000832	22457.37	0.046031	0.046201	0.005143	20198.41	-8.228.611
BOUYGUES	0.000000	0.000000	0.046966	0.003859	24724.03	0.978797	0.978699	0.000699	72303.76	-12510.58
CAP GEMINI	0.000000	0.000000	0.037604	0.011365	22322.46	0.584505	0.583993	0.001902	33055.29	-10770.25
CARREFOUR	0.000000	0.000000	0.056915	0.001139	27436.74	0.021106	0.021222	0.004718	29069.59	-10484.56
CREDIT AGRICOLE	0.000000	0.000000	0.072348	0.000259	9.421.372	0.962118	0.961643	0.002467	9.518.860	-3.479.191
DANONE	0.000000	0.000000	0.090614	0.000908	27942.16	0.000354	0.000364	0.007252	31820.25	-10685.59
DEXIA	0.000000	0.000000	0.207562	0.004538	14710.02	0.999950	0.999949	0.000274	117219.6	-9.209.587
EADS (PAR)	0.441089	0.440141	0.005396	0.009816	8.631.262	0.999934	0.999933	0.000439	41900.71	-5.521.059
EDF	0.000616	0.000765	0.066597	5.93E-05	2.961.083	0.334558	0.332066	0.024911	1.780.702	-9.560.329
ESSILOR INTL.	0.000000	0.000000	0.051671	0.003062	25238.55	0.001985	0.002017	0.006229	26276.17	-10259.92
FRANCE TELECOM	0.000000	0.000000	0.114424	0.006970	12796.76	0.974345	0.974145	0.001277	19625.33	-6.249.289
GDF SUEZ	0.209557	0.209098	0.024079	2.81E-05	3.844.514	0.573253	0.569148	0.015632	2.003.182	-1.137.439
L'OREAL	0.000000	0.000000	0.103955	0.000737	28404.48	0.282271	0.282095	0.002708	20481.59	-9.705.964
LAFARGE	0.000000	0.000000	0.077145	0.001095	27525.66	0.130375	0.130439	0.003383	20978.36	-9.759.250
LAGARDERE GROUPE	0.000000	0.000000	0.063704	0.005558	23912.92	0.981922	0.981836	0.000671	69532.63	-12423.68
LVMH	0.000000	0.000000	0.113249	0.001053	27611.42	0.092658	0.092769	0.003654	22898.54	-9.953.988

MICHELIN	0.000000	0.000000	0.056244	0.002651	25558.87	0.373053	0.372743	0.002430	26074.60	-10242.79
PERNOD-RICARD	0.000000	0.000000	0.071480	0.002224	25949.27	0.100865	0.100967	0.003588	25305.99	-10176.27
PEUGEOT	0.000000	0.000000	0.059637	0.001284	27171.46	0.236348	0.236246	0.002874	26285.46	-10260.70
PPR	0.000000	0.000000	0.022550	0.003368	25026.80	0.581820	0.581309	0.001909	40346.21	-11213.43
RENAULT	0.000000	0.000000	0.079300	0.002159	18974.22	0.019908	0.020059	0.006360	15484.45	-7.277.193
SAINT GOBAIN	0.000000	0.000000	0.029846	0.005959	23757.90	0.937588	0.937357	0.000947	32713.15	-10747.12
SANOFI-AVENTIS	0.000000	0.000000	0.038062	0.001945	26247.78	0.280709	0.280535	0.002714	32922.84	-10761.33
SCHNEIDER ELECTRIC	0.000000	0.000000	0.039743	0.006248	23652.53	0.198466	0.198426	0.003030	22739.92	-9.938.532
SOCIETE GENERALE	0.000000	0.000000	0.064322	0.001285	27168.50	0.003238	0.003281	0.005928	19754.42	-9.625.587
STMICROELECTRONICS (PAR)	0.000000	0.000000	0.054425	0.004891	17527.54	0.562892	0.562219	0.002623	13936.56	-7.077.498
SUEZ ENVIRONNEMENT	NA (INSUFFICIENT DATA)									
TECHNIP	0.000000	0.000000	0.019211	0.007337	17018.43	0.911025	0.910630	0.001406	40575.29	-8.909.560
TOTAL	0.000000	0.000000	0.078263	0.000793	28241.16	0.021483	0.021599	0.004706	16457.28	-9.219.555
UNIBAIL-RODAMCO	0.000669	0.000684	0.006880	0.002164	26010.21	0.591583	0.591068	0.001886	44080.83	-11410.27
VALLOUREC	0.000000	0.000000	0.016933	0.008274	23028.30	0.656836	0.656304	0.001736	38580.70	-11113.94
VEOLIA ENVIRONNEMENT	0.000000	0.000000	0.135223	0.001724	10207.77	0.882366	0.881508	0.002782	17999.80	-4.725.460
VINCI (EX SGE)	0.000000	0.000000	0.047026	0.002547	25648.09	0.000003	0.000003	0.009896	20288.03	-9.684.851
VIVENDI	0.000000	0.000000	0.264222	0.011621	22272.86	0.006366	0.006431	0.005504	22679.80	-9.932.646

	FR DURING CRISIS LEAST SQUARES					FR DURING CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
AIR LIQUIDE	0.000024	0.000034	0.071753	7.63E-05	3.443.451	0.063025	0.064165	0.032818	1.907.429	-1.096.079
ALCATEL-LUCENT	0.000007	0.000010	0.077292	0.002423	2.522.018	0.983385	0.982706	0.005524	2.144.354	-1.127.281
ALSTOM	0.000000	0.000000	0.200993	0.000630	2.880.982	0.449394	0.446015	0.018644	1.452.077	-1.023.388
ARCELORMITTAL	0.000000	0.000000	0.108792	0.001419	2.664.493	0.772799	0.768638	0.012258	1.446.962	-1.022.448
AXA	0.000000	0.000000	0.148198	0.000876	2.793.115	0.675862	0.671395	0.014190	1.529.142	-1.037.169
BNP PARIBAS	0.000000	0.000000	0.108771	0.002466	2.517.259	0.794872	0.790866	0.011790	2.055.614	-1.116.018
BOUYGUES	0.000000	0.000000	0.173434	0.000422	2.987.948	0.917029	0.914631	0.008682	2.225.777	-1.137.213
CAP GEMINI	0.323015	0.321030	0.021547	0.000417	2.990.813	0.269495	0.268207	0.022997	2.141.024	-1.126.867
CARREFOUR	0.000000	0.000000	0.097405	0.000247	3.130.921	0.800216	0.796253	0.011674	2.812.863	-1.199.600
CREDIT AGRICOLE	0.000000	0.000000	0.154936	0.001680	2.619.668	0.137588	0.138054	0.027840	1.978.258	-1.105.796
DANONE	0.003283	0.003666	0.048885	0.000145	3.272.605	0.974128	0.973144	0.006211	1.664.520	-1.059.777
DEXIA	0.000000	0.000000	0.148500	0.021992	1.934.178	0.953949	0.952389	0.007289	3.431.179	-1.252.554
EADS (PAR)	0.013762	0.014596	0.041466	0.000681	2.860.337	0.924281	0.922030	0.008441	1.928.512	-1.099.009
EDF	0.180849	0.180762	0.025952	0.000387	3.010.938	0.968864	0.967719	0.006532	2.608.532	-1.179.502
ESSILOR INTL.	0.001880	0.002149	0.051643	0.000488	2.948.890	0.934035	0.931995	0.008097	3.908.548	-1.287.269
FRANCE TELECOM	0.379962	0.377297	0.020169	0.000185	3.207.525	0.818527	0.814727	0.011269	3.334.478	-1.244.935
GDF SUEZ	0.000000	0.000000	0.152344	0.000632	2.880.180	0.385622	0.382893	0.020040	2.301.216	-1.146.096
L'OREAL	0.035888	0.037028	0.036144	0.000194	3.194.727	0.801643	0.797691	0.011643	3.262.876	-1.239.150
LAFARGE	0.002745	0.003088	0.049776	0.000688	2.857.597	0.995623	0.995414	0.003961	5.278.689	-1.367.355
LAGARDERE GROUPE	0.202090	0.201717	0.025157	0.000999	2.758.131	0.985965	0.985377	0.005288	6.338.309	-1.416.107
LVMH	0.000713	0.000851	0.056316	0.000246	3.132.056	0.992811	0.992484	0.004469	3.102.818	-1.225.746
MICHELIN	0.023604	0.024632	0.038515	0.000753	2.833.539	0.676141	0.671674	0.014185	2.190.404	-1.132.944
PERNOD-RICARD	0.000000	0.000000	0.170137	0.000482	2.952.450	0.991994	0.991634	0.004590	2.292.318	-1.145.064
PEUGEOT	0.000001	0.000002	0.085860	0.000702	2.852.015	0.977398	0.976517	0.005990	1.658.459	-1.058.804
PPR	0.002073	0.002359	0.051165	0.000563	2.910.757	0.874297	0.871167	0.009920	2.389.095	-1.156.084
RENAULT	0.003419	0.003813	0.048680	0.001019	2.752.838	0.939654	0.937741	0.007885	2.125.367	-1.124.911
SAINT GOBAIN	0.000000	0.000000	0.193866	0.000413	2.993.524	0.204906	0.204495	0.025056	1.782.473	-1.078.023

SANOFI-AVENTIS	0.000019	0.000028	0.072770	0.000264	3.112.423	0.342848	0.340618	0.021051	2.371.968	-1.154.166
SCHNEIDER ELECTRIC	0.168059	0.168141	0.026468	0.000155	3.254.030	0.933508	0.931456	0.008116	1.828.575	-1.084.828
SOCIETE GENERALE	0.000000	0.000000	0.174130	0.002213	2.546.150	0.918684	0.916318	0.008628	3.020.909	-1.218.616
STMICROELECTRONICS (PAR)	0.160834	0.161010	0.026774	0.000384	3.012.771	0.946951	0.945213	0.007592	1.672.127	-1.060.992
SUEZ ENVIRONNEMENT	NA (INSUFFICIENT DATA)									
TECHNIP	0.000000	0.000001	0.088669	0.000939	2.774.659	0.771448	0.767280	0.012286	1.898.604	-1.094.843
TOTAL	0.000000	0.000000	0.110170	4.58E-05	3.579.604	0.734696	0.730347	0.013036	1.878.095	-1.091.949
UNIBAIL-RODAMCO	0.000010	0.000015	0.075568	0.000152	3.260.697	0.191531	0.191301	0.025544	1.275.183	-9.887.684
VALLOUREC	0.226086	0.225387	0.024333	0.000863	2.797.265	0.841994	0.838441	0.010726	2.047.911	-1.115.018
VEOLIA ENVIRONNEMENT	0.906308	0.903705	0.009018	0.005660	2.295.897	0.969588	0.968464	0.006490	6.225.855	-1.411.336
VINCI (EX SGE)	0.000086	0.000115	0.066048	0.000168	3.232.630	0.966902	0.965699	0.006643	1.792.178	-1.079.470
VIVENDI	0.059535	0.060687	0.033163	9.43E-05	3.387.131	0.254812	0.253722	0.023430	2.262.293	-1.141.550

FRENCH (EURONEXT) MARKET FRCAC40

AR1 MODEL

	FR BEFORE CRISIS LEAST SQUARES					FR BEFORE CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
AIR LIQUIDE	0.000000	0.000000	0.095324	0.001265	27196.76	0.453397	0.452988	0.002217	14186.87	-8.887.974
ALCATEL-LUCENT	0.000000	0.000000	0.031295	0.085766	17824.04	0.926133	0.925872	0.000996	55525.84	-11921.33
ALSTOM	0.003636	0.003723	0.010889	0.274147	7.447.521	0.992604	0.992530	0.000996	31484.22	-6.469.996
ARCELORMITTAL	0.000000	0.000000	0.052760	0.037544	10869.75	0.421261	0.420628	0.003912	18739.41	-6.285.468
AXA	0.000000	0.000000	0.206057	0.004963	24158.80	0.673235	0.672703	0.001698	18129.68	-9.433.128
BNP PARIBAS	0.000000	0.000000	0.139631	0.003425	19897.48	0.861709	0.861227	0.001503	18794.57	-8.096.877
BOUYGUES	0.000000	0.000000	0.070682	0.006539	23545.54	0.836762	0.836334	0.001292	37046.05	-11021.71
CAP GEMINI	0.000000	0.000000	0.082469	0.019543	21111.83	0.618555	0.618030	0.001824	22655.93	-9.928.571
CARREFOUR	0.000000	0.000000	0.116177	0.002108	26062.14	0.000235	0.000242	0.007492	17330.85	-9.332.955
CREDIT AGRICOLE	0.000000	0.000000	0.144327	0.000739	8.637.438	0.934085	0.933360	0.002898	6.355.331	-3.178.395
DANONE	0.000000	0.000000	0.070530	0.001246	27230.19	0.001758	0.001787	0.006304	21100.09	-9.770.418
DEXIA	0.000000	0.000000	0.165113	0.004753	14639.40	0.999077	0.999068	0.000519	51059.19	-8.042.481
EADS (PAR)	0.000000	0.000000	0.028968	0.011274	8.497.771	0.975008	0.974737	0.001757	12604.76	-4.405.642
EDF	0.000595	0.000740	0.066933	7.70E-05	2.894.768	0.461404	0.457310	0.021608	1.359.392	-8.931.480
ESSILOR INTL.	0.000000	0.000000	0.064978	0.003957	24662.29	0.206978	0.206923	0.002993	31562.93	-10665.63
FRANCE TELECOM	0.000000	0.000000	0.188889	0.011675	12129.96	0.969780	0.969552	0.001336	12030.86	-5.620.011
GDF SUEZ	0.004283	0.004719	0.046092	4.74E-05	3.693.142	0.433186	0.430061	0.018399	1.595.551	-1.073.307
L'OREAL	0.000000	0.000000	0.143304	0.002018	26158.98	0.238203	0.238098	0.002867	13345.68	-8.752.096
LAFARGE	0.000000	0.000000	0.070812	0.002286	25882.01	0.849327	0.848917	0.001256	19556.56	-9.601.544
LAGARDERE GROUPE	0.000000	0.000000	0.084818	0.008485	22966.48	0.814127	0.813672	0.001354	51505.57	-11754.25
LVMH	0.000000	0.000000	0.128331	0.003212	25125.90	0.656845	0.656314	0.001736	18485.09	-9.476.286
MICHELIN	0.000000	0.000000	0.068847	0.003537	24911.84	0.273827	0.273665	0.002738	18647.36	-9.495.716
PERNOD-RICARD	0.000000	0.000000	0.067324	0.002338	25832.24	0.390718	0.390384	0.002382	19883.47	-9.638.396
PEUGEOT	0.000000	0.000000	0.093011	0.002688	25521.76	0.550088	0.549595	0.001983	18139.85	-9.434.375
PPR	0.000000	0.000000	0.058591	0.005601	23889.91	0.894305	0.893973	0.001115	39978.60	-11191.06
RENAULT	0.000000	0.000000	0.121541	0.003739	18055.15	0.011974	0.012096	0.006813	12419.50	-6.908.810
SAINT GOBAIN	0.000000	0.000000	0.058178	0.007137	23351.30	0.970115	0.969985	0.000768	36501.44	-10988.79
SANOFI-AVENTIS	0.000000	0.000000	0.054353	0.002792	25437.69	0.048849	0.048987	0.004132	18984.83	-9.535.586
SCHNEIDER ELECTRIC	0.000000	0.000000	0.067708	0.007338	23289.56	0.487860	0.487416	0.002132	18491.36	-9.477.040
SOCIETE GENERALE	0.000000	0.000000	0.133996	0.003929	24678.24	0.364055	0.363757	0.002456	20505.71	-9.706.897

STMICROELECTRONICS (PAR)	0.000000	0.000000	0.095439	0.010227	16300.99	0.998437	0.998424	0.000496	13234.80	-6.990.353
SUEZ ENVIRONNEMENT	NA (INSUFFICIENT DATA)									
TECHNIP	0.000000	0.000000	0.036191	0.007839	16902.27	0.988844	0.988769	0.000789	43940.48	-9.040.412
TOTAL	0.000000	0.000000	0.069196	0.001546	26751.20	0.336404	0.336146	0.002537	12753.09	-8.651.129
UNIBAIL-RODAMCO	0.000043	0.000045	0.008449	0.002264	25903.72	0.537390	0.536906	0.002013	45178.26	-11462.87
VALLOUREC	0.000000	0.000000	0.022197	0.009830	22639.45	0.668887	0.668355	0.001708	37515.90	-11049.73
VEOLIA ENVIRONNEMENT	0.000000	0.000000	0.122012	0.002092	10022.76	0.553798	0.552605	0.004756	11567.20	-4.315.043
VINCI (EX SGE)	0.000000	0.000000	0.051234	0.003380	25012.77	0.011760	0.011850	0.005109	23406.49	-10001.02
VIVENDI	0.000000	0.000000	0.210169	0.024763	20585.66	0.037528	0.037663	0.004321	16068.33	-9.164.813

	FR DURING CRISIS LEAST SQUARES					FR DURING CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
AIR LIQUIDE	0.000000	0.000000	0.106069	0.000471	2.958.472	0.904757	0.902126	0.009065	1.799.292	-1.080.525
ALCATEL-LUCENT	0.000000	0.000000	0.170445	0.005605	2.298.470	0.115249	0.115972	0.029017	1.295.792	-9.930.411
ALSTOM	0.000000	0.000000	0.300464	0.002691	2.494.004	0.289300	0.287748	0.022439	1.392.479	-1.012.219
ARCELORMITTAL	0.000000	0.000000	0.259308	0.008741	2.180.079	0.976176	0.975256	0.006075	1.235.372	-9.803.157
AXA	0.000000	0.000000	0.142586	0.008448	2.189.150	0.755120	0.750860	0.012623	1.903.089	-1.095.472
BNP PARIBAS	0.000002	0.000003	0.083248	0.006918	2.242.417	0.971371	0.970302	0.006384	1.795.093	-1.079.903
BOUYGUES	0.000000	0.000000	0.158915	0.002484	2.515.341	0.139986	0.140424	0.027723	1.385.328	-1.010.847
CAP GEMINI	0.004630	0.005102	0.047151	0.001607	2.631.466	0.977293	0.976409	0.005998	1.737.397	-1.071.196
CARREFOUR	0.000000	0.000000	0.157559	0.000705	2.850.871	0.756767	0.752516	0.012589	2.276.833	-1.143.257
CREDIT AGRICOLE	0.000000	0.000000	0.099974	0.006727	2.249.876	0.969090	0.967952	0.006519	2.037.505	-1.113.660
DANONE	0.000000	0.000000	0.155154	0.000330	3.053.041	0.935207	0.933193	0.008053	1.429.341	-1.019.183
DEXIA	0.000000	0.000000	0.147711	0.031554	1.837.970	0.627115	0.622692	0.015127	2.648.124	-1.183.517
EADS (PAR)	0.000152	0.000197	0.063476	0.001783	2.603.722	0.385448	0.382721	0.020044	1.378.691	-1.009.567
EDF	0.000000	0.000000	0.139835	0.001360	2.675.932	0.858514	0.855165	0.010324	2.219.953	-1.136.515
ESSILOR INTL.	0.000001	0.000002	0.084871	0.000490	2.948.194	0.866008	0.862760	0.010135	2.210.052	-1.135.324
FRANCE TELECOM	0.000002	0.000003	0.082884	0.000407	2.997.495	0.704957	0.700524	0.013624	2.573.128	-1.175.860
GDF SUEZ	0.000000	0.000000	0.237240	0.002976	2.467.209	0.226720	0.226011	0.024312	1.533.153	-1.037.868
L'OREAL	0.000000	0.000000	0.111299	0.000663	2.867.475	0.311618	0.309777	0.021841	1.764.145	-1.075.268
LAFARGE	0.000000	0.000000	0.095291	0.002692	2.493.978	0.999948	0.999945	0.001466	2.581.417	-1.176.717
LAGARDERE GROUPE	0.000000	0.000000	0.147801	0.001853	2.593.491	0.232843	0.232051	0.024113	2.391.155	-1.156.313
LVMH	0.000000	0.000000	0.128802	0.001358	2.676.241	0.368771	0.366233	0.020430	1.951.529	-1.102.170
MICHELIN	0.000378	0.000466	0.059291	0.002257	2.540.902	0.618517	0.614113	0.015292	1.431.678	-1.019.618
PERNOD-RICARD	0.000000	0.000000	0.244946	0.001448	2.659.286	0.818633	0.814833	0.011267	1.895.819	-1.094.452
PEUGEOT	0.000001	0.000002	0.084090	0.002573	2.505.983	0.999048	0.998997	0.002776	1.457.004	-1.024.291
PPR	0.000000	0.000000	0.148400	0.002508	2.512.789	0.962324	0.960990	0.006886	1.825.587	-1.084.392
RENAULT	0.000000	0.000000	0.141921	0.005250	2.315.933	0.972415	0.971377	0.006320	1.481.254	-1.028.690
SAINT GOBAIN	0.000000	0.000000	0.127973	0.004549	2.354.105	0.754186	0.749922	0.012642	1.490.909	-1.030.421
SANOFI-AVENTIS	0.000000	0.000000	0.167921	0.000739	2.838.389	0.811168	0.807299	0.011434	2.200.631	-1.134.185
SCHNEIDER ELECTRIC	0.000000	0.000000	0.191068	0.002231	2.543.996	0.661602	0.657135	0.014465	1.456.200	-1.024.144
SOCIETE GENERALE	0.000000	0.000000	0.134184	0.005161	2.320.498	0.702987	0.698550	0.013663	1.878.366	-1.091.987
STMICROELECTRONICS	0.003446	0.003841	0.048642	0.000954	2.770.436	0.655915	0.651451	0.014575	1.370.400	-1.007.960
SUEZ ENVIRONNEMENT	NA (INSUFFICIENT DATA)									
TECHNIP	0.000000	0.000000	0.178671	0.002882	2.475.739	0.955817	0.954307	0.007203	1.339.692	-1.001.920
TOTAL	0.000000	0.000000	0.229128	0.001056	2.743.239	0.783981	0.779894	0.012023	1.644.144	-1.056.494
UNIBAIL-RODAMCO	0.000259	0.000326	0.061047	0.000466	2.961.430	0.645246	0.640792	0.014780	1.245.005	-9.823.858
VALLOUREC	0.000000	0.000000	0.166725	0.002317	2.533.862	0.185457	0.185309	0.025774	1.184.653	-9.691.435

VEOLIA ENVIRONNEMENT	0.000000	0.000000	0.133158	0.004341	2.366.586	0.532900	0.528874	0.016949	3.210.723	-1.234.856
VINCI (EX SGE)	0.000000	0.000000	0.188544	0.002379	2.526.884	0.796907	0.792917	0.011746	1.335.644	-1.001.114
VIVENDI	0.000000	0.000000	0.167124	0.000538	2.923.129	0.351415	0.349081	0.020843	2.317.043	-1.147.923

DEUTSCH MARKET DAX30

MARKET MODEL

	DE BEFORE CRISIS LEAST SQUARES					DE BEFORE CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADIDAS	0.000000	0.000000	0.076493	0.001772	17662.52	0.707708	0.706944	0.002347	18180.97	-7.077.399
ALLIANZ	0.000000	0.000000	0.095629	0.001043	27633.02	0.017269	0.017376	0.004853	19755.55	-9.625.713
BASF	0.000000	0.000000	0.071624	0.000451	29499.59	0.407266	0.406911	0.002337	30193.57	-10568.91
BMW	0.000000	0.000000	0.114758	0.001370	27026.71	0.000027	0.000028	0.008719	22577.06	-9.922.551
BAYER	0.000001	0.000001	0.010404	0.008525	22961.79	0.962960	0.962805	0.000814	76597.62	-12638.85
BEIERSDORF	0.000000	0.000000	0.062212	0.004447	24408.84	0.171547	0.171550	0.003155	34984.71	-10896.39
COMMERZBANK	0.000000	0.000000	0.119155	0.001518	26798.20	0.049575	0.049712	0.004121	36068.79	-10964.25
DAIMLER	0.000000	0.000000	0.056204	0.000338	14823.38	0.976879	0.976674	0.001386	13343.73	-5.283.618
DEUTSCHE BANK	0.000000	0.000000	0.134748	0.000709	28491.10	0.727356	0.726836	0.001571	25745.12	-10214.52
DEUTSCHE BOERSE	0.000000	0.000000	0.037292	0.000500	10404.99	0.928649	0.927983	0.002575	8.401.007	-3.778.846
DEUTSCHE POST	0.000000	0.000000	0.056447	0.000386	10994.82	0.611041	0.609719	0.004657	7.551.138	-3.778.950
DEUTSCHE TELEKOM	0.000000	0.000000	0.115759	0.001395	16375.88	0.262818	0.262588	0.004401	13929.53	-6.227.780
E ON	0.000000	0.000000	0.128902	0.000738	28402.90	0.914687	0.914398	0.001041	31395.86	-10655.73
FRESENIUS MED.CARE	0.000004	0.000005	0.015233	0.007510	14190.79	0.349580	0.349145	0.003916	20579.67	-6.836.366
FRESENIUS PREF.	0.000000	0.000000	0.033615	0.005689	23861.17	0.001623	0.001650	0.006351	26695.59	-10295.13
HENKEL PREF.	0.000000	0.000000	0.093102	0.001150	27415.62	0.000794	0.000811	0.006779	23957.71	-10054.53
INFINEON TECHNOLOGIES	0.000000	0.000000	0.081046	0.003762	10005.97	0.965249	0.964911	0.001837	8.900.040	-4.230.407
K + S	0.000000	0.000000	0.038088	0.003419	24993.57	0.746149	0.745638	0.001526	39012.36	-11138.68
LINDE	0.000000	0.000000	0.077572	0.000813	28188.10	0.001989	0.002021	0.006227	19404.82	-9.585.884
DEUTSCHE LUFTHANSA	0.000000	0.000000	0.043107	0.002064	26115.73	0.008893	0.008972	0.005290	20391.14	-9.696.122
MAN	0.000000	0.000000	0.092129	0.001303	27138.78	0.000841	0.000859	0.006745	17065.46	-9.300.242
MERCK KGAA	0.000000	0.000000	0.048060	0.003149	16901.43	0.010854	0.010979	0.007435	18199.58	-7.115.127
METRO	0.000000	0.000000	0.065025	0.001356	16950.12	0.017286	0.017451	0.007466	11287.42	-6.067.847
MUENCHENER RUCK.	0.000000	0.000000	0.113551	0.001533	26776.15	0.369945	0.369639	0.002439	27794.52	-10384.83
RWE	0.000000	0.000000	0.117089	0.000999	27729.61	0.286246	0.286064	0.002695	21933.53	-9.858.252
SALZGITTER	0.000000	0.000000	0.079719	0.057816	18705.41	0.992854	0.992816	0.000530	406937.9	-16352.30
SAP	0.000000	0.000000	0.022087	0.017839	21319.94	0.993067	0.993030	0.000526	93795.43	-13089.22
SIEMENS	0.000000	0.000000	0.055933	0.001318	27112.59	0.991412	0.991367	0.000554	83247.18	-12823.95
THYSSENKRUPP	0.000000	0.000000	0.050903	0.002156	26018.52	0.537505	0.537021	0.002012	27045.98	-10324.12
VOLKSWAGEN	0.000000	0.000000	0.032368	0.001369	27028.22	0.254040	0.253909	0.002808	33540.59	-10802.66

	DE DURING CRISIS LEAST SQUARES					DE DURING CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADIDAS	0.000000	0.000000	0.278763	0.000647	2.873.799	0.894076	0.891258	0.009379	2.937.243	-1.211.131
ALLIANZ	0.000000	0.000000	0.453167	0.001386	2.670.763	0.854754	0.851357	0.010417	2.384.367	-1.155.556
BASF	0.000000	0.000000	0.272152	0.000382	3.014.613	0.540545	0.536473	0.016799	3.009.485	-1.217.606
BMW	0.000000	0.000000	0.137315	0.000538	2.922.948	0.969201	0.968065	0.006513	1.892.201	-1.093.943
BAYER	0.000000	0.000000	0.185690	0.000366	3.025.944	0.983554	0.982880	0.005509	2.294.530	-1.145.321
BEIERSDORF	0.014376	0.015227	0.041231	0.000145	3.271.970	0.929047	0.926897	0.008276	1.796.524	-1.080.115
COMMERZBANK	0.000000	0.000000	0.130698	0.011428	2.108.631	0.959351	0.957935	0.007035	2.942.235	-1.211.584
DAIMLER	0.000000	0.000000	0.409427	0.000937	2.775.251	0.995801	0.995600	0.003922	2.564.092	-1.174.923

DEUTSCHE BANK	0.000000	0.000000	0.133567	0.004478	2.358.317	0.950305	0.948652	0.007450	3.664.477	-1.270.085
DEUTSCHE BOERSE	0.000000	0.000000	0.314819	0.001908	2.585.733	0.806087	0.802173	0.011546	1.761.268	-1.074.833
DEUTSCHE POST	0.000000	0.000000	0.342595	0.001564	2.638.602	0.109602	0.110384	0.029345	4.041.526	-1.296.185
DEUTSCHE TELEKOM	0.000000	0.000000	0.136023	0.000500	2.942.724	0.362829	0.360361	0.020570	2.929.170	-1.210.398
E ON	0.000000	0.000000	0.333860	0.000475	2.956.064	0.844761	0.841241	0.010660	1.632.181	-1.054.548
FRESENIUS MED.CARE	0.000000	0.000000	0.113689	0.000197	3.191.401	0.979593	0.978785	0.005830	1.892.821	-1.094.030
FRESENIUS PREF.	0.017434	0.018356	0.040185	0.000724	2.843.887	0.995492	0.995277	0.003989	3.267.548	-1.239.532
HENKEL PREF.	0.000000	0.000000	0.224926	0.000298	3.080.519	0.378561	0.375912	0.020202	2.083.376	-1.119.593
INFINEON TECH	0.390460	0.387678	0.019930	0.070676	1.623.062	0.999385	0.999351	0.002516	7.221.775	-1.450.882
K + S	0.000000	0.000000	0.094654	0.002525	2.510.959	0.862995	0.859706	0.010212	1.991.426	-1.107.564
LINDE	0.000000	0.000000	0.208370	0.000332	3.051.639	0.970429	0.969330	0.006441	2.162.051	-1.129.472
DEUTSCHE LUFTH	0.000000	0.000000	0.132293	0.000649	2.873.207	0.000428	0.000524	0.058720	3.249.838	-1.238.083
MAN	0.000000	0.000000	0.246374	0.000666	2.866.226	0.674441	0.669974	0.014218	1.326.749	-9.993.331
MERCK KGAA	0.436349	0.433093	0.018921	0.000724	2.843.893	0.999160	0.999115	0.002699	5.816.813	-1.393.226
METRO	0.000000	0.000000	0.443637	0.002254	2.541.252	0.469779	0.466220	0.018219	2.147.134	-1.127.627
MUENCHENER RUCK.	0.000000	0.000000	0.260472	0.000397	3.004.113	0.929418	0.927276	0.008263	3.399.257	-1.250.063
RWE	0.000000	0.000000	0.212798	0.000589	2.898.938	0.473185	0.469597	0.018149	2.901.234	-1.207.844
SALZGITTER	0.000000	0.000000	0.153958	0.001021	2.752.272	0.912429	0.909941	0.008829	1.474.559	-1.027.483
SAP	0.000000	0.000000	0.186002	0.000448	2.971.541	0.914423	0.911974	0.008766	3.232.624	-1.236.668
SIEMENS	0.000000	0.000000	0.183232	0.001288	2.690.457	0.975574	0.974635	0.006116	4.379.185	-1.317.569
THYSSENKRUPP	0.000000	0.000000	0.095554	0.000958	2.769.177	0.976080	0.975157	0.006082	2.215.257	-1.135.951
VOLKSWAGEN	0.000000	0.000000	0.390222	0.404801	1.157.944	0.845468	0.841957	0.010643	4.278.155	-1.311.349

DEUTSCH MARKET DAX30

AR1 MODEL

	DE BEFORE CRISIS LEAST SQUARES					DE BEFORE CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADIDAS	0.000000	0.000000	0.089198	0.002396	17194.48	0.591391	0.590643	0.002739	14935.00	-6.774.295
ALLIANZ	0.000000	0.000000	0.125591	0.004597	24328.96	0.772864	0.772371	0.001460	27176.88	-10333.03
BASF	0.000000	0.000000	0.102053	0.001401	26970.82	0.950248	0.950053	0.000886	20490.11	-9.705.206
BMW	0.000000	0.000000	0.116015	0.003749	24782.25	0.143036	0.143082	0.003308	23056.26	-9.967.508
BAYER	0.000000	0.000000	0.016346	0.014375	21794.69	0.995008	0.994980	0.000485	45975.95	-11501.78
BEIERSDORF	0.000000	0.000000	0.067973	0.004405	24423.71	0.247172	0.247052	0.002833	32581.06	-10736.21
COMMERZBANK	0.000000	0.000000	0.128466	0.004666	24295.93	0.991964	0.991922	0.000545	42807.51	-11343.05
DAIMLER	0.000000	0.000000	0.135132	0.001076	13484.92	0.915591	0.915035	0.002011	9.373.202	-4.876.003
DEUTSCHE BANK	0.000000	0.000000	0.154983	0.002519	25666.28	0.982285	0.982201	0.000667	34376.42	-10855.45
DEUTSCHE BOERSE	0.000000	0.000000	0.045093	0.000733	10071.53	0.743407	0.742067	0.004004	8.195.948	-3.756.075
DEUTSCHE POST	0.000000	0.000000	0.091766	0.000637	10547.74	0.970937	0.970614	0.001929	6.727.858	-3.675.772
DEUTSCHE TELEKOM	0.000000	0.000000	0.148215	0.004255	14805.81	0.908624	0.908144	0.001689	11633.37	-5.973.512
E ON	0.000000	0.000000	0.085223	0.001520	26789.12	0.794893	0.794418	0.001404	26264.27	-10257.10
FRESENIUS MED.CARE	0.000000	0.000000	0.031340	0.007997	14096.33	0.355630	0.355181	0.003889	20725.05	-6.844.439
FRESENIUS PREF.	0.000000	0.000000	0.044037	0.006587	23529.32	0.077369	0.077494	0.003792	31092.88	-10632.28
HENKEL PREF.	0.000000	0.000000	0.108962	0.002023	26153.53	0.375289	0.374976	0.002424	36146.42	-10967.06
INFINEON TECH	0.000000	0.000000	0.188715	0.007873	9.284.238	0.998412	0.998390	0.000851	7.826.456	-4.104.101
K + S	0.000000	0.000000	0.039835	0.005112	24092.90	0.994799	0.994770	0.000490	50872.34	-11726.75
LINDE	0.000000	0.000000	0.059614	0.001777	26441.93	0.952915	0.952728	0.000872	35193.99	-10907.70
DEUTSCHE LUFTH	0.000000	0.000000	0.065870	0.005820	23804.49	0.709488	0.708962	0.001613	25276.94	-10171.93
MAN	0.000000	0.000000	0.078095	0.003248	25101.57	0.990700	0.990652	0.000566	34340.29	-10853.11

MERCK KGAA	0.000000	0.000000	0.041731	0.003752	16625.25	0.209654	0.209570	0.004299	18113.61	-7.106.019
METRO	0.000000	0.000000	0.074472	0.002880	15855.70	0.064316	0.064522	0.006050	11167.10	-6.050.772
MUENCHENER RUCK.	0.000000	0.000000	0.146932	0.005618	23883.31	0.845980	0.845565	0.001266	26292.62	-10259.50
RWE	0.000000	0.000000	0.089864	0.001786	26430.16	0.857733	0.857335	0.001231	24933.23	-10141.49
SALZGITTER	0.000000	0.000000	0.082042	0.057432	18715.50	0.993373	0.993337	0.000520	391563.6	-16263.51
SAP	0.000000	0.000000	0.046052	0.024301	20627.48	0.967043	0.966902	0.000789	65454.62	-12287.03
SIEMENS	0.000000	0.000000	0.115076	0.003211	25126.54	0.996912	0.996895	0.000433	44817.59	-11445.06
THYSSENKRUPP	0.000000	0.000000	0.043745	0.003615	24863.14	0.950983	0.950790	0.000882	28890.83	-10468.99
VOLKSWAGEN	0.000000	0.000000	0.068533	0.003383	25010.47	0.982240	0.982156	0.000668	29882.02	-10543.98

	DE DURING CRISIS LEAST SQUARES					DE DURING CRISIS ARCH				
	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL	F-PROB	OBS*RSQ	R-SQ	SSR	LOGL
ADIDAS	0.000000	0.000000	0.198671	0.001330	2.681.761	0.544666	0.540570	0.016719	2.184.720	-1.132.251
ALLIANZ	0.000000	0.000000	0.174830	0.003940	2.392.425	0.335821	0.333676	0.021225	1.636.199	-1.055.203
BASF	0.000000	0.000000	0.213890	0.001440	2.660.629	0.083892	0.084907	0.031053	1.484.989	-1.029.361
BMW	0.000000	0.000000	0.102040	0.001856	2.593.004	0.882585	0.879581	0.009699	2.033.679	-1.113.159
BAYER	0.000000	0.000000	0.184233	0.000745	2.836.195	0.472730	0.469146	0.018158	2.021.236	-1.111.524
BEIERSDORF	0.000000	0.000000	0.119534	0.000234	3.145.443	0.669623	0.665155	0.014311	1.531.712	-1.037.617
COMMERZBANK	0.000000	0.000000	0.168159	0.015079	2.034.761	0.649453	0.644995	0.014699	2.836.676	-1.201.847
DAIMLER	0.000000	0.000000	0.133857	0.003909	2.394.536	0.657391	0.652926	0.014546	1.743.218	-1.072.088
DEUTSCHE BANK	0.000000	0.000000	0.123366	0.009118	2.168.810	0.969510	0.968384	0.006495	2.117.361	-1.123.906
DEUTSCHE BOERSE	0.000000	0.000000	0.142834	0.002954	2.469.174	0.672126	0.667658	0.014262	1.319.527	-9.978.783
DEUTSCHE POST	0.000000	0.000000	0.192985	0.001809	2.599.911	0.169113	0.169181	0.026425	1.480.941	-1.028.634
DEUTSCHE TELEKOM	0.000000	0.000000	0.206236	0.000946	2.772.558	0.678890	0.674424	0.014132	2.430.658	-1.160.680
E ON	0.000000	0.000000	0.312789	0.001469	2.655.393	0.709237	0.704813	0.013540	2.170.608	-1.130.525
FRESENIUS MED.CARE	0.000000	0.000000	0.123843	0.000346	3.040.336	0.992416	0.992073	0.004529	2.242.527	-1.139.211
FRESENIUS PREF.	0.001929	0.002202	0.051519	0.001031	2.749.725	0.993872	0.993589	0.004298	3.019.639	-1.218.504
HENKEL PREF.	0.000000	0.000000	0.101907	0.000428	2.984.028	0.398865	0.395992	0.019740	1.433.652	-1.019.985
INFINEON TECHNOLOGIES	0.314388	0.312512	0.021769	0.070771	1.622.703	0.982305	0.981588	0.005615	4.526.212	-1.326.370
K + S	0.000000	0.000000	0.140827	0.004607	2.350.763	0.714049	0.709636	0.013446	1.601.201	-1.049.441
LINDE	0.000000	0.000000	0.185087	0.000824	2.809.472	0.848395	0.844919	0.010573	1.872.190	-1.091.110
DEUTSCHE LUFTHANSA	0.000000	0.000000	0.102998	0.000541	2.921.669	0.487925	0.484217	0.017848	1.476.171	-1.027.774
MAN	0.000000	0.000000	0.185534	0.003040	2.461.537	0.069780	0.070888	0.032196	1.294.215	-9.927.166
MERCK KGAA	0.160464	0.160644	0.026790	0.000851	2.800.856	0.975407	0.974462	0.006127	5.408.241	-1.373.817
METRO	0.000000	0.000000	0.183283	0.003469	2.426.387	0.054101	0.055267	0.033737	2.077.754	-1.118.873
MUENCHENER RUCK.	0.000000	0.000000	0.140227	0.001135	2.724.028	0.856038	0.852657	0.010386	2.579.017	-1.176.469
RWE	0.000000	0.000000	0.211878	0.001148	2.721.105	0.784829	0.780749	0.012005	2.541.857	-1.172.602
SALZGITTER	0.000000	0.000000	0.165746	0.007131	2.234.321	0.269326	0.268040	0.023002	1.399.714	-1.013.600
SAP	0.000000	0.000000	0.165610	0.001452	2.658.442	0.940042	0.938138	0.007870	3.841.202	-1.282.637
SIEMENS	0.000000	0.000000	0.158387	0.003409	2.430.992	0.983719	0.983051	0.005495	3.391.950	-1.249.489
THYSSENKRUPP	0.000000	0.000000	0.112099	0.003215	2.446.597	0.666171	0.661703	0.014377	1.672.769	-1.061.094
VOLKSWAGEN	0.000000	0.000000	0.426766	0.421021	1.147.474	0.755421	0.751163	0.012617	4.015.137	-1.294.439

With the above table I provide evidence for the usefulness of the GARCH modeling approach. To continue I present the results table of least squares and GARCH(1,1) market model and AR(1) model.

TABLE 2 LS AND GARCH(1,1) ESTIMATION RESULTS FOR BOTH MARKET MODEL & AR(1) BY MARKET AND SUB PERIOD

least squares estimation of Market Model

	before crisis					during crisis				
	frcac40									
STOCK	a	b	tstat	sddep	se	a	b	tstat	sddep	se
AIR LIQUIDE	0,000113	0,807775	56,241120	0,016241	0,012421	0,000421	0,795987	31,255630	0,020706	0,012373
ALCATEL-LUCENT	-0,000542	1,456808	58,248920	0,028705	0,021630	-0,000774	1,363599	22,904760	0,040556	0,028923
ALSTOM	-0,000667	0,925620	16,761020	0,040263	0,038102	0,000408	1,266690	26,591690	0,035119	0,023143
ARCELORMITTAL	0,000081	0,524726	10,694070	0,036079	0,035324	0,000081	1,700519	29,419130	0,045238	0,028083
AXA	0,000007	1,253224	78,189660	0,021348	0,013862	0,000387	1,684394	35,667270	0,041964	0,022944
BNP PARIBAS	0,000054	1,119102	61,314600	0,020591	0,014421	0,000387	1,326764	24,941520	0,037858	0,025844
BOUYGUES	0,000196	0,942172	45,380020	0,021710	0,017956	-0,000041	1,217147	29,960980	0,032155	0,019737
CAP GEMINI	-0,000313	1,192764	44,329460	0,027932	0,023270	0,000257	1,055686	24,631840	0,030300	0,020822
CARREFOUR	0,000225	0,858828	54,812970	0,017532	0,013551	-0,000352	0,784866	21,728120	0,023993	0,017549
CREDIT AGRICOLE	0,000215	0,864370	33,404910	0,017649	0,013348	-0,000010	1,441506	26,390370	0,040098	0,026537
DANONE	0,000150	0,611715	42,316150	0,014801	0,012502	0,000003	0,622991	18,326960	0,021006	0,016515
DEXIA	0,000169	0,691067	32,540820	0,018384	0,015671	-0,001240	1,231020	13,323530	0,051683	0,044888
EADS (PAR)	0,000194	1,045988	29,676490	0,025407	0,020940	0,000112	1,027616	20,187660	0,032716	0,024730
EDF	0,001470	0,718966	10,574850	0,015373	0,013812	-0,000537	0,779317	18,639020	0,026007	0,020313
ESSILOR INTL.	0,000438	0,438374	21,318200	0,018667	0,017784	0,000076	0,438602	13,189910	0,018555	0,016155
FRANCE TELECOM	-0,000399	1,418281	46,255830	0,029628	0,021896	0,000039	0,542627	16,801170	0,019338	0,015691
GDF SUEZ	0,000355	0,863085	13,994650	0,015535	0,013381	0,000332	0,931993	21,914900	0,028361	0,020661
L'OREAL	0,000310	0,993704	64,000070	0,018602	0,013428	0,000090	0,709972	21,992620	0,021565	0,015684
LAFARGE	-0,000036	0,868211	48,808700	0,019056	0,015384	-0,000033	1,160522	26,380330	0,032287	0,021373
LAGARDERE GROUPE	-0,000003	0,947279	41,653600	0,023181	0,019668	-0,000485	0,921993	23,772290	0,026918	0,018843
LVMH	0,000063	1,031393	64,480420	0,019232	0,013834	0,000398	0,981416	30,480920	0,025762	0,015643
MICHELIN	0,000218	0,832537	42,370530	0,020126	0,016993	-0,000135	1,178863	23,641530	0,034511	0,024226
PERNOD-RICARD	0,000298	0,479040	24,511210	0,018004	0,016902	0,000053	0,808431	19,235710	0,026472	0,020418
PEUGEOT	0,000086	0,848861	49,690910	0,018417	0,014774	-0,001192	1,127928	20,991160	0,035132	0,026105
PPR	0,000247	0,849400	43,969800	0,020004	0,016707	0,000217	1,221476	27,618070	0,033326	0,021487
RENAULT	0,000066	0,961787	38,744430	0,022955	0,019064	-0,000982	1,501145	28,181970	0,040618	0,025878
SAINT GOBAIN	0,000098	0,932064	53,147650	0,019386	0,015167	-0,000223	1,487717	35,072150	0,037253	0,020608
SANOFI-AVENTIS	0,000247	0,811700	43,681500	0,019204	0,016071	0,000154	0,653302	18,111990	0,022190	0,017524
SCHNEIDER ELECTRIC	0,000035	0,847662	39,793660	0,021446	0,018422	0,000301	1,263123	36,333330	0,031298	0,016890
SOCIETE GENERALE	0,000136	1,113437	68,528100	0,020137	0,014052	-0,000336	1,294421	21,461470	0,039834	0,029302
STMICROELECTRONICS	-0,000015	1,386650	44,011430	0,030412	0,024170	-0,000608	0,887796	19,939600	0,028466	0,021631
SUEZ ENVIRONNEMENT						NA				
TECHNIP	0,000338	0,568476	20,379970	0,022735	0,021447	0,000320	1,169892	22,191590	0,035367	0,025612
TOTAL	0,000280	0,810085	51,599160	0,017160	0,013578	0,000166	0,994875	37,921020	0,024356	0,012746
UNIBAIL-RODAMCO	0,000269	0,238895	14,005460	0,015071	0,014752	0,000171	0,780178	20,618350	0,024544	0,018383
VALLOUREC	0,000531	0,606397	23,363800	0,023779	0,022447	-0,000110	1,170996	22,407740	0,035222	0,025389
VEOLIA ENVIRONNEMENT	0,000350	0,521111	17,385730	0,019187	0,017798	-0,000775	0,860510	17,658730	0,029697	0,023675
VINCI (EX SGE)	0,000263	0,498006	22,914270	0,019871	0,018796	0,000375	1,261557	41,971690	0,030099	0,014603
VIVENDI	-0,000259	1,126055	56,637370	0,022548	0,017195	-0,000102	0,736350	25,464800	0,020812	0,014049
	DAX30									
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
ADIDAS	0,000262	0,554468	25,196760	0,020150	0,018347	0,000112	0,794714	18,075490	0,026080	0,020612
ALLIANZ	-0,000260	1,090594	82,292360	0,019544	0,012313	-0,000447	1,220371	25,365620	0,033342	0,022555
BASF	0,000189	0,797848	64,201500	0,016018	0,011546	0,000028	1,034482	29,434090	0,026550	0,016476
BMW	0,000115	0,897853	57,647830	0,019118	0,014470	-0,000016	1,015937	22,900740	0,029159	0,020797
BAYER	0,000051	0,885793	59,973290	0,018446	0,013722	0,000050	0,766825	20,206130	0,023545	0,017791
BEIERSDORF	0,000308	0,382925	19,340590	0,019149	0,018395	-0,000116	0,491278	13,913520	0,019271	0,016553
COMMERZBANK	-0,000133	0,939047	61,858270	0,019227	0,014104	-0,001545	1,355555	16,481890	0,047212	0,038557
DAIMLER	-0,000215	0,886997	47,254030	0,019517	0,013916	-0,000486	1,254142	28,116330	0,032776	0,020911
DEUTSCHE BANK	-0,000128	0,991586	80,515210	0,017926	0,011442	-0,000208	1,448033	23,926900	0,040666	0,028372
DEUTSCHE BOERSE	0,000884	0,444270	18,249080	0,017333	0,015865	-0,000095	1,074369	18,116920	0,035207	0,027801
DEUTSCHE POST	-0,000029	0,538379	24,069080	0,017021	0,014776	-0,000459	0,874902	19,238280	0,027642	0,021320
DEUTSCHE TEL	-0,000386	1,017935	45,518480	0,024342	0,018475	-0,000380	0,582325	15,105370	0,021530	0,018073
E ON	0,000177	0,691728	50,193070	0,016018	0,012804	-0,000167	0,863772	20,604290	0,026231	0,019653
FRESENIUS MED.CARE	-0,000002	0,484932	19,980130	0,021432	0,020074	0,000052	0,288837	7,924848	0,018034	0,017086

FRESENIUS PREF.	0,000473	0,467641	21,908130	0,020870	0,019832	-0,000346	0,400261	8,675356	0,023064	0,021629
HENKEL PREF.	0,000107	0,535591	34,744320	0,016144	0,014322	-0,000132	0,620289	16,724110	0,021396	0,017388
INFINEON TECH	-0,000544	1,286701	29,718450	0,035740	0,029654	-0,001132	1,190689	10,780790	0,057016	0,051777
K + S	0,000307	0,498347	25,457590	0,019463	0,018187	0,001206	1,047382	14,188500	0,040500	0,034607
LINDE	-0,000047	0,637898	43,975750	0,016137	0,013477	0,000155	0,791795	21,168760	0,023688	0,017535
DEUTSCHE LUFTHANSA	-0,000046	0,904862	47,443030	0,021738	0,017720	-0,000618	0,779405	19,667730	0,024307	0,018578
MAN	0,000080	0,822361	48,053770	0,019589	0,015900	-0,000440	1,263250	24,713220	0,034932	0,023964
MERCK KGAA	0,000201	0,455069	18,998870	0,021141	0,020009	-0,000379	0,408889	10,117910	0,020641	0,018945
METRO	-0,000005	0,695960	32,618860	0,020655	0,017667	-0,000500	0,745920	13,652840	0,029672	0,025613
MUENCHENER RUCK.	-0,000118	0,971283	60,456560	0,020137	0,014926	0,000123	0,731855	17,783340	0,024264	0,019293
RWE	0,000067	0,689850	48,950270	0,016235	0,013093	-0,000104	0,685928	18,402240	0,022261	0,017474
SALZGITTER	0,000477	0,285614	12,422170	0,021726	0,021361	-0,000634	1,471917	24,583660	0,040804	0,028069
SAP	0,000390	1,022813	42,389710	0,026553	0,022417	0,000050	0,652184	16,800800	0,022429	0,018198
SIEMENS	-0,000033	1,032846	76,972420	0,019027	0,012467	-0,000049	1,160419	27,059000	0,030813	0,020105
THYSSENKRUPP	-0,000014	0,816234	48,468990	0,019334	0,015646	-0,000422	1,240280	25,722220	0,033672	0,022605
VOLKSWAGEN	0,000072	0,950902	61,259210	0,019573	0,014422	-0,000208	0,625078	4,653050	0,064166	0,062978
					ftse100uk					
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
ADMIRAL GROUP	0,001043	1,014170	14,356850	0,016597	0,014740	0,000869	0,763605	13,566730	0,029126	0,025182
ALLIANCE TRUST	0,000110	0,624082	69,526060	0,008695	0,006022	0,000163	1,084354	43,377020	0,023645	0,011184
AMEC	0,000109	0,595994	18,654940	0,022254	0,021435	0,000677	1,081333	22,502010	0,029887	0,021500
ANGLO AMERICAN	0,000245	0,893236	24,958250	0,025324	0,023687	0,000026	1,800552	27,934950	0,045026	0,028837
ANTOFAGASTA	0,000684	0,343868	14,012250	0,016822	0,016465	0,000737	1,627816	23,034750	0,044457	0,031617
ASSOCIATED BRIT.FOODS	0,000180	0,599222	28,350540	0,015405	0,014181	0,000183	0,577486	18,212110	0,018001	0,014187
ASTRAZENECA	0,000187	0,854957	37,829380	0,016639	0,014141	0,000481	0,605167	15,490980	0,020980	0,017478
AUTONOMY CORP.	-0,000596	1,508383	17,359200	0,043935	0,040645	0,001366	0,863448	14,709540	0,031045	0,026262
AVIVA	-0,000184	1,228183	54,256860	0,019570	0,015187	-0,000223	1,641666	20,465380	0,047760	0,035889
BAE SYSTEMS	0,000089	0,820887	24,095800	0,024298	0,022856	-0,000242	0,726920	17,992750	0,022831	0,018075
BARCLAYS	0,000125	1,294210	61,058170	0,019271	0,014221	-0,000200	1,807179	17,110860	0,058607	0,047253
BG GROUP	0,000286	0,759779	32,497840	0,017444	0,015686	0,001001	1,116916	22,745960	0,030700	0,021969
BHP BILLITON	0,000645	0,972114	27,009770	0,023762	0,021031	0,000890	1,587810	28,514570	0,039378	0,024913
BP	0,000077	0,851470	43,644170	0,015637	0,013089	0,000354	0,976092	32,895430	0,022973	0,013276
BRITISH AIRWAYS	-0,000077	1,154211	38,831410	0,023069	0,019942	-0,000751	1,202174	16,880700	0,039333	0,031862
BRITISH AMERICAN TOBACCO	0,000368	0,635073	24,572620	0,018475	0,017340	0,000544	0,577551	14,409700	0,021075	0,017932
BRITISH LAND	0,000191	0,645717	27,682830	0,016940	0,015649	-0,001116	1,007617	16,517950	0,033443	0,027292
BRITISH SKY BCAST.GROUP	0,000063	1,029180	31,434790	0,022651	0,019887	0,000007	0,832256	20,613310	0,024114	0,018064
BT GROUP	-0,000144	1,085706	44,487710	0,019675	0,016373	-0,001309	0,861081	16,235870	0,028911	0,023728
BUNZL	0,000356	0,544142	25,004710	0,015589	0,014600	0,000098	0,660416	18,956720	0,020089	0,015587
BURBERRY GROUP	0,000538	0,637666	14,183350	0,018533	0,017287	0,000010	0,965417	14,888160	0,034414	0,029012
CABLE & WIRELESS	-0,000369	1,256650	37,538990	0,025765	0,022459	-0,000034	0,768555	19,907880	0,022714	0,017272
CADBURY	0,000136	0,635792	31,912890	0,014814	0,013366	0,000605	0,591543	13,311810	0,022886	0,019881
CAIRN ENERGY	0,000314	0,364297	10,162300	0,024325	0,024051	0,001245	1,155950	19,414980	0,034666	0,026638
CAPITA GROUP	0,000899	0,756487	26,215780	0,020797	0,019360	0,000135	0,527992	16,616340	0,017455	0,014216
CARNIVAL	0,000444	0,874534	21,500420	0,021375	0,019059	0,000338	1,042369	20,108550	0,030629	0,023192
CENTRICA	0,000510	0,616083	20,173620	0,019300	0,018015	-0,000345	0,599188	13,851440	0,022505	0,019354
COBHAM	0,000518	0,360142	18,102610	0,013828	0,013347	0,000398	0,636816	16,883820	0,020833	0,016875
COMPASS GROUP	-0,000235	0,972310	25,134360	0,020785	0,017772	0,000610	0,822410	18,540480	0,025356	0,019846
DIAGEO	0,000055	0,717244	33,931280	0,015907	0,014182	0,000064	0,647861	22,346210	0,017971	0,012971
EURASIAN NATRES.CORP.						NA				
EXPERIAN	0,000527	1,128532	12,280040	0,016436	0,012833	0,000340	0,867186	18,587160	0,026695	0,020874
FRESNILLO						NA				
FRIENDS PROVIDENT	0,000260	1,345967	36,592500	0,021924	0,016188	0,000770	1,196018	15,802410	0,040900	0,033862
G4S	0,000305	0,582021	15,821620	0,022825	0,021911	0,000480	0,748727	22,522960	0,020684	0,014873
GLAXOSMITHKLINE	0,000041	0,970930	45,679700	0,017278	0,014260	0,000098	0,512320	14,805350	0,018335	0,015482
HAMMERSON	0,000096	0,359016	17,873450	0,013950	0,013476	-0,001170	0,933545	14,951410	0,033178	0,027935
HOME RETAIL GROUP	0,000218	0,672806	28,518670	0,017210	0,015828	-0,000399	0,997220	15,810290	0,034090	0,028219
HSBC HDG. (ORD $0.50)	0,000274	1,123199	56,256970	0,017181	0,012803	0,000270	1,143438	24,698620	0,030184	0,020713
ICAP	0,000994	0,445133	14,607730	0,017072	0,016333	0,000259	1,384993	19,433600	0,041512	0,031885
IMPERIAL TOBACCO GP.	0,000628	0,386711	14,981190	0,015910	0,015320	0,000080	0,579269	15,072630	0,020470	0,017194

INMARSAT	0,000497	0,990265	11,453990	0,018775	0,016954	0,000836	0,727607	14,888480	0,025936	0,021865
ICTL.HTLS.GP.	0,000386	0,948901	19,513310	0,014655	0,012712	-0,000055	1,043938	23,020820	0,028519	0,020289
INTERNATIONAL POWER	0,000182	0,666846	23,673470	0,019725	0,018554	-0,000282	0,891852	19,283450	0,026854	0,020692
INTERTEK GROUP	0,000598	0,382313	11,105950	0,014344	0,013746	0,000726	0,672801	16,053010	0,022762	0,018751
INVENSYS	-0,000370	1,219656	27,536690	0,032142	0,029716	0,000214	1,348722	21,083330	0,038593	0,028621
JOHNSON MATTHEY	0,000249	0,648901	27,906700	0,016907	0,015600	0,000114	1,008750	20,804380	0,029078	0,021693
KAZAKHMYS	0,001092	1,958237	19,758260	0,025239	0,018882	0,000548	2,262795	27,183490	0,057231	0,037242
KINGFISHER	-0,000084	0,840471	34,422270	0,018430	0,016381	0,000442	1,066962	18,748900	0,032672	0,025461
LAND SECURITIES GROUP	0,000148	0,580769	35,738310	0,012366	0,010903	-0,001420	0,944026	17,042650	0,030695	0,024782
LEGAL & GENERAL	0,000031	1,227086	53,690010	0,019677	0,015334	-0,000373	1,460184	17,336820	0,046955	0,037682
LIBERTY INTL.	0,000398	0,297255	18,233250	0,010864	0,010434	-0,001209	0,979984	16,259920	0,032870	0,026965
LLOYDS BANKING GROUP	-0,000073	1,270793	50,691130	0,020379	0,015009	-0,001894	1,640759	13,575100	0,062554	0,054075
LONDON STOCK EX.GROUP	0,000861	0,556555	12,775360	0,021513	0,020630	-0,000374	1,287399	19,112670	0,038969	0,030136
LONMIN	0,000134	0,658208	20,221520	0,022816	0,021838	-0,000543	1,354710	15,193570	0,047605	0,039892
MAN GROUP	0,000727	0,474217	18,360900	0,016522	0,015754	-0,000129	1,560886	20,300010	0,045618	0,034401
MARKS & SPENCER GROUP	0,000041	0,760667	32,149330	0,017618	0,015874	-0,000697	0,814286	13,689890	0,030851	0,026612
MORRISON(WM)SPMKTS.	0,000382	0,501677	20,603040	0,017095	0,016337	0,000162	0,584204	15,178270	0,020543	0,017220
NATIONAL GRID	0,000311	0,575772	25,074160	0,015103	0,013757	-0,000121	0,686948	19,341250	0,020647	0,015890
NEXT	0,000654	0,726141	22,611840	0,022746	0,021545	0,000255	1,038111	18,806680	0,031730	0,024696
OLD MUTUAL	0,000156	1,147840	35,474260	0,020980	0,016628	-0,000196	1,761978	21,911630	0,049381	0,035977
PEARSON	-0,000044	1,065963	41,880240	0,020158	0,017077	0,000311	0,656860	18,890940	0,020023	0,015557
PETROFAC	0,001172	1,335824	12,520690	0,023375	0,020402	0,001785	1,029304	17,334090	0,033102	0,026567
PRUDENTIAL	-0,000045	1,344406	59,113590	0,020380	0,015258	0,000420	1,870878	26,517150	0,047825	0,031566
RANDGOLD RESOURCES	0,000297	0,271634	5,311108	0,030132	0,029979	0,002633	0,626483	7,705018	0,038286	0,036377
RECKITT BENCKISER GROUP	0,000249	0,549313	24,864780	0,015815	0,014822	0,000421	0,505242	13,790100	0,019039	0,016392
REED ELSEVIER	0,000030	0,892314	39,768560	0,017521	0,015054	-0,000194	0,752930	19,158840	0,022758	0,017583
RENTOKIL INITIAL	0,000155	0,763245	29,682630	0,018878	0,017252	-0,000431	0,900722	12,377380	0,036847	0,032558
REXAM	0,000063	0,605921	25,177610	0,017255	0,016146	-0,000718	0,921094	18,856770	0,028108	0,021854
RIO TINTO	0,000189	0,983975	42,794070	0,018323	0,015427	0,000558	1,768063	21,416030	0,050162	0,036936
ROLLS-ROYCE GROUP	0,000013	0,939379	32,662860	0,021480	0,019295	0,000401	1,090236	25,670220	0,028273	0,019002
ROYAL BANK OF SCTL.GP.	0,000271	1,195241	52,085830	0,019527	0,015396	-0,003372	1,831972	12,071890	0,076425	0,067895
ROYAL DUTCH SHELL A(LON)	-0,000180	0,976672	24,510710	0,011157	0,007720	0,000238	1,000941	33,047810	0,023522	0,013551
ROYAL DUTCH SHELL B	0,000084	0,871461	47,984770	0,015005	0,012185	0,000186	1,019345	31,046030	0,024477	0,014690
RSA INSURANCE GROUP	-0,000441	1,362505	46,997460	0,023786	0,019451	0,000217	0,847785	17,413780	0,027185	0,021782
SABMILLER	0,000497	0,775310	24,732400	0,018519	0,016399	0,000517	0,861603	23,292990	0,023399	0,016549
SAGE GROUP	0,000681	1,054247	32,066550	0,024468	0,022058	0,000238	0,688942	16,769900	0,022638	0,018380
SAINSBURY (J)	-0,000010	0,685230	29,688240	0,016946	0,015485	-0,000692	0,768253	15,689390	0,026401	0,021908
SCHRODERS	0,000274	1,112930	41,263220	0,021272	0,018096	0,000175	1,396263	23,726070	0,037576	0,026329
SCHRODERS NV	0,000282	1,217541	40,061230	0,023779	0,020390	0,000126	1,455680	24,614260	0,038489	0,026459
SCOT.& SOUTHERN ENERGY	0,000327	0,429637	21,296520	0,013921	0,013231	-0,000108	0,639386	17,364010	0,020540	0,016474
SEGRO	0,000066	0,440038	20,313840	0,015190	0,014533	-0,001428	1,013436	12,898820	0,040158	0,035151
SERCO GROUP	0,000707	0,449425	16,816420	0,018489	0,017930	0,000533	0,538277	14,235460	0,019816	0,016917
SEVERN TRENT	0,000236	0,447840	21,122070	0,014919	0,014225	-0,000390	0,630814	17,351660	0,020274	0,016265
SHIRE	0,000534	0,749757	18,131290	0,026036	0,024725	-0,000095	0,609177	14,286460	0,022368	0,019077
SMITH & NEPHEW	0,000232	0,545716	24,291660	0,016038	0,015072	0,000169	0,646071	14,965960	0,022946	0,019314
SMITHS GROUP	0,000186	0,673248	30,006860	0,016502	0,015053	0,000108	0,798225	20,952440	0,022919	0,017045
STANDARD CHARTERED	0,000312	1,293816	49,771900	0,021753	0,017440	0,000867	1,607357	24,829830	0,042325	0,028962
STANDARD LIFE	0,000630	1,138036	13,905500	0,015896	0,012400	-0,000065	1,364946	23,124880	0,037204	0,026408
TESCO	0,000230	0,703331	31,853720	0,016413	0,014814	0,000124	0,629298	15,490290	0,021818	0,018176
THOMAS COOK GROUP	0,000333	0,816642	7,359534	0,023418	0,022571	-0,000028	0,940047	14,729740	0,033766	0,028553
TUI TRAVEL	0,000293	0,476024	13,378360	0,024344	0,023872	0,000077	0,933887	15,523470	0,032330	0,026916
TULLOW OIL	0,000693	0,377634	9,445997	0,027086	0,026822	0,001880	1,124584	17,963880	0,035357	0,028008
UNILEVER (UK)	0,000151	0,725736	37,973630	0,014751	0,012822	0,000463	0,597031	15,533310	0,020659	0,017196
UNITED UTILITIES GROUP	0,000096	0,550237	26,708860	0,014886	0,013822	-0,000499	0,644906	19,886660	0,019071	0,014509
VEDANTA RESOURCES	0,000858	1,842944	20,819610	0,024353	0,020269	0,000842	1,857499	23,556650	0,050165	0,035279
VODAFONE GROUP	0,000139	1,344885	51,911640	0,022017	0,017382	0,000083	0,858329	20,990490	0,024620	0,018295
WHITBREAD	0,000145	0,599376	29,112580	0,015068	0,013813	-0,000190	0,965058	20,542180	0,028016	0,021019
WOLSELEY	0,000264	0,696749	28,319900	0,017929	0,016506	-0,001429	1,369574	16,374460	0,045722	0,037421
WPP	-0,000184	1,091004	22,811240	0,033907	0,032088	-0,000122	1,010008	24,589750	0,026717	0,018377

	least squares estimation of AR1									
	before crisis					during crisis				
	frcac40									
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
AIR LIQUIDE	0,000337	-0,091254	-6,116252	0,016240	0,016175	-0,000180	-0,127433	-2,988342	0,020706	0,020556
ALCATEL-LUCENT	-0,000181	0,034493	2,303756	0,028704	0,028690	-0,001701	0,045110	1,050034	0,040556	0,040552
ALSTOM	-0,000527	0,015094	0,739016	0,040272	0,040275	-0,000531	-0,012944	-0,301227	0,035119	0,035148
ARCELORMITTAL	0,000217	0,006454	0,330610	0,036078	0,036085	-0,001158	0,012783	0,297371	0,045238	0,045276
AXA	0,000289	0,075171	5,031846	0,021346	0,021288	-0,000862	-0,009199	-0,213890	0,041964	0,042001
BNP PARIBAS	0,000347	0,039207	2,359806	0,020590	0,020577	-0,000598	-0,015111	-0,351361	0,037858	0,037889
BOUYGUES	0,000407	0,043220	2,887337	0,021710	0,021692	-0,000944	-0,007629	-0,177475	0,032155	0,032184
CAP GEMINI	-0,000025	0,059435	3,973616	0,027934	0,027888	-0,000506	0,030337	0,706041	0,030300	0,030314
CARREFOUR	0,000437	-0,007197	-0,480357	0,017532	0,017534	-0,000960	-0,031516	-0,733585	0,023993	0,024003
CREDIT AGRICOLE	0,000348	-0,069332	-2,689344	0,017599	0,017562	-0,001022	0,047635	1,109236	0,040098	0,040089
DANONE	0,000307	-0,026132	-1,744826	0,014801	0,014797	-0,000494	-0,078894	-1,839699	0,021006	0,020960
DEXIA	0,000381	0,000298	0,015808	0,018367	0,018371	-0,001890	0,120690	2,828211	0,051683	0,051353
EADS (PAR)	0,000091	0,052384	2,264249	0,025398	0,025370	-0,000676	-0,047008	-1,094124	0,032716	0,032710
EDF	0,001656	0,084597	1,824175	0,015389	0,015351	-0,001033	0,069278	1,615288	0,026007	0,025968
ESSILOR INTL.	0,000573	-0,053348	-3,565269	0,018669	0,018645	-0,000268	-0,084182	-1,965465	0,018555	0,018506
FRANCE TELECOM	-0,000076	0,070161	3,574653	0,029569	0,029501	-0,000377	-0,055453	-1,291597	0,019338	0,019327
GDF SUEZ	0,000477	-0,027245	-0,757852	0,013140	0,013145	-0,000360	-0,016482	-0,384070	0,028361	0,028384
L'OREAL	0,000584	-0,056465	-3,775406	0,018597	0,018569	-0,000492	-0,146340	-3,443354	0,021565	0,021352
LAFARGE	0,000185	-0,023736	-1,585338	0,019048	0,019045	-0,000826	0,071067	1,657305	0,032287	0,032235
LAGARDERE GROUPE	0,000226	0,012313	0,821918	0,023180	0,023181	-0,001169	-0,003629	-0,084340	0,026918	0,026943
LVMH	0,000298	0,052398	3,502289	0,019230	0,019206	-0,000336	-0,038610	-0,898982	0,025762	0,025767
MICHELIN	0,000401	0,057576	3,850505	0,020120	0,020088	-0,000980	0,024862	0,578377	0,034511	0,034532
PERNOD-RICARD	0,000462	-0,110189	-7,399893	0,018003	0,017895	-0,000542	0,002172	0,050513	0,026472	0,026496
PEUGEOT	0,000281	0,061866	4,138213	0,018408	0,018374	-0,001906	0,060395	1,408074	0,035132	0,035100
PPR	0,000448	0,013548	0,904001	0,020003	0,020004	-0,000642	0,060539	1,411458	0,033326	0,033295
RENAULT	0,000367	0,042142	2,435395	0,022955	0,022938	-0,001919	0,081949	1,912619	0,040618	0,040518
SAINT GOBAIN	0,000326	-0,014199	-0,947722	0,019387	0,019388	-0,001373	-0,040805	-0,949891	0,037253	0,037256
SANOFI-AVENTIS	0,000457	-0,023817	-1,590269	0,019202	0,019199	-0,000352	-0,081478	-1,901956	0,022190	0,022137
SCHNEIDER ELECTRIC	0,000241	-0,002671	-0,178238	0,021447	0,021449	-0,000669	-0,070700	-1,649428	0,031298	0,031248
SOCIETE GENERALE	0,000379	0,072637	4,861692	0,020133	0,020082	-0,001138	0,124819	2,925610	0,039834	0,039559
STMICROELECTRONICS	0,000411	0,050668	2,922316	0,030416	0,030381	-0,001195	0,054785	1,276374	0,028466	0,028449
SUEZ ENVIRONMENT					NA					
TECHNIP	0,000540	-0,033339	-1,929511	0,022738	0,022729	-0,000538	0,007337	0,170729	0,035367	0,035398
TOTAL	0,000462	0,011935	0,796653	0,017158	0,017159	-0,000621	-0,102619	-2,400731	0,024356	0,024249
UNIBAIL-RODAMCO	0,000349	-0,087848	-5,887237	0,015069	0,015012	-0,000432	-0,071988	-1,678673	0,024544	0,024503
VALLOUREC	0,000665	0,018968	1,266089	0,023781	0,023780	-0,000992	-0,021088	-0,490581	0,035222	0,035246
VEOLIA ENVIRON	0,000300	0,034891	1,503362	0,019192	0,019186	-0,001421	-0,008545	-0,198814	0,029697	0,029723
VINCI (EX SGE)	0,000397	-0,016961	-1,132467	0,019863	0,019863	-0,000601	-0,093424	-2,183953	0,030099	0,029995
VIVENDI	0,000014	0,105456	7,078102	0,022547	0,022424	-0,000676	-0,045677	-1,064177	0,020812	0,020809
					DAX30					
ADIDAS	0,000465	0,060144	3,339289	0,020149	0,020115	-0,000321	0,007633	0,177722	0,026080	0,026103
ALLIANZ	0,000080	0,058795	3,930398	0,019545	0,019514	-0,001114	0,000471	0,010953	0,033342	0,033373
BASF	0,000443	-0,002932	-0,195678	0,016019	0,016021	-0,000538	-0,000817	-0,019024	0,026550	0,026575
BMW	0,000381	0,050168	3,352103	0,019118	0,019096	-0,000541	0,062294	1,451773	0,029159	0,029129
BAYER	0,000334	-0,004947	-0,330144	0,018445	0,018447	-0,000407	-0,127424	-2,989504	0,023545	0,023375
BEIERSDORF	0,000475	-0,104817	-7,033320	0,019150	0,019047	-0,000405	-0,054279	-1,265862	0,019271	0,019260
COMMERZBANK	0,000158	0,046845	3,129876	0,019228	0,019209	-0,002137	0,066602	1,552697	0,047212	0,047151
DAIMLER	-0,000025	0,044957	2,160589	0,019518	0,019502	-0,001076	0,084567	1,975191	0,032776	0,032688
DEUTSCHE BANK	0,000175	0,053792	3,594863	0,017928	0,017904	-0,000925	0,079743	1,860966	0,040666	0,040574
DEUTSCHE BOERSE	0,000823	0,038463	1,609964	0,017143	0,017135	-0,000703	-0,033217	-0,773329	0,035207	0,035220
DEUTSCHE POST	-0,000005	-0,009693	-0,407535	0,017017	0,017021	-0,000842	0,106230	2,486283	0,027642	0,027511
DEUTSCHE TELEKOM	-0,000076	0,021741	1,161276	0,024176	0,024174	-0,000729	-0,046949	-1,093250	0,021530	0,021526
E ON	0,000395	0,002222	0,148255	0,016020	0,016021	-0,000637	0,003407	0,079335	0,026231	0,026255
FRESENIUS MED.CARE	0,000172	0,026075	1,390775	0,021436	0,021433	-0,000115	-0,118021	-2,767792	0,018034	0,017925

FRESENIUS PREF.	0,000615	0,006993	0,466680	0,020872	0,020874	-0,000589	-0,041958	-0,976682	0,023064	0,023065
HENKEL PREF.	0,000277	-0,004356	-0,290655	0,016146	0,016147	-0,000482	-0,023211	-0,540784	0,021396	0,021410
INFINEON TECHNOLOGIES	-0,000878	0,083801	4,129890	0,032138	0,032007	-0,001603	0,098707	2,305596	0,057016	0,056790
K + S	0,000487	-0,041646	-2,780816	0,019462	0,019448	0,000669	-0,051871	-1,209148	0,040500	0,040483
LINDE	0,000161	-0,035740	-2,386863	0,016138	0,016129	-0,000294	-0,062948	-1,467092	0,023688	0,023663
DEUTSCHE LUFTHANSA	0,000241	0,008327	0,555839	0,021736	0,021738	-0,000982	0,059987	1,397910	0,024307	0,024286
MAN	0,000329	0,023341	1,557978	0,019591	0,019588	-0,001129	0,002418	0,056259	0,034932	0,034965
MERCK KGAA	0,000423	-0,085362	-4,763087	0,021143	0,021069	-0,000587	0,027778	0,647301	0,020641	0,020652
METRO	0,000269	0,015379	0,827424	0,020655	0,020656	-0,000809	0,102004	2,388012	0,029672	0,029544
MUENCHENER RUCK.	0,000176	0,094592	6,343319	0,020132	0,020044	-0,000295	-0,060081	-1,399897	0,024264	0,024242
RWE	0,000288	-0,011463	-0,765025	0,016236	0,016237	-0,000462	0,037676	0,877396	0,022261	0,022266
SALZGITTER	0,000581	-0,021003	-1,401892	0,021728	0,021725	-0,001492	-0,037618	-0,875812	0,040804	0,040812
SAP	0,000676	0,052258	3,492285	0,026555	0,026522	-0,000302	0,016291	0,379163	0,022429	0,022446
SIEMENS	0,000276	0,060446	4,040667	0,019028	0,018996	-0,000688	-0,006512	-0,151549	0,030813	0,030841
THYSSENKRUPP	0,000236	0,039054	2,608466	0,019334	0,019322	-0,001072	0,026633	0,619802	0,033672	0,033691
VOLKSWAGEN	0,000348	0,065043	4,350082	0,019574	0,019535	-0,000503	0,093611	2,186861	0,064166	0,063944
					ftse100uk					
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
ADMIRAL GROUP	0,001265	0,099735	2,779040	0,016541	0,016469	0,000645	-0,104715	-2,450298	0,029126	0,028992
ALLIANCE TRUST	0,000241	0,040396	2,698124	0,008695	0,008689	-0,000284	-0,188753	-4,470080	0,023645	0,023242
AMEC	0,000228	0,082483	5,524033	0,022253	0,022179	0,000268	0,003071	0,071441	0,029887	0,029914
ANGLO AMERICAN	0,000502	-0,077003	-5,090892	0,025327	0,025255	-0,000635	0,034460	0,802044	0,045026	0,045041
ANTOFAGASTA	0,000639	0,164943	11,161560	0,016821	0,016593	0,000131	-0,069552	-1,621782	0,044457	0,044390
ASSOCIATED BRIT.FOODS	0,000340	-0,078828	-5,276702	0,015405	0,015359	-0,000037	-0,159227	-3,755866	0,018001	0,017788
ASTRAZENECA	0,000349	0,058395	3,566039	0,016641	0,016615	0,000259	-0,023476	-0,546188	0,020980	0,020994
AUTONOMY CORP.	-0,000613	0,062482	2,644308	0,043908	0,043835	0,001064	-0,022682	-0,527789	0,031045	0,031065
AVIVA	0,000095	0,007696	0,513712	0,019567	0,019569	-0,000790	0,059621	1,388401	0,047760	0,047719
BAE SYSTEMS	0,000259	0,041052	2,741811	0,024300	0,024282	-0,000591	-0,150578	-3,545363	0,022831	0,022591
BARCLAYS	0,000386	0,075994	5,086071	0,019271	0,019217	-0,000835	0,056978	1,327686	0,058607	0,058566
BG GROUP	0,000470	-0,038885	-2,596932	0,017446	0,017434	0,000583	-0,006661	-0,154958	0,030700	0,030727
BHP BILLITON	0,000721	0,025241	1,295198	0,023767	0,023764	0,000287	0,008865	0,206239	0,039378	0,039413
BP	0,000243	0,039994	2,675491	0,015613	0,015603	-0,000013	-0,091230	-2,130936	0,022973	0,022899
BRITISH AIRWAYS	0,000185	0,055028	3,681617	0,023049	0,023017	-0,001159	0,037417	0,870717	0,039333	0,039341
BRITISH AMERICAN TOBACCO	0,000510	0,003380	0,225528	0,018476	0,018478	0,000329	-0,009754	-0,227029	0,021075	0,021094
BRITISH LAND	0,000355	-0,024946	-1,667205	0,016923	0,016920	-0,001613	-0,079895	-1,864145	0,033443	0,033367
BRITISH SKY BCAST.GROUP	0,000252	0,089236	5,164715	0,022640	0,022553	-0,000339	-0,112477	-2,633472	0,024114	0,023983
BT GROUP	0,000100	0,040210	2,686219	0,019673	0,019659	-0,001737	-0,064455	-1,502567	0,028911	0,028877
BUNZL	0,000433	0,098391	6,598842	0,015590	0,015516	-0,000160	-0,057696	-1,344359	0,020089	0,020074
BURBERRY GROUP	0,000667	0,086573	3,177789	0,018540	0,018477	-0,000352	0,009381	0,218258	0,034414	0,034444
CABLE & WIRELESS	-0,000073	0,088092	5,903290	0,025762	0,025665	-0,000333	-0,029761	-0,692623	0,022714	0,022725
CADBURY	0,000286	-0,008630	-0,576135	0,014810	0,014812	0,000407	-0,063482	-1,479834	0,022886	0,022861
CAIRN ENERGY	0,000323	0,178255	12,088510	0,024327	0,023941	0,000773	0,042300	0,985155	0,034666	0,034667
CAPITA GROUP	0,000963	0,097677	6,550053	0,020800	0,020703	-0,000073	-0,122471	-2,870441	0,017455	0,017340
CARNIVAL	0,000418	0,087062	3,694887	0,021377	0,021302	-0,000056	-0,017974	-0,418011	0,030629	0,030653
CENTRICA	0,000681	-0,057416	-3,046269	0,019100	0,019071	-0,000666	-0,177130	-4,186755	0,022505	0,022169
COBHAM	0,000479	0,205169	13,974250	0,013829	0,013537	0,000173	-0,076270	-1,785990	0,020833	0,020791
COMPASS GROUP	-0,000304	-0,014145	-0,591317	0,020587	0,020591	0,000305	-0,021926	-0,509630	0,025356	0,025373
DIAGEO	0,000213	0,022464	1,499514	0,015908	0,015906	-0,000198	-0,125537	-2,945107	0,017971	0,017845
EURASIAN NATRES.CORP.						NA				
EXPERIAN	-0,000399	0,033046	0,504063	0,016364	0,016391	0,000016	-0,052913	-1,233525	0,026695	0,026682
FRESNILLO						NA				
FRIENDS PROVIDENT GROUP	-0,000197	-0,094279	-3,800748	0,021871	0,021780	-0,001311	-0,074720	-1,742659	0,040900	0,040823
G4S	0,000407	0,013362	0,722885	0,022828	0,022830	0,000206	-0,045660	-1,062877	0,020684	0,020682
GLAXOSMITHKLINE	0,000258	0,019265	1,286308	0,017275	0,017273	-0,000097	-0,028583	-0,665164	0,018335	0,018345
HAMMERSON	0,000157	0,129584	8,722813	0,013949	0,013833	-0,001506	0,011001	0,255822	0,033178	0,033207
HOME RETAIL GROUP	0,000357	0,028997	1,935934	0,017212	0,017207	-0,000829	-0,071696	-1,670962	0,034090	0,034034
HSBC HDG. (ORD $0.50)	0,000496	0,051252	3,228847	0,017160	0,017139	-0,000161	0,002114	0,049180	0,030184	0,030212
ICAP	0,000970	0,083092	4,010639	0,016993	0,016937	-0,000286	-0,085343	-1,992245	0,041512	0,041398
IMPERIAL TOBACCO GP.	0,000678	-0,005450	-0,290985	0,015888	0,015890	-0,000144	-0,055041	-1,284926	0,020470	0,020458
INMARSAT	0,000664	-0,075112	-1,929884	0,017550	0,017508	0,000578	-0,027190	-0,632810	0,025936	0,025951

ICTL.HTLS.GP.	0,000822	-0,000289	-0,009797	0,014661	0,014668	-0,000438	0,025867	0,601716	0,028519	0,028536
INTERNATIONAL POWER	0,000278	0,016055	1,064459	0,019504	0,019504	-0,000606	0,023414	0,544337	0,026854	0,026871
INTERTEK GROUP	0,000562	0,050205	1,884012	0,014187	0,014174	0,000511	-0,079893	-1,864078	0,022762	0,022711
INVENSYS	-0,000086	0,045449	3,036586	0,032141	0,032111	-0,000292	0,012561	0,292309	0,038593	0,038626
JOHNSON MATTHEY	0,000381	0,036943	2,467320	0,016908	0,016899	-0,000281	-0,058582	-1,364672	0,029078	0,029055
KAZAKHMYS	0,001632	0,008915	0,198322	0,025208	0,025233	-0,000302	0,018254	0,424677	0,057231	0,057274
KINGFISHER	0,000106	0,021727	1,450587	0,018428	0,018426	0,000039	-0,025552	-0,594323	0,032672	0,032692
LAND SECURITIES GROUP	0,000283	0,007014	0,468410	0,012357	0,012359	-0,001719	0,033902	0,788978	0,030695	0,030705
LEGAL & GENERAL	0,000325	-0,044253	-2,957096	0,019671	0,019654	-0,000934	-0,008805	-0,204550	0,046955	0,046996
LIBERTY INTL.	0,000421	0,085835	5,409910	0,010850	0,010812	-0,001673	-0,063401	-1,476128	0,032870	0,032834
LLOYDS BANKING GROUP	0,000158	0,038766	2,140983	0,020372	0,020360	-0,002275	0,096767	2,261476	0,062554	0,062318
LONDON STOCK EX.GROUP	0,000965	0,027104	1,208642	0,020772	0,020769	-0,000902	-0,048698	-1,134122	0,038969	0,038959
LONMIN	0,000272	0,040244	2,687795	0,022818	0,022802	-0,001019	0,034502	0,803064	0,047605	0,047620
MAN GROUP	0,000792	0,064568	3,756189	0,016505	0,016473	-0,000798	-0,095562	-2,227840	0,045618	0,045452
MARKS & SPENCER GROUP	0,000225	-0,034839	-2,327469	0,017612	0,017604	-0,000973	0,034616	0,804777	0,030851	0,030861
MORRISON(WM)SPMKTS.	0,000508	-0,024928	-1,663624	0,017096	0,017093	-0,000058	-0,127335	-2,992328	0,020543	0,020394
NATIONAL GRID	0,000429	-0,035692	-1,974386	0,015106	0,015098	-0,000409	-0,078731	-1,837668	0,020647	0,020602
NEXT	0,000787	0,045712	3,054942	0,022740	0,022719	-0,000140	-0,041217	-0,958757	0,031730	0,031732
OLD MUTUAL	0,000081	-0,084244	-3,933503	0,020776	0,020706	-0,000950	-0,105637	-2,471131	0,049381	0,049150
PEARSON	0,000192	0,025351	1,692601	0,020158	0,020153	0,000068	-0,069998	-1,631908	0,020023	0,019992
PETROFAC	0,001397	-0,075112	-1,722511	0,022727	0,022682	0,001358	0,025687	0,598430	0,033102	0,033122
PRUDENTIAL	0,000258	0,018505	1,235607	0,020374	0,020373	-0,000282	0,018211	0,423693	0,047825	0,047861
RANDGOLD RESOURCES	0,000309	0,062212	3,209352	0,030138	0,030085	0,002385	0,004893	0,113807	0,038286	0,038321
RECKITT BENCKISER GROUP	0,000366	0,021728	1,450280	0,015815	0,015814	0,000260	-0,114253	-2,677814	0,019039	0,018931
REED ELSEVIER	0,000223	0,034542	2,306739	0,017522	0,017514	-0,000522	-0,096343	-2,251034	0,022758	0,022673
RENTOKIL INITIAL	0,000326	0,006349	0,423736	0,018879	0,018881	-0,000722	0,069580	1,622647	0,036847	0,036792
REXAM	0,000194	0,026021	1,737213	0,017256	0,017252	-0,001094	-0,026693	-0,621122	0,028108	0,028124
RIO TINTO	0,000390	0,047768	3,190230	0,018325	0,018306	-0,000111	-0,016991	-0,395452	0,050162	0,050202
ROLLS-ROYCE GROUP	0,000217	0,051647	3,451866	0,021478	0,021451	-0,000009	-0,048441	-1,128350	0,028273	0,028266
ROYAL BANK OF SCTL.GP.	0,000512	0,054562	3,647019	0,019527	0,019500	-0,003483	0,142396	3,346005	0,076425	0,075716
ROYAL DUTCH SHELL A(LON)	0,000168	0,014259	0,333806	0,011162	0,011171	-0,000146	-0,058993	-1,374701	0,023522	0,023503
ROYAL DUTCH SHELL B	0,000263	0,032277	2,155671	0,015001	0,014995	-0,000208	-0,063409	-1,478312	0,024477	0,024450
RSA INSURANCE GROUP	-0,000122	0,031941	2,133812	0,023777	0,023767	-0,000119	-0,125092	-2,930272	0,027185	0,026996
SABMILLER	0,000534	-0,066841	-3,153053	0,018523	0,018485	0,000201	-0,040222	-0,937222	0,023399	0,023402
SAGE GROUP	0,000894	0,024229	1,617462	0,024471	0,024467	-0,000028	-0,145124	-3,409652	0,022638	0,022420
SAINSBURY (J)	0,000148	0,008883	0,593057	0,016942	0,016943	-0,001071	-0,091608	-2,139785	0,026401	0,026315
SCHRODERS	0,000563	-0,078802	-5,275434	0,021274	0,021211	-0,000393	-0,114726	-2,686301	0,037576	0,037362
SCHRODERS NV	0,000636	-0,146713	-9,898599	0,023781	0,023526	-0,000506	-0,193025	-4,575696	0,038489	0,037800
SCOT.& SOUTHERN ENERGY	0,000406	-0,015535	-1,014732	0,013858	0,013858	-0,000390	-0,115861	-2,713130	0,020540	0,020420
SEGRO	0,000152	0,113556	7,629007	0,015185	0,015089	-0,001791	0,011092	0,258097	0,040158	0,040192
SERCO GROUP	0,000691	0,142712	9,622882	0,018491	0,018304	0,000351	-0,064263	-1,497792	0,019816	0,019793
SEVERN TRENT	0,000325	0,038653	2,581590	0,014919	0,014910	-0,000628	-0,000342	-0,007952	0,020274	0,020292
SHIRE	0,000550	0,062008	3,448876	0,025733	0,025686	-0,000332	-0,023325	-0,542711	0,022368	0,022382
SMITH & NEPHEW	0,000372	-0,029834	-1,993311	0,016028	0,016023	-0,000079	-0,040488	-0,942465	0,022946	0,022948
SMITHS GROUP	0,000333	0,017022	1,136060	0,016503	0,016502	-0,000198	-0,017568	-0,406620	0,022919	0,022937
STANDARD CHARTERED	0,000570	0,059849	4,001970	0,021751	0,021714	0,000268	-0,028338	-0,659461	0,042325	0,042347
STANDARD LIFE	0,000747	-0,041233	-0,720384	0,015634	0,015647	-0,000595	-0,024948	-0,580520	0,037204	0,037227
TESCO	0,000400	-0,019725	-1,317106	0,016409	0,016407	-0,000126	-0,104804	-2,450989	0,021818	0,021717
THOMAS COOK GROUP	0,000573	0,124374	3,296806	0,023435	0,023270	-0,000379	0,016619	0,386436	0,033766	0,033792
TUI TRAVEL	0,000346	0,132833	8,944316	0,024347	0,024134	-0,000276	-0,001683	-0,039081	0,032330	0,032359
TULLOW OIL	0,000732	0,049663	3,318530	0,027086	0,027055	0,001558	-0,066209	-1,543649	0,035357	0,035312
UNILEVER (UK)	0,000302	0,048047	3,210685	0,014749	0,014733	0,000254	-0,064740	-1,509765	0,020659	0,020635
UNITED UTILITIES GROUP	0,000220	0,007539	0,503123	0,014886	0,014887	-0,000734	0,011822	0,275128	0,019071	0,019088
VEDANTA RESOURCES	0,001536	0,043476	1,358883	0,024303	0,024293	0,000127	0,056134	1,308537	0,050165	0,050132
VODAFONE GROUP	0,000434	0,030355	2,027494	0,022012	0,022004	-0,000259	-0,088264	-2,061086	0,024620	0,024547
WHITBREAD	0,000270	0,039086	2,610469	0,015069	0,015059	-0,000525	0,057575	1,341508	0,028016	0,027996
WOLSELEY	0,000401	0,046086	3,078769	0,017931	0,017914	-0,001773	0,087096	2,032349	0,045722	0,045590
WPP	0,000058	0,133060	8,960880	0,033907	0,033609	-0,000509	-0,011038	-0,256695	0,026717	0,026740

GARCH(1,1) estimation of Market Model										
	before crisis					during crisis				
	frcac40									
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
AIR LIQUIDE	0,000122	0,853746	74,502720	0,016241	0,012440	0,000895	0,768955	37,206380	0,020706	0,012430
ALCATEL-LUCENT	-0,000678	1,126099	81,967170	0,028705	0,022059	-0,000531	1,407309	23,344230	0,040556	0,029019
ALSTOM	0,000784	0,980256	31,266410	0,040263	0,038161	0,000574	1,316292	30,681580	0,035119	0,023231
ARCELORMITTAL	0,000630	0,684347	19,071050	0,036079	0,035421	0,000963	1,567069	27,821110	0,045238	0,028316
AXA	0,000027	1,193626	88,712410	0,021348	0,013888	0,000195	1,489666	35,949600	0,041964	0,023366
BNP PARIBAS	0,000024	1,120101	82,590840	0,020591	0,014427	0,000318	1,359816	37,425720	0,037858	0,025925
BOUYGUES	-0,000011	0,888030	56,696130	0,021710	0,017977	-0,000172	1,229378	33,974420	0,032155	0,019794
CAP GEMINI	-0,000070	1,055801	46,667620	0,027932	0,023346	0,000393	1,050864	27,573990	0,030300	0,020881
CARREFOUR	0,000443	0,843034	63,016220	0,017532	0,013558	-0,000402	0,754992	23,592590	0,023993	0,017609
CREDIT AGRICOLE	0,000085	0,947136	39,793710	0,017649	0,013408	-0,000448	1,415531	32,878880	0,040098	0,026620
DANONE	0,000191	0,675202	63,166280	0,014801	0,012533	-0,000031	0,632295	17,110590	0,021006	0,016562
DEXIA	-0,000178	0,621046	35,971770	0,018384	0,015714	-0,000327	1,266293	20,327480	0,051683	0,045028
EADS (PAR)	0,000422	0,971742	34,363580	0,025407	0,020983	-0,000016	1,029721	18,434780	0,032716	0,024800
EDF	0,001448	0,662131	10,466430	0,015373	0,013867	-0,000465	0,746121	18,482550	0,026007	0,020382
ESSILOR INTL.	0,000704	0,453768	33,834170	0,018667	0,017793	0,000553	0,408029	18,096000	0,018555	0,016221
FRANCE TELECOM	-0,000345	1,183619	46,805070	0,029628	0,022157	0,000059	0,535643	18,301640	0,019338	0,015735
GDF SUEZ	0,000244	0,799984	17,447040	0,015535	0,013430	0,000503	0,786399	20,848260	0,028361	0,020944
L'OREAL	0,000222	1,009628	74,286660	0,018602	0,013434	0,000041	0,683127	25,746720	0,021565	0,015738
LAFARGE	-0,000024	0,961341	65,827440	0,019056	0,015436	0,000197	1,158065	28,964820	0,032287	0,021434
LAGARDERE GROUPE	-0,000032	0,881802	64,503240	0,023181	0,019693	0,000753	0,972310	45,500660	0,026918	0,018963
LVMH	0,000195	0,992339	77,922150	0,019232	0,013848	0,000447	0,994729	39,470180	0,025762	0,015689
MICHELIN	0,000339	0,840938	54,908040	0,020126	0,017000	-0,000320	1,241516	30,155970	0,034511	0,024330
PERNOD-RICARD	0,000229	0,566209	35,036590	0,018004	0,016946	0,000035	0,680002	19,210600	0,026472	0,020651
PEUGEOT	0,000125	0,859053	61,987580	0,018417	0,014780	-0,001834	1,150699	24,668760	0,035132	0,026191
PPR	0,000434	0,787250	60,384850	0,020004	0,016733	0,000135	1,201524	33,940140	0,033326	0,021551
RENAULT	-0,000049	1,015508	51,429810	0,022955	0,019087	-0,000753	1,452754	36,112470	0,040618	0,025972
SAINT GOBAIN	0,000225	1,004904	85,335340	0,019386	0,015202	-0,000667	1,497404	47,285080	0,037253	0,020672
SANOFI-AVENTIS	0,000155	0,812513	51,232530	0,019204	0,016076	-0,000095	0,682924	18,494670	0,022190	0,017586
SCHNEIDER ELECTRIC	0,000241	0,888680	50,166520	0,021446	0,018437	0,000063	1,274097	40,943630	0,031298	0,016940
SOCIETE GENERALE	0,000205	1,102864	87,791540	0,020137	0,014057	-0,000958	1,323507	39,724520	0,039834	0,029397
STMICROELECTRONICS (PAR)	-0,000695	1,309941	54,592280	0,030412	0,024213	-0,001457	0,876585	21,964260	0,028466	0,021709
SUEZ ENVIRONNEMENT					NA					
TECHNIP	0,000639	0,550107	26,110410	0,022735	0,021460	0,000503	1,128697	22,319850	0,035367	0,025699
TOTAL	0,000200	0,867585	74,143210	0,017160	0,013603	0,000130	0,924489	31,691240	0,024356	0,012866
UNIBAIL-RODAMCO	0,000464	0,220057	16,711120	0,015071	0,014760	0,000173	0,789418	24,322680	0,024544	0,018436
VALLOUREC	0,000673	0,565658	28,192450	0,023779	0,022461	0,000407	1,202165	21,598870	0,035222	0,025473
VEOLIA ENVIRONNEMENT	0,000796	0,539772	24,887510	0,019187	0,017819	-0,000012	0,881405	26,862400	0,029697	0,023756
VINCI (EX SGE)	0,000625	0,493623	29,156440	0,019871	0,018806	-0,000193	1,225447	55,990130	0,030099	0,014673
VIVENDI	0,000010	0,948280	72,642290	0,022548	0,017356	-0,000044	0,755128	35,587870	0,020812	0,014093
					DAX30					
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
ADIDAS	0,000522	0,554503	31,139040	0,020150	0,018358	0,000795	0,807972	27,033420	0,026080	0,020682
ALLIANZ	-0,000097	1,112083	116,57802	0,019544	0,012322	-0,000473	1,200831	36,010340	0,033342	0,022621
BASF	0,000053	0,892062	111.1478	0,016018	0,011624	-0,000193	0,975891	36,131850	0,026550	0,016566
BMW	0,000012	0,953082	85,249120	0,019118	0,014496	-0,000054	1,046168	31,793180	0,029159	0,020864
BAYER	0,000162	0,959068	93,616580	0,018446	0,013765	0,000176	0,781414	24,141430	0,023545	0,017843
BEIERSDORF	0,000219	0,434188	30,812500	0,019149	0,018415	0,000053	0,475250	12,928980	0,019271	0,016603
COMMERZBANK	-0,000114	0,924199	103,3580	0,019227	0,014110	-0,001091	1,493471	28,745670	0,047212	0,038766
DAIMLER	-0,000370	0,904960	52,456590	0,019517	0,013929	-0,000663	1,268305	37,162510	0,032776	0,020972
DEUTSCHE BANK	-0,000180	0,981894	127,9940	0,017926	0,011447	-0,000488	1,312790	31,676710	0,040666	0,028582
DEUTSCHE BOERSE	0,000891	0,462955	24,983390	0,017333	0,015881	-0,000145	1,149754	19,921210	0,035207	0,027920
DEUTSCHE POST	0,000073	0,530935	29,036810	0,017021	0,014790	-0,000134	0,850760	37,899450	0,027642	0,021387
DEUTSCHE TELEKOM	-0,000426	0,858238	51,117140	0,024342	0,018652	-0,000536	0,540782	15,491870	0,021530	0,018143
E ON	0,000147	0,810072	77,629560	0,016018	0,012914	0,000388	0,730788	20,800410	0,026231	0,019900
FRESENIUS MED.CARE	0,000240	0,495922	28,255780	0,021432	0,020087	0,000685	0,253271	9,916751	0,018034	0,017162
FRESENIUS PREF.	0,000649	0,481811	29,438620	0,020870	0,019840	-0,000380	0,394263	8,812420	0,023064	0,021690
HENKEL PREF.	0,000038	0,585131	60,876070	0,016144	0,014343	-0,000453	0,662845	21,621180	0,021396	0,017461
INFINEON TECHNOLOGIES	-0,000816	1,180898	39,117240	0,035740	0,029723	0,000275	1,529498	22,057110	0,057016	0,052385
K + S	0,000595	0,434750	32,019310	0,019463	0,018217	0,002141	1,041598	16,285000	0,040500	0,034716
LINDE	0,000027	0,713094	74,578640	0,016137	0,013522	0,000544	0,768970	26,504770	0,023688	0,017595
DEUTSCHE LUFTHANSA	0,000034	0,928705	63,438250	0,021738	0,017729	0,000036	0,798026	30,721690	0,024307	0,018645

MAN	0,000052	0,926814	85,184720	0,019589	0,015971	-0,000287	1,286939	26,987480	0,034932	0,024035
MERCK KGAA	0,000209	0,504645	26,042060	0,021141	0,020033	-0,000210	0,432499	11,101460	0,020641	0,019005
METRO	-0,000045	0,698609	39,758160	0,020655	0,017677	-0,001790	0,758527	23,308590	0,029672	0,025719
MUENCHENER RUCK.	-0,000010	0,858569	72,337040	0,020137	0,015014	-0,000043	0,733506	30,978740	0,024264	0,019348
RWE	0,000091	0,787002	82,990000	0,016235	0,013167	-0,000380	0,643063	22,080790	0,022261	0,017546
SALZGITTER	0,000363	0,218558	11,556120	0,021726	0,021389	-0,001131	1,462954	25,754750	0,040804	0,028152
SAP	0,000256	0,859287	55,285980	0,026553	0,022541	0,000468	0,578160	20,968870	0,022429	0,018316
SIEMENS	-0,000123	0,962317	124,556900	0,019027	0,012510	0,000162	1,179834	27,700350	0,030813	0,020165
THYSSENKRUPP	-0,000139	0,932828	70,374510	0,019334	0,015735	-0,000189	1,254131	27,748960	0,033672	0,022671
VOLKSWAGEN	-0,000068	1,056866	94,793520	0,019573	0,014502	-0,000327	0,573303	10,836690	0,064166	0,063162
					FTSE100UK					
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
ADMIRAL GROUP	0,001090	0,966756	17,143780	0,016597	0,014774	0,001243	0,745686	17,192060	0,029126	0,025257
ALLIANCE TRUST	0,000243	0,592093	102,771500	0,008695	0,006034	0,000039	0,972412	66,278760	0,023645	0,011422
AMEC	0,000562	0,531880	21,462550	0,022254	0,021456	0,000944	0,935151	20,807450	0,029887	0,021746
ANGLO AMERICAN	0,000515	0,902024	45,346140	0,025324	0,023697	0,000441	1,744090	28,414870	0,045026	0,028941
ANTOFAGASTA	0,000123	0,200565	11,505130	0,016822	0,016544	0,000337	1,671875	28,530960	0,044457	0,031719
ASSOCIATED BRIT	0,000328	0,539672	36,079690	0,015405	0,014199	0,000014	0,545428	18,837440	0,018001	0,014240
ASTRAZENECA	0,000192	0,827306	42,026500	0,016639	0,014150	0,000057	0,601281	17,850600	0,020980	0,017532
AUTONOMY CORP.	0,001315	1,611349	34,231580	0,043935	0,040740	0,001235	0,855196	16,718290	0,031045	0,026336
AVIVA	-0,000178	1,157328	64,690320	0,019570	0,015209	-0,001006	1,475362	26,446360	0,047760	0,036139
BAE SYSTEMS	0,000491	0,857255	50,761310	0,024298	0,022871	0,000079	0,674261	17,377670	0,022831	0,018157
BARCLAYS	0,000144	1,257481	70,166050	0,019271	0,014231	-0,002086	1,617464	24,061980	0,058607	0,047560
BG GROUP	0,000196	0,842690	42,386650	0,017444	0,015713	0,000729	1,091190	20,231140	0,030700	0,022037
BHP BILLITON	0,000970	1,061239	38,087090	0,023762	0,021070	0,000197	1,634179	27,870050	0,039378	0,025009
BP	0,000070	0,904810	57,883480	0,015637	0,013105	0,000226	0,934524	31,337750	0,022973	0,013337
BRITISH AIRWAYS	0,000233	1,073615	47,936700	0,023069	0,019967	-0,001235	1,267695	17,182870	0,039333	0,031980
BRITISH AMERICAN TOBACCO	0,000631	0,812208	46,788580	0,018475	0,017439	0,000584	0,492648	16,577040	0,021075	0,018057
BRITISH LAND	0,000467	0,643475	35,318490	0,016940	0,015657	-0,001341	1,070232	20,355780	0,033443	0,027396
BRITISH SKY BCAST.GROUP	0,000378	0,870553	35,816720	0,022651	0,019969	-0,000404	0,788708	24,856860	0,024114	0,018138
BT GROUP	0,000007	0,980522	55,157010	0,019675	0,016414	-0,002122	0,878513	24,166220	0,028911	0,023811
BUNZL	0,000366	0,521923	31,720630	0,015589	0,014607	-0,000550	0,624360	21,664610	0,020089	0,015658
BURBERRY GROUP	0,000573	0,892744	28,911450	0,018533	0,017513	0,000449	1,070577	17,922460	0,034414	0,029166
CABLE & WIRELESS	0,000197	1,158266	57,086800	0,025765	0,022495	-0,000255	0,780192	20,009070	0,022714	0,017323
CADBURY	0,000146	0,663756	43,003190	0,014814	0,013374	-0,000293	0,600407	18,192690	0,022886	0,019958
CAIRN ENERGY	0,000638	0,328260	12,756910	0,024325	0,024064	0,001861	1,072825	18,914280	0,034666	0,026768
CAPITA GROUP	0,000936	0,586417	33,664230	0,020797	0,019442	-0,000120	0,531834	21,403400	0,017455	0,014258
CARNIVAL	0,000358	0,885045	34,185530	0,021375	0,019076	0,000292	1,040474	20,935540	0,030629	0,023257
CENTRICA	0,000406	0,624193	25,936770	0,019300	0,018026	-0,000304	0,587597	16,015820	0,022505	0,019409
COBHAM	0,000298	0,337053	27,928590	0,013828	0,013356	0,000596	0,644684	20,252690	0,020833	0,016924
COMPASS GROUP	-0,000077	0,943181	29,131820	0,020785	0,017792	0,000473	0,797172	18,921960	0,025356	0,019907
DIAGEO	0,000161	0,746497	47,623210	0,015907	0,014190	-0,000025	0,623010	22,824330	0,017971	0,013016
EURASIAN NATRES						NA				
EXPERIAN	-0,000363	1,102968	12,572280	0,016436	0,012920	0,000061	0,824741	23,120750	0,026695	0,020949
FRESNILLO						NA				
FRIENDS PROVIDENT	-0,000208	1,241789	36,427840	0,021924	0,016244	0,000526	1,190629	27,823100	0,040900	0,033981
G4S	0,000811	0,660563	23,480710	0,022825	0,021946	-0,000004	0,742559	24,283770	0,020684	0,014923
GLAXOSMITHKLINE	0,000042	0,971836	50,604410	0,017278	0,014265	0,000288	0,494813	15,844740	0,018335	0,015530
HAMMERSON	0,000200	0,337669	24,656440	0,013950	0,013483	-0,000889	1,056911	18,369850	0,033178	0,028115
HOME RETAIL GROUP	0,000569	0,518196	35,468720	0,017210	0,015913	-0,000556	1,098461	19,909360	0,034090	0,028366
HSBC HDG. (ORD $0.50)	0,000092	0,947693	68,057690	0,017181	0,012934	0,000186	1,021663	53,289080	0,030184	0,020903
ICAP	0,000912	0,347874	14,245480	0,017072	0,016380	0,000155	1,464489	24,693830	0,041512	0,032011
IMPERIAL TOBACCO GP.	0,000632	0,435224	20,163920	0,015910	0,015338	0,000212	0,494770	13,930060	0,020470	0,017320
INMARSAT	0,000157	0,965456	13,830340	0,018775	0,017003	0,000684	0,654173	13,324600	0,025936	0,021972
ICTL.HTLS.GP.	0,000335	0,999784	26,463110	0,014655	0,012734	-0,000087	1,120789	25,862210	0,028519	0,020399
INTERNATIONAL POWER	0,000070	0,736348	30,658880	0,019725	0,018574	0,000670	0,852005	17,713940	0,026854	0,020787
INTERTEK GROUP	0,000470	0,383313	13,765890	0,014344	0,013761	0,000690	0,766031	26,549110	0,022762	0,018889
INVENSYS	0,000455	0,932605	39,180020	0,032142	0,029876	0,000056	1,353355	23,809720	0,038593	0,028701
JOHNSON MATTHEY	0,000336	0,701508	39,829240	0,016907	0,015615	0,000202	1,065734	26,936350	0,029078	0,021782
KAZAKHMYS	0,001113	1,841270	20,066230	0,025239	0,018966	0,001592	2,078844	27,861920	0,057231	0,037531
KINGFISHER	-0,000100	0,894592	47,364980	0,018430	0,016396	-0,000014	1,054476	18,503740	0,032672	0,025537
LAND SECURITIES Gr	0,000216	0,609558	45,136480	0,012366	0,010911	-0,001320	0,976337	21,998240	0,030695	0,024859
LEGAL & GENERAL	0,000018	1,194373	64,578920	0,019677	0,015342	-0,000756	1,264072	28,380590	0,046955	0,037977
LIBERTY INTL.	0,000216	0,271779	21,887840	0,010864	0,010443	-0,001061	1,076369	19,288630	0,032870	0,027104
LLOYDS BANKING Gr	-0,000030	1,157047	59,375650	0,020379	0,015067	-0,001828	1,335223	23,228280	0,062554	0,054545

LONDON STOCK EX.GROUP	0,000191	0,498219	19,493150	0,021513	0,020667	-0,000223	1,301586	18,120790	0,038969	0,030222
LONMIN	0,000175	0,630744	26,746950	0,022816	0,021847	0,001808	1,356529	15,462500	0,047605	0,040072
MAN GROUP	0,000547	0,350503	17,921190	0,016522	0,015816	0,000500	1,441033	22,671690	0,045618	0,034581
MARKS & SPENCER GROUP	0,000082	0,860256	44,592720	0,017618	0,015911	0,000366	0,883287	16,635270	0,030851	0,026739
MORRISON(WM)SPMKTS.	0,000666	0,445826	26,483140	0,017095	0,016354	0,000302	0,553049	15,990010	0,020543	0,017279
NATIONAL GRID	0,000244	0,571128	31,640240	0,015103	0,013764	0,000349	0,554042	19,185420	0,020647	0,016148
NEXT	0,000784	0,707961	35,222800	0,022746	0,021554	-0,000256	1,110817	19,739050	0,031730	0,024810
OLD MUTUAL	0,000180	1,177041	43,446580	0,020980	0,016643	-0,001175	1,661101	25,589710	0,049381	0,036142
PEARSON	-0,000006	0,955622	49,437710	0,020158	0,017118	0,000652	0,640210	21,340560	0,020023	0,015607
PETROFAC	0,001450	1,276254	12,653000	0,023375	0,020471	0,002407	0,987399	15,457530	0,033102	0,026661
PRUDENTIAL	0,000142	1,310248	73,766520	0,020380	0,015269	0,000205	1,764114	42,621180	0,047825	0,031721
RANDGOLD RESOURCES	0,000127	0,346909	12,711950	0,030132	0,030008	0,002190	0,682386	9,813008	0,038286	0,036498
RECKITT BENCKISER GROUP	0,000313	0,632701	39,770510	0,015815	0,014851	0,000916	0,433064	12,391580	0,019039	0,016505
REED ELSEVIER	0,000028	0,890080	51,612790	0,017521	0,015059	-0,000030	0,773226	20,851490	0,022758	0,017637
RENTOKIL INITIAL	0,000367	0,803592	45,875490	0,018878	0,017264	-0,001152	0,895933	11,728260	0,036847	0,032657
REXAM	0,000115	0,675660	34,693830	0,017255	0,016167	-0,000506	0,928250	18,022110	0,028108	0,021916
RIO TINTO	0,000086	0,987589	52,989260	0,018323	0,015432	0,000243	1,922134	36,270220	0,050162	0,037160
ROLLS-ROYCE GROUP	0,000259	0,994627	52,682770	0,021480	0,019312	0,000089	1,104410	29,922050	0,028273	0,019059
ROYAL BANK OF SCTL.GP.	0,000031	1,146977	67,003460	0,019527	0,015411	-0,000713	1,759759	50,486350	0,076425	0,068152
ROYAL DUTCH SHELL A	0,000233	0,970296	24,567290	0,011157	0,007742	0,000257	0,928012	33,174790	0,023522	0,013661
ROYAL DUTCH SHELL B	0,000036	0,875531	61,718300	0,015005	0,012189	0,000256	0,941053	33,409650	0,024477	0,014808
RSA INSURANCE GROUP	0,000178	1,304668	65,378380	0,023786	0,019467	0,000105	1,041419	24,124730	0,027185	0,022160
SABMILLER	0,000745	0,777880	30,253270	0,018519	0,016412	0,000670	0,854441	19,042110	0,023399	0,016597
SAGE GROUP	0,000330	0,616396	30,416500	0,024468	0,022504	-0,000338	0,682529	19,675560	0,022638	0,018441
SAINSBURY (J)	0,000095	0,743750	40,246300	0,016946	0,015502	-0,000922	0,792799	24,687560	0,026401	0,021975
SCHRODERS	0,000710	0,761289	42,631770	0,021272	0,018447	-0,000151	1,463269	44,123600	0,037576	0,026437
SCHRODERS NV	0,000521	0,743660	37,222930	0,023779	0,020947	-0,000289	1,520614	37,263880	0,038489	0,026566
SCOT&SOUTHERN ENERG	0,000399	0,450540	33,124740	0,013921	0,013238	0,000029	0,545569	16,787390	0,020540	0,016620
SEGRO	0,000262	0,378454	23,286300	0,015190	0,014553	-0,001644	1,082977	17,149460	0,040158	0,035276
SERCO GROUP	0,001295	0,271908	18,142240	0,018489	0,018033	0,000372	0,567450	17,282930	0,019816	0,016975
SEVERN TRENT	0,000338	0,498107	29,387880	0,014919	0,014239	-0,000574	0,613998	19,488840	0,020274	0,016315
SHIRE	0,000094	0,720649	24,964850	0,026036	0,024744	0,000091	0,617377	15,258680	0,022368	0,019132
SMITH & NEPHEW	0,000143	0,603258	39,350170	0,016038	0,015089	0,000138	0,647327	17,024120	0,022946	0,019368
SMITHS GROUP	0,000395	0,672846	41,170170	0,016502	0,015060	0,000181	0,731445	22,584980	0,022919	0,017141
STANDARD CHARTERED	0,000497	1,234040	64,241150	0,021753	0,017457	0,001111	1,484633	36,596330	0,042325	0,029141
STANDARD LIFE	0,000525	1,102766	17,981800	0,015896	0,012468	-0,000878	1,407343	24,375560	0,037204	0,026507
TESCO	0,000261	0,744482	41,060230	0,016413	0,014825	0,000398	0,648332	16,559520	0,021818	0,018232
THOMAS COOK GROUP	0,000632	0,886430	8,626941	0,023418	0,022628	0,000157	0,927261	22,424960	0,033766	0,028634
TUI TRAVEL	0,000544	0,430514	16,610770	0,024344	0,023886	0,000173	0,957659	19,641570	0,032330	0,026994
TULLOW OIL	0,001150	0,310012	11,927010	0,027086	0,026843	0,002326	1,096561	15,294460	0,035357	0,028095
UNILEVER (UK)	0,000163	0,727967	53,672940	0,014751	0,012827	0,000613	0,577158	16,701910	0,020659	0,017249
UNITED UTILITIES GROUP	0,000199	0,549147	32,594370	0,014886	0,013827	-0,000703	0,624135	22,134990	0,019071	0,014556
VEDANTA RESOURCES	0,000957	1,701318	19,162690	0,024353	0,020327	0,001607	1,739752	22,888190	0,050165	0,035459
VODAFONE GROUP	0,000192	1,214789	54,504520	0,022017	0,017437	0,000283	0,873826	23,307910	0,024620	0,018349
WHITBREAD	0,000100	0,651470	40,727210	0,015068	0,013828	-0,000653	0,986710	19,057720	0,028016	0,021087
WOLSELEY	0,000384	0,787177	41,476650	0,017929	0,016538	-0,000596	1,416245	21,744870	0,045722	0,037545
WPP	0,000349	0,964651	40,265820	0,033907	0,032128	-0,000490	1,035226	28,426420	0,026717	0,018438

GARCH(1,1) estimation of AR1

	before crisis					during crisis				
	frcac40									
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
AIR LIQUIDE	0,000424	-0,091152	-6,197939	0,016240	0,016180	0,000535	-0,143174	-2,759096	0,020706	0,020628
ALCATEL-LUCENT	-0,000145	0,052415	3,289756	0,028704	0,028704	-0,002013	0,020334	0,414898	0,040556	0,040678
ALSTOM	0,001093	-0,008213	-0,413837	0,040272	0,040345	0,000999	-0,036794	-0,737589	0,035119	0,035290
ARCELORMITTAL	0,000832	-0,002875	-0,132261	0,036078	0,036112	0,000825	0,002762	0,060340	0,045238	0,045449
AXA	0,000638	0,056273	3,605635	0,021346	0,021302	0,000502	0,039888	0,789731	0,041964	0,042190
BNP PARIBAS	0,000586	0,004928	0,284945	0,020590	0,020599	0,000091	0,043185	0,910981	0,037858	0,038065
BOUYGUES	0,000402	0,031730	2,048603	0,021710	0,021701	-0,000210	-0,040857	-0,856385	0,032155	0,032301
CAP GEMINI	0,000450	0,039099	2,582425	0,027934	0,027907	0,000405	0,030408	0,635212	0,030300	0,030412
CARREFOUR	0,000648	0,006814	0,493961	0,017532	0,017543	-0,000433	-0,029528	-0,624549	0,023993	0,024076
CREDIT AGRICOLE	0,000684	-0,053213	-1,969366	0,017599	0,017586	-0,000414	0,054382	1,126107	0,040098	0,040206
DANONE	0,000335	-0,011715	-0,777390	0,014801	0,014804	-0,000018	-0,061666	-1,320781	0,021006	0,021027
DEXIA	0,000543	-0,040993	-2,304706	0,018367	0,018397	-0,000588	0,037177	0,806825	0,051683	0,051699
EADS (PAR)	0,000760	0,074733	3,261751	0,025398	0,025406	-0,000096	-0,050777	-1,091160	0,032716	0,032807

EDF	0,001803	0,068474	1,292627	0,015389	0,015403	-0,000015	0,085341	1,912045	0,026007	0,026063
ESSILOR INTL.	0,000986	-0,068641	-4,700018	0,018669	0,018657	0,000418	-0,123711	-2,513815	0,018555	0,018585
FRANCE TELECOM	0,000256	0,055886	2,764749	0,029569	0,029523	-0,000147	-0,052253	-0,995806	0,019338	0,019382
GDF SUEZ	0,000595	-0,007604	-0,198865	0,013140	0,013185	0,000897	-0,031120	-0,695931	0,028361	0,028494
L'OREAL	0,000670	-0,058924	-3,836344	0,018597	0,018575	0,000181	-0,153240	-2,993602	0,021565	0,021423
LAFARGE	0,000373	-0,022347	-1,450062	0,019048	0,019052	0,000027	0,066623	1,279996	0,032287	0,032337
LAGARDERE GROUPE	0,000346	0,002044	0,137641	0,023180	0,023190	-0,001249	-0,065535	-1,364147	0,026918	0,027069
LVMH	0,000566	0,033872	2,226258	0,019230	0,019218	0,000483	-0,076607	-1,443450	0,025762	0,025871
MICHELIN	0,000599	0,048529	3,253949	0,020120	0,020097	-0,001203	0,012041	0,258768	0,034511	0,034632
PERNOD-RICARD	0,000544	-0,102570	-6,946837	0,018003	0,017902	0,000059	-0,006285	-0,123499	0,026472	0,026578
PEUGEOT	0,000325	0,051314	3,352464	0,018408	0,018382	-0,001889	0,021484	0,484158	0,035132	0,035225
PPR	0,000756	0,021699	1,406350	0,020003	0,020013	0,000176	0,032787	0,671939	0,033326	0,033411
RENAULT	0,000507	0,024635	1,388548	0,022955	0,022953	-0,001200	0,060906	1,276235	0,040618	0,040648
SAINT GOBAIN	0,000786	-0,032142	-2,134710	0,019387	0,019402	-0,000994	-0,055125	-1,077138	0,037253	0,037366
SANOFI-AVENTIS	0,000492	-0,017598	-1,213519	0,019202	0,019205	0,000005	-0,041392	-0,972206	0,022190	0,022219
SCHNEIDER ELECTRIC	0,000688	0,000670	0,045876	0,021447	0,021461	-0,000045	-0,079561	-1,733320	0,031298	0,031343
SOCIETE GENERALE	0,000454	0,034203	2,264010	0,020133	0,020104	-0,000532	0,156726	3,303054	0,039834	0,039693
STMICROELECTRONICS (PAR)	0,000242	0,049599	2,773186	0,030416	0,030396	-0,001721	0,033951	0,797179	0,028466	0,028539
SUEZ ENVIRONNEMENT						NA				
TECHNIP	0,001042	0,004316	0,249243	0,022738	0,022761	0,000703	-0,029029	-0,600974	0,035367	0,035543
TOTAL	0,000610	0,010841	0,727700	0,017158	0,017165	0,000356	-0,070238	-1,425544	0,024356	0,024349
UNIBAIL-RODAMCO	0,000637	-0,097198	-5,797751	0,015069	0,015021	0,000156	-0,070007	-1,535659	0,024544	0,024578
VALLOUREC	0,000931	0,017086	1,015906	0,023781	0,023789	0,000768	-0,049817	-1,001016	0,035222	0,035404
VEOLIA ENVIRONNEMENT	0,001024	0,001098	0,044323	0,019192	0,019225	-0,000120	0,046365	0,975386	0,029697	0,029877
VINCI (EX SGE)	0,000796	-0,021072	-1,504510	0,019863	0,019873	0,000362	-0,102820	-2,166655	0,030099	0,030095
VIVENDI	0,000430	0,086186	5,688409	0,022547	0,022440	-0,000348	-0,027131	-0,527115	0,020812	0,020873

						DAX30				
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
ADIDAS	0,000857	0,058537	3,235342	0,020149	0,020129	0,000663	0,033112	0,721961	0,026080	0,026203
ALLIANZ	0,000472	0,063424	4,823798	0,019545	0,019524	-0,000393	0,012997	0,266081	0,033342	0,033476
BASF	0,000639	-0,000073	-0,004678	0,016019	0,016027	-0,000252	-0,039189	-0,675249	0,026550	0,026670
BMW	0,000510	0,070944	4,700844	0,019118	0,019107	-0,000162	0,071569	1,544700	0,029159	0,029214
BAYER	0,000673	-0,009891	-0,691772	0,018445	0,018457	0,000481	-0,103984	-2,144663	0,023545	0,023463
BEIERSDORF	0,000550	-0,085445	-6,200101	0,019150	0,019057	-0,000191	-0,050384	-1,121771	0,019271	0,019315
COMMERZBANK	0,000233	0,033640	2,092072	0,019228	0,019217	-0,000322	0,037611	0,779267	0,047212	0,047340
DAIMLER	0,000232	0,043592	1,910707	0,019518	0,019517	-0,000414	0,058567	1,194207	0,032776	0,032798
DEUTSCHE BANK	0,000242	0,054223	3,426556	0,017928	0,017910	-0,000824	0,022539	0,485027	0,040666	0,040754
DEUTSCHE BOERSE	0,001099	0,044061	1,691289	0,017143	0,017153	0,000592	-0,012280	-0,251150	0,035207	0,035349
DEUTSCHE POST	0,000399	-0,013053	-0,519242	0,017017	0,017040	-0,000404	0,078213	1,600689	0,027642	0,027602
DEUTSCHE TELEKOM	0,000157	0,022215	1,143802	0,024176	0,024188	-0,000353	-0,009987	-0,211761	0,021530	0,021603
E ON	0,000638	-0,011162	-0,735480	0,016020	0,016030	0,000542	-0,025017	-0,511084	0,026231	0,026366
FRESENIUS MED.CARE	0,000613	-0,011966	-0,673266	0,021436	0,021464	0,000823	-0,140127	-2,915587	0,018034	0,018004
FRESENIUS PREF.	0,000867	0,008921	0,645234	0,020872	0,020883	-0,000369	-0,031300	-0,619565	0,023064	0,023131
HENKEL PREF.	0,000354	-0,010995	-0,782805	0,016146	0,016153	0,000019	-0,010268	-0,228345	0,021396	0,021477
INFINEON TECHNOLOGIES	0,000030	0,044394	2,223458	0,032138	0,032076	-0,001289	0,111695	2,316353	0,057016	0,056954
K + S	0,000700	-0,030505	-1,992771	0,019462	0,019457	0,002658	-0,006904	-0,143169	0,040500	0,040687
LINDE	0,000419	-0,011237	-0,741044	0,016138	0,016142	0,000820	-0,108258	-2,251000	0,023688	0,023780
DEUTSCHE LUFTHANSA	0,000470	0,005654	0,373886	0,021736	0,021746	-0,000669	0,053540	1,113677	0,024307	0,024356
MAN	0,000495	0,047856	3,061103	0,019591	0,019602	0,000328	0,004219	0,091923	0,034932	0,035092
MERCK KGAA	0,000701	-0,053026	-3,094259	0,021143	0,021093	-0,000527	-0,000304	-0,005630	0,020641	0,020718
METRO	0,000444	0,012639	0,704994	0,020655	0,020667	-0,001186	0,066483	1,459583	0,029672	0,029647
MUENCHENER RUCK.	0,000393	0,081838	5,689269	0,020132	0,020054	-0,000324	0,000570	0,010701	0,024264	0,024355
RWE	0,000561	-0,004440	-0,302150	0,016236	0,016245	0,000148	0,054143	1,326908	0,022261	0,022339
SALZGITTER	0,000313	-0,031107	-1,732646	0,021728	0,021735	-0,000710	-0,055493	-1,224412	0,040804	0,040941
SAP	0,000856	0,045326	2,803346	0,026555	0,026532	0,000774	-0,049419	-1,141381	0,022429	0,022584
SIEMENS	0,000321	0,040697	2,581581	0,019028	0,019006	0,000812	-0,046447	-0,829532	0,030813	0,030990
THYSSENKRUPP	0,000389	0,045608	2,941000	0,019334	0,019329	-0,000120	0,016226	0,341566	0,033672	0,033801
VOLKSWAGEN	0,000650	0,065635	4,207232	0,019574	0,019544	0,000457	0,019914	0,492222	0,064166	0,064305

	FTSE100UK									
	a	b	tstat	sddep	se	a	b	tstat	sddep	se
ADMIRAL GROUP	0,001667	0,080366	2,211795	0,016541	0,016508	0,001631	-0,078973	-1,697149	0,029126	0,029100
ALLIANCE TRUST	0,000347	0,076831	4,786156	0,008695	0,008698	0,000223	-0,172573	-3,600524	0,023645	0,023315
AMEC	0,000785	0,110764	7,512228	0,022253	0,022203	0,001767	0,020109	0,418738	0,029887	0,030040
ANGLO AMERICAN	0,000709	0,026133	1,617745	0,025327	0,025399	0,000620	0,034670	0,690024	0,045026	0,045184
ANTOFAGASTA	0,000191	0,243050	12,910380	0,016821	0,016655	0,000393	-0,031335	-0,706205	0,044457	0,044547
ASSOCIATED BRIT.FOOD	0,000546	0,001692	-0,119523	0,015405	0,015412	0,000392	-0,126369	-2,432088	0,018001	0,017852
ASTRAZENECA	0,000387	0,055485	3,489682	0,016641	0,016622	0,000204	0,004698	0,104779	0,020980	0,021061
AUTONOMY CORP.	0,001599	-0,016914	-0,612331	0,043908	0,044069	0,001363	-0,012043	-0,271425	0,031045	0,031155
AVIVA	0,000363	0,027970	1,852743	0,019567	0,019581	-0,000400	0,019177	0,414689	0,047760	0,047893
BAE SYSTEMS	0,000851	0,101233	6,748377	0,024300	0,024342	-0,000065	-0,081659	-1,836716	0,022831	0,022715
BARCLAYS	0,000556	0,072800	4,826121	0,019271	0,019225	-0,001221	0,027480	0,677035	0,058607	0,058756
BG GROUP	0,000532	-0,021499	-1,435533	0,017446	0,017443	0,001438	-0,061514	-1,345394	0,030700	0,030870
BHP BILLITON	0,001229	0,031400	1,584675	0,023767	0,023783	0,000763	-0,017487	-0,376277	0,039378	0,039539
BP	0,000398	0,058315	3,830347	0,015613	0,015611	0,000724	-0,096877	-2,043135	0,022973	0,022975
BRITISH AIRWAYS	0,000768	0,047498	3,208128	0,023049	0,023032	-0,000648	0,035034	0,771491	0,039333	0,039454
BRITISH AMERICAN tob	0,000849	-0,004984	-0,339377	0,018476	0,018488	0,001089	-0,065495	-1,487196	0,021075	0,021198
BRITISH LAND	0,000632	-0,004709	-0,315818	0,016923	0,016931	-0,001901	-0,074241	-1,622812	0,033443	0,033462
BRITISH SKY BCAST.GR	0,000529	0,070995	3,806848	0,022640	0,022568	0,000058	-0,084515	-1,853250	0,024114	0,024063
BT GROUP	0,000445	0,048329	3,286012	0,019673	0,019669	-0,001547	-0,041167	-0,823744	0,028911	0,028966
BUNZL	0,000476	0,110821	8,194720	0,015590	0,015522	0,000352	-0,050467	-1,072811	0,020089	0,020137
BURBERRY GROUP	0,001137	0,031769	1,098574	0,018540	0,018531	0,000594	-0,019929	-0,390010	0,034414	0,034568
CABLE & WIRELESS	0,000684	0,080145	4,821910	0,025762	0,025686	0,000091	-0,004159	-0,092387	0,022714	0,022799
CADBURY	0,000384	0,016500	1,078005	0,014810	0,014822	-0,000117	-0,063274	-1,870695	0,022886	0,022931
CAIRN ENERGY	0,000637	0,203333	12,887700	0,024327	0,023959	0,001946	0,040318	0,872649	0,034666	0,034784
CAPITA GROUP	0,000960	0,117412	7,573794	0,020800	0,020714	-0,000019	-0,064170	-1,399364	0,017455	0,017418
CARNIVAL	0,000635	0,064202	2,777543	0,021377	0,021327	0,000244	0,002331	0,051798	0,030629	0,030746
CENTRICA	0,000677	-0,065729	-3,141043	0,019100	0,019082	-0,000495	-0,152879	-3,277312	0,022505	0,022238
COBHAM	0,000448	0,245069	14,870590	0,013829	0,013553	0,000629	-0,040533	-0,935680	0,020833	0,020867
COMPASS GROUP	-0,000072	-0,036166	-1,191083	0,020587	0,020615	0,000283	-0,032236	-0,674943	0,025356	0,025445
DIAGEO	0,000401	0,011055	0,707851	0,015908	0,015913	0,000297	-0,125141	-2,814655	0,017971	0,017901
EURASIAN NATRES..						NA				
EXPERIAN	0,000320	-0,011937	-0,159937	0,016364	0,016531	0,000731	-0,042003	-0,859869	0,026695	0,026768
FRESNILLO						NA				
FRIENDS PROVIDENT	0,000481	-0,059206	-2,294906	0,021871	0,021825	-0,000383	0,029008	0,605813	0,040900	0,041166
G4S	0,000984	0,021217	1,067354	0,022828	0,022850	0,000402	-0,113193	-2,429325	0,020684	0,020787
GLAXOSMITHKLINE	0,000356	0,012106	0,841067	0,017275	0,017280	0,000331	0,011406	0,248917	0,018335	0,018415
HAMMERSON	0,000220	0,157068	11,054820	0,013949	0,013843	-0,001010	-0,016788	-0,352199	0,033178	0,033316
HOME RETAIL GROUP	0,000654	0,054829	3,952754	0,017212	0,017221	-0,000220	-0,060979	-1,402482	0,034090	0,034136
HSBC HDG. (ORD $0.50)	0,000472	0,034509	2,137170	0,017160	0,017148	0,000248	0,018857	0,443381	0,030184	0,030303
ICAP	0,001146	0,117175	4,717299	0,016993	0,016959	0,001247	-0,074730	-1,513473	0,041512	0,041545
IMPERIAL TOBACCO GP.	0,000816	-0,008021	-0,429908	0,015888	0,015899	0,000261	-0,039493	-0,829297	0,020470	0,020521
INMARSAT	0,000980	-0,051822	-1,298971	0,017550	0,017563	0,001214	-0,046320	-1,083644	0,025936	0,026035
ICTL.HTLS.GP.	0,000893	-0,010370	-0,357631	0,014661	0,014688	-0,000018	0,022280	0,476869	0,028519	0,028619
INTERNATIONAL POWER	0,000416	0,029325	1,897592	0,019504	0,019513	0,000437	-0,050645	-1,148735	0,026854	0,027042
INTERTEK GROUP	0,000664	0,061655	2,297134	0,014187	0,014191	0,000732	-0,074022	-1,594525	0,022762	0,022775
INVENSYS	0,000777	0,079543	5,555071	0,032141	0,032152	0,000614	0,030541	0,681306	0,038593	0,038750
JOHNSON MATTHEY	0,000552	0,079566	5,363496	0,016908	0,016921	0,000490	-0,073638	-1,573875	0,029078	0,029150
KAZAKHMYS	0,001934	0,030147	0,662815	0,025208	0,025318	0,001880	-0,024860	-0,510587	0,057231	0,057530
KINGFISHER	0,000159	0,052395	3,494256	0,018428	0,018441	0,000016	-0,018723	-0,428240	0,032672	0,032784
LAND SECURITIES	0,000424	0,035082	2,263658	0,012357	0,012369	-0,001183	0,020330	0,424278	0,030695	0,030799
LEGAL & GENERAL	0,000477	-0,022181	-1,459841	0,019671	0,019666	-0,000965	-0,068416	-1,459126	0,046955	0,047211
LIBERTY INTL.	0,000246	0,125083	7,504396	0,010850	0,010825	-0,001400	-0,075367	-1,667697	0,032870	0,032929
LLOYDS BANKING	0,000378	0,049885	2,609184	0,020372	0,020372	-0,001533	0,012920	0,287067	0,062554	0,062720
LONDON STOCK EX.GROUP	0,000516	-0,121026	-5,738581	0,020772	0,021037	-0,000177	-0,032968	-0,718904	0,038969	0,039079
LONMIN	0,000363	0,067495	4,052525	0,022818	0,022818	0,001178	0,066647	1,126665	0,047605	0,047827

MAN GROUP	0,000525	0,121292	6,305471	0,016505	0,016508	0,000625	-0,078009	-1,588208	0,045618	0,045608
MARKS & SPENCER GROUP	0,000413	0,026223	1,835682	0,017612	0,017644	0,002039	-0,086424	-2,099262	0,030851	0,031330
MORRISON(WM)SPMKTS.	0,000792	0,064322	3,654501	0,017096	0,017170	0,000179	-0,130205	-2,640092	0,020543	0,020453
NATIONAL GRID	0,000369	-0,034825	-1,942383	0,015106	0,015106	0,000032	-0,145266	-2,966014	0,020647	0,020711
NEXT	0,000955	0,075061	4,742093	0,022740	0,022737	0,000386	-0,036775	-0,858594	0,031730	0,031825
OLD MUTUAL	0,000622	-0,057168	-2,637341	0,020776	0,020736	0,000003	-0,097857	-2,281886	0,049381	0,049298
PEARSON	0,000383	0,027762	1,939512	0,020158	0,020161	0,000996	-0,064558	-1,222255	0,020023	0,020070
PETROFAC	0,002343	-0,017977	-0,342527	0,022727	0,022814	0,002519	0,021625	0,474388	0,033102	0,033235
PRUDENTIAL	0,000612	0,046011	2,965323	0,020374	0,020391	0,000793	-0,040788	-0,855934	0,047825	0,048090
RANDGOLD RESOURCES	0,000084	0,057130	2,548808	0,030138	0,030103	0,002408	0,035268	0,769253	0,038286	0,038446
RECKITT BENCKISER GROUP	0,000549	0,011966	0,837057	0,015815	0,015821	0,001023	-0,134610	-2,958464	0,019039	0,019003
REED ELSEVIER	0,000338	0,023489	1,572601	0,017522	0,017521	-0,000190	-0,109721	-2,258238	0,022758	0,022741
RENTOKIL INITIAL	0,000592	0,034613	2,205947	0,018879	0,018897	-0,001372	0,039470	0,979074	0,036847	0,036916
REXAM	0,000273	0,053709	3,700549	0,017256	0,017265	-0,000927	-0,012199	-0,271213	0,028108	0,028205
RIO TINTO	0,000453	0,069807	4,766715	0,018325	0,018317	0,001596	0,016463	0,322917	0,050162	0,050399
ROLLS-ROYCE GROUP	0,000610	0,035942	2,438485	0,021478	0,021465	0,000723	-0,014746	-0,322329	0,028273	0,028370
ROYAL BANK OF SCTL.GP.	0,000464	0,060763	3,996454	0,019527	0,019507	0,000687	0,017614	0,371961	0,076425	0,076672
ROYAL DUTCH SHELL A(LON)	0,000267	0,060704	1,404252	0,011162	0,011214	0,000767	-0,049175	-1,093585	0,023522	0,023587
ROYAL DUTCH SHELL B	0,000352	0,061886	4,204450	0,015001	0,015007	0,000596	-0,037456	-0,824797	0,024477	0,024540
RSA INSURANCE GROUP	0,000572	0,025404	1,609775	0,023777	0,023786	0,000260	-0,109896	-2,403975	0,027185	0,027077
SABMILLER	0,000949	-0,048236	-2,210238	0,018523	0,018506	0,001271	0,007211	0,154227	0,023399	0,023519
SAGE GROUP	0,000347	0,099386	5,834953	0,024471	0,024549	0,000729	-0,108383	-2,331402	0,022638	0,022510
SAINSBURY (J)	0,000330	0,042082	2,865238	0,016942	0,016959	0,000300	-0,135521	-2,232534	0,026401	0,026452
SCHRODERS	0,000890	0,053627	3,773700	0,021274	0,021408	0,001035	-0,069063	-1,526311	0,037576	0,037533
SCHRODERS NV	0,000763	0,017107	1,176650	0,023781	0,023856	0,000751	-0,116341	-2,435477	0,038489	0,038040
SCOT.& SOUTHERN ENERGY	0,000484	0,020485	1,379069	0,013858	0,013872	0,000170	-0,157662	-3,211693	0,020540	0,020503
SEGRO	0,000310	0,148490	10,290860	0,015185	0,015104	-0,001532	-0,002772	-0,056983	0,040158	0,040309
SERCO GROUP	0,001251	0,152127	10,772550	0,018491	0,018319	0,000519	-0,059530	-1,223686	0,019816	0,019849
SEVERN TRENT	0,000509	0,052627	3,569890	0,014919	0,014918	-0,000527	-0,074308	-1,695591	0,020274	0,020405
SHIRE	0,000959	0,092261	5,288847	0,025733	0,025715	0,000334	0,008555	0,182681	0,022368	0,022466
SMITH & NEPHEW	0,000401	0,028074	1,840863	0,016028	0,016055	0,000191	0,013728	0,270075	0,022946	0,023047
SMITHS GROUP	0,000614	0,067477	4,750772	0,016503	0,016532	0,000575	-0,029858	-0,534617	0,022919	0,023016
STANDARD CHARTERED	0,000964	0,044434	2,962743	0,021751	0,021728	0,001676	-0,049942	-1,085697	0,042325	0,042499
STANDARD LIFE	0,001164	-0,023572	-0,350055	0,015634	0,015735	0,000194	-0,056714	-1,270449	0,037204	0,037358
TESCO	0,000565	0,004244	0,302164	0,016409	0,016419	0,000642	-0,098307	-2,069750	0,021818	0,021792
THOMAS COOK GROUP	0,000898	0,069496	2,423186	0,023435	0,023358	0,000191	0,039754	0,855990	0,033766	0,033900
TUI TRAVEL	0,000587	0,162534	8,636214	0,024347	0,024154	0,000083	-0,053531	-1,062192	0,032330	0,032495
TULLOW OIL	0,001138	0,095083	7,026811	0,027086	0,027096	0,002449	-0,064781	-1,310349	0,035357	0,035421
UNILEVER (UK)	0,000413	0,069468	4,824481	0,014749	0,014742	0,000854	-0,071557	-1,659125	0,020659	0,020701
UNITED UTILITIES GROUP	0,000382	0,032456	2,107125	0,014886	0,014898	-0,000605	-0,037962	-0,880905	0,019071	0,019165
VEDANTA RESOURCES	0,001596	0,046589	1,439536	0,024303	0,024330	0,001021	0,021159	0,418770	0,050165	0,050310
VODAFONE GROUP	0,000650	0,056741	3,803526	0,022012	0,022020	0,000588	-0,082446	-1,742163	0,024620	0,024630
WHITBREAD	0,000372	0,066767	4,208804	0,015069	0,015070	-0,000483	0,042192	0,876848	0,028016	0,028077
WOLSELEY	0,000728	0,083319	5,528908	0,017931	0,017935	-0,002243	0,050822	1,133843	0,045722	0,045749
WPP	0,000822	0,069895	4,943232	0,033907	0,033697	-0,000386	-0,046792	-1,095276	0,026717	0,026832

In order to conclude of whether volatility (time varying) level has changed or not we can take a look on the average coefficients by market and the levels of conditional variance in Tables 3 and 4 respectively. Moreover a line graph of the conditional variance before and after the crisis for both models but sampling the market as a unique market is very revealing.

TABLE 3 AVERAGE COEFS AND STATS

Least Squares estimation of Market Model						
before crisis				during crisis		
FRCAC40						
a AVERAGE	b AVERAGE	sddep		a AVERAGE	b AVERAGE	sddep
0,000139	0,868569	0,019938		-0,000084	1,062731	0,031089
DAX30						
a AVERAGE	b AVERAGE	sddep		a AVERAGE	b AVERAGE	sddep
0,000073	0,755944	0,019977		-0,000237	0,896036	0,030696
FTSE100UK						
a AVERAGE	b AVERAGE	sddep		a AVERAGE	b AVERAGE	sddep
0,000249	0,831509	0,019448		0,000055	1,014588	0,031411
Least Squares estimation of AR(1)						
before crisis				during crisis		
FRCAC40						
a AVERAGE	b AVERAGE	sddep		a AVERAGE	b AVERAGE	sddep
0,000338	0,009768	0,021416		-0,000852	-0,010447	0,031089
DAX30						
a AVERAGE	b AVERAGE	sddep		a AVERAGE	b AVERAGE	sddep
0,000277	0,017683	0,019845		-0,000704	0,007038	0,030696
FTSE100UK						
a AVERAGE	b AVERAGE	sddep		a AVERAGE	b AVERAGE	sddep
0,000406	0,030336	0,019399		-0,000325	-0,038376	0,031411
GARCH(1,1) estimation of Market Model						
before crisis				during crisis		
FRCAC40						
a AVERAGE	b AVERAGE	sddep		a AVERAGE	b AVERAGE	sddep
0,000232	0,849414	0,021483		-0,000037	1,048957	0,031089
DAX30						
a AVERAGE	b AVERAGE	sddep AVERAGE		a AVERAGE	b AVERAGE	sddep
0,000075	0,766802	0,019977		-0,000108	0,899519	0,030696
FTSE100UK						
a AVERAGE	b AVERAGE	sddep AVERAGE		a AVERAGE	b AVERAGE	sddep
0,000351	0,801301	0,019448		0,000065	0,999111	0,031411
GARCH(1,1) estimation of AR(1)						
before crisis				during crisis		
FRCAC40						
a AVERAGE	b AVERAGE	sddep AVERAGE		a AVERAGE	b AVERAGE	sddep AVERAGE
0,000624	0,003689	0,021416		-0,000139	-0,017166	0,031089
DAX30						
a AVERAGE	b AVERAGE	sddep AVERAGE		a AVERAGE	b AVERAGE	sddep AVERAGE
0,000509	0,017210	0,019845		0,000020	-0,001599	0,030696
FTSE100UK						
a AVERAGE	b AVERAGE	sddep AVERAGE		a AVERAGE	b AVERAGE	sddep AVERAGE
0,000649	0,048483	0,019399		0,000332	-0,041456	0,031411

TABLE 4

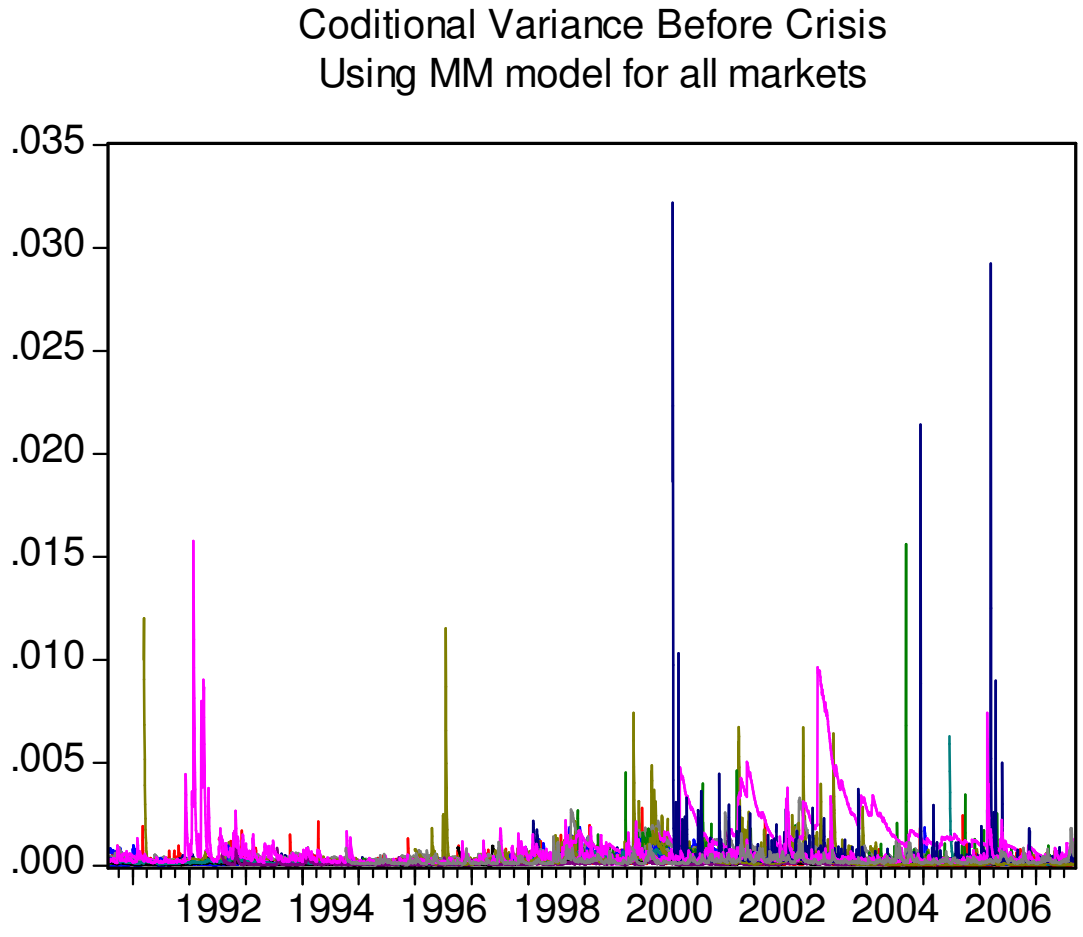
CONDITIONAL VARIANCE OF ALL MARKET SAMPLE

	AR(1) BEFORE CRISIS	AR(1) DURING CRISIS	Δ%	MM BEFORE CRISIS	MM DURING CRISIS	Δ%
	average	average		average	average	
Mean	0,000434	0,001135	*61,734038*	0,000341	0,000700	*51,385344*
Median	0,000295	0,000725	*59,372571*	0,000227	0,000435	*47,910000*
Maximum	0,006132	0,012373	*50,446092*	0,007130	0,015742	*54,707788*
Minimum	0,000103	0,000239	*56,808432*	0,000084	0,000141	*40,276536*
Std. Dev.	0,000460	0,001358	*66,105040*	0,000440	0,001155	*61,879972*
Skewness	4,023839	2,859594	*-40,713683*	4,681951	3,677534	*-27,312251*
Kurtosis	39,129480	15,968128	*-145,047387*	56,262297	33,627802	*-67,308874*

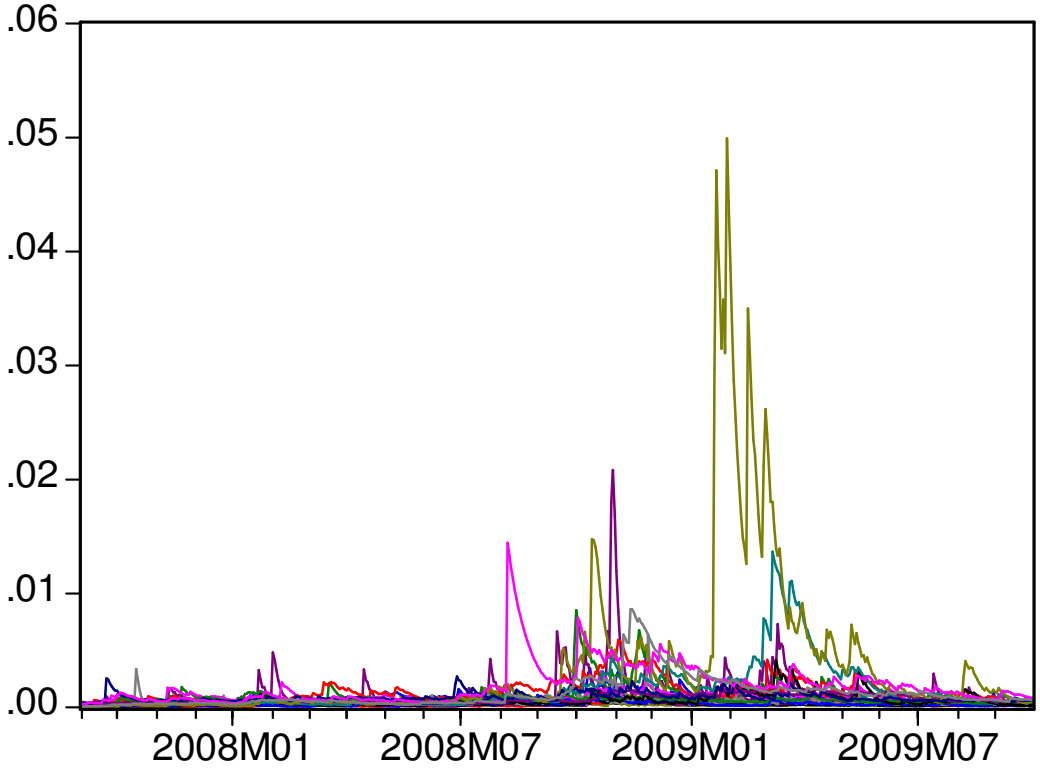
Table 2,3: sddep=standard deviation of dependent variable(dialy returns)

tstat=statistical importance of a

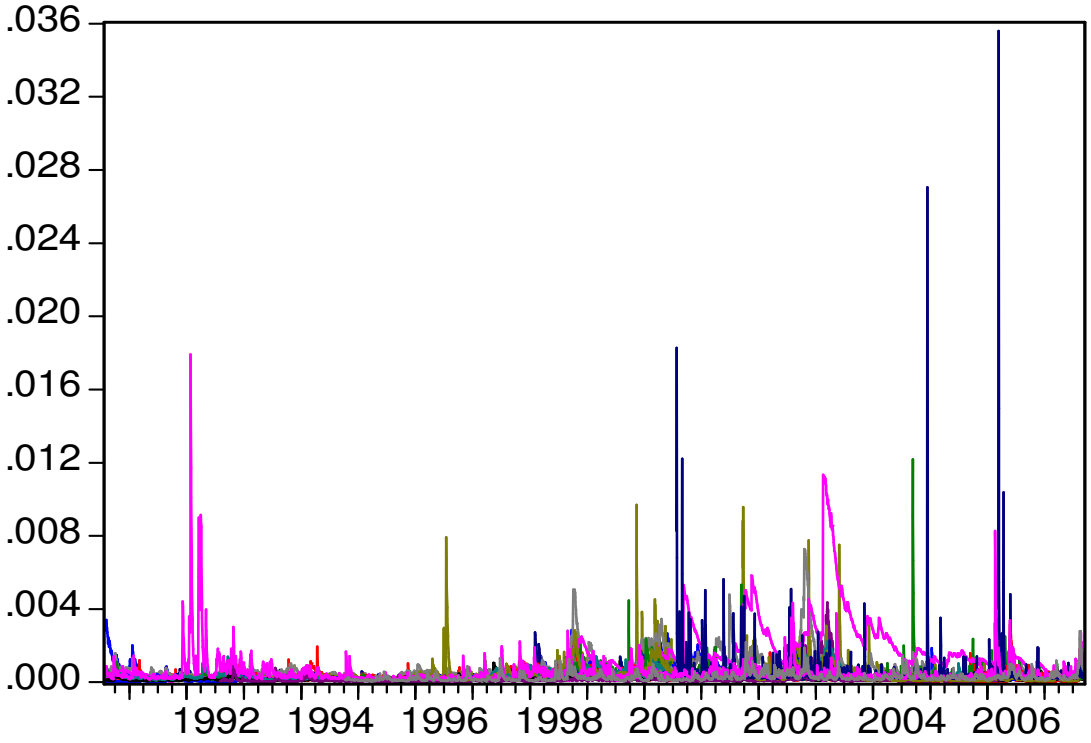
se=standard error of equation

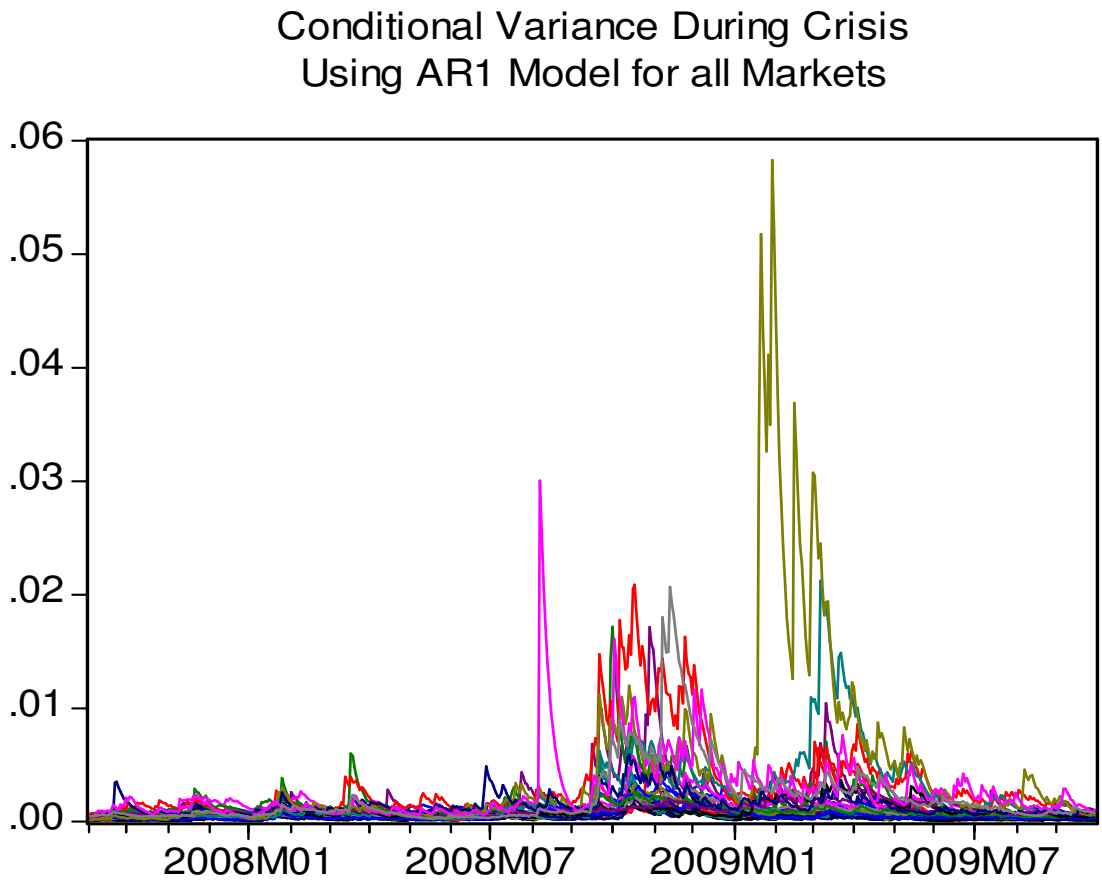


Conditional Variance during Crisis
Using MM model for all markets



Conditional Variance Before Crisis
Using Ar1 Model for all markets





The above tables and graphs should be enough evidence to support the fact that volatility is surely not constant and has changed from a low-medium to a high and persisting level probably because of the crisis.

The second question raised was:

Have the risk premia changed radically due to bad news arrivals (serial autocorrelation)?

This was answered by testing a M-GARCH (1,1) Model introducing the *logarithm* of the conditional variance into the mean model which would be the Market Model and the AR(1) in each case. The maximization of the Log Likelihood function was to be

achieved with the BHHH algorithm and a limit of 500 iterations.

Every other measure of variance (standard deviation or variance itself failed to be tested because maximization could not achieved).

Bellow I provide the results of the M-GARCH test:

TABLE 5

δ-Coefficient of GARCH in mean modeling:

$R_t = a_t + b_t R_{m,t} + \delta h_t + u_t$.. for the Market Model

$R_t = c + \Phi R_{t-1} + \delta h_t + u_t$.. for the Ar(1) Model

Where: $h_t = \omega + \alpha_1 u^2_{t-1} + b_1 h_{t-1}$.

	MGARCH(1,1) MM MODEL					
	FRCAC40					
	BEFORE CRISIS			DURING CRISIS		
	δ coef	p-value	se	δ coef	p-value	se
AIR LIQUIDE	-3.62E-05	0.8857	0.000252	-0.001270	0.1581	0.000900
ALCATEL-LUCENT	0.000144	0.5601	0.000248	0.002297	0.3263	0.002340
ALSTOM	-0.001739	0.0307	0.000805	0.002281	0.2041	0.001796
ARCELORMITTAL	0.000710	0.5245	0.001116	-0.000977	0.5259	0.001540
AXA	0.000264	0.3828	0.000303	0.001594	0.1285	0.001049
BNP PARIBAS	0.000149	0.4896	0.000215	0.000545	0.5893	0.001009
BOUYGUES	0.000958	0.0067	0.000353	0.002118	0.3366	0.002204
CAP GEMINI	7.35E-05	0.9024	0.000599	-0.006271	0.3508	0.006721
CARREFOUR	-0.000267	0.4622	0.000363	-0.001674	0.1460	0.001152
CREDIT AGRICOLE	9.69E-05	0.8841	0.000665	0.000978	0.4122	0.001193
DANONE	-0.000168	0.5627	0.000291	0.000595	0.7055	0.001575
DEXIA	-0.000258	0.4653	0.000354	-0.000539	0.6933	0.001367
EADS (PAR)	0.000126	0.8516	0.000673	-0.002305	0.5125	0.003519
EDF	-2.75E-05	0.9923	0.002860	-0.000717	0.8841	0.004922
ESSILOR INTL.	0.000116	0.7628	0.000384	0.000375	0.7602	0.001229
FRANCE TELECOM	-0.000110	0.7698	0.000375	-0.002862	0.4654	0.003921
GDF SUEZ	-0.195990	0.0000	4.39E-07	-0.001034	0.4614	0.001404
L'OREAL	0.000238	0.4899	0.000345	-0.002995	0.0690	0.001647
LAFARGE	9.79E-05	0.7600	0.000321	-0.000162	0.9450	0.002349
LAGARDERE GROUPE	-0.000109	0.7577	0.000353	0.000758	0.6977	0.001952
LVMH	4.62E-05	0.8676	0.000277	0.000620	0.5163	0.000955
MICHELIN	-0.000741	0.1665	0.000535	0.003878	0.3300	0.003981
PERNOD-RICARD	0.000215	0.6384	0.000457	-1.85E-05	0.9893	0.001372

PEUGEOT	5.12E-05	0.9048	0.000429	0.001724	0.4534	0.002299
PPR	0.000143	0.7313	0.000418	0.002950	0.0548	0.001536
RENAULT	0.000486	0.2322	0.000407	-0.001092	0.6661	0.002530
SAINT GOBAIN	-4.84E-05	0.8645	0.000284	0.001348	0.4633	0.001838
SANOFI-AVENTIS	0.000214	0.5934	0.000400	0.001154	0.3405	0.001210
SCHNEIDER ELECTRIC	-4.90E-05	0.8849	0.000339	0.003286	0.2090	0.002615
SOCIETE GENERALE	-2.22E-05	0.9201	0.000221	0.001381	0.3883	0.001601
STMICROELECTRONICS (PAR)	0.001297	0.0026	0.000431	-0.001050	0.8221	0.004672
SUEZ ENVIRONNEMENT	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION, ITERATIONS=500)					
TECHNIP	0.000110	0.8727	0.000683	0.001694	0.5964	0.003199
TOTAL	5.43E-05	0.8278	0.000249	0.000454	0.7198	0.001266
UNIBAIL-RODAMCO	-0.001680	0.0101	0.000653	0.001735	0.5154	0.002668
VALLOUREC	0.001116	0.3171	0.001115	-0.004893	0.0986	0.002963
VEOLIA ENVIRONNEMENT	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION, ITERATIONS=500)					
VINCI (EX SGE)	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION, ITERATIONS=500)					
VIVENDI	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION, ITERATIONS=500)					

	DAX30					
	BEFORE CRISIS			DURING CRISIS		
	δ coef	p-value	se	δ coef	p-value	se
ADIDAS	-2.85E-05	0.9600	0.000569	0.000455	0.8224	0.002028
ALLIANZ	4.67E-05	0.7763	0.000165	0.001472	0.1090	0.000918
BASF	7.54E-05	0.7703	0.000258	0.000348	0.8147	0.001483
BMW	7.27E-05	0.7593	0.000237	0.001216	0.4744	0.001699
BAYER	-3.90E-05	0.8549	0.000213	-0.001998	0.2628	0.001784
BEIERSDORF	0.000391	0.2614	0.000348	0.000483	0.8191	0.002110
COMMERZBANK	0.000313	0.2509	0.000273	0.001100	0.4433	0.001434
DAIMLER	0.000662	0.3357	0.000688	0.003869	0.0451	0.001930
DEUTSCHE BANK	0.000147	0.2350	0.000124	0.002113	0.0906	0.001249
DEUTSCHE BOERSE	0.000878	0.3981	0.001039	-0.000959	0.7171	0.002645
DEUTSCHE POST	-0.001096	0.1264	0.000717	0.000326	0.8639	0.001902
DEUTSCHE TELEKOM	0.000358	0.2682	0.000324	-0.001707	0.1816	0.001278
E ON	-9.00E-05	0.6335	0.000189	-0.002676	0.0234	0.001181
FRESENIUS MED.CARE	-0.000469	0.2989	0.000451	0.000655	0.6720	0.001548
FRESENIUS PREF.	-0.000374	0.5166	0.000576	-0.000524	0.8187	0.002285
HENKEL PREF.	0.000187	0.5249	0.000295	0.001741	0.5602	0.002988
INFINEON TECHNOLOGIES	0.000489	0.4447	0.000639	0.005623	0.0159	0.002332
K + S	-6.45E-05	0.9367	0.000813	-0.002680	0.4951	0.003928
LINDE	0.000200	0.4420	0.000260	-0.001280	0.2462	0.001104
DEUTSCHE LUFTHANSA	0.000164	0.7013	0.000427	0.000626	0.8930	0.004657
MAN	0.000343	0.2791	0.000317	0.000188	0.9223	0.001930

MERCK KGAA	0.000117	0.8466	0.000607		0.003667	0.1899	0.002797
METRO	0.000547	0.2072	0.000434		0.002284	0.0728	0.001273
MUENCHENER RUCK.	0.000261	0.4123	0.000319		-0.000920	0.2944	0.000877
RWE	-1.13E-05	0.9439	0.000161		-0.000408	0.7658	0.001370
SALZGITTER	0.000697	0.3364	0.000725		0.002503	0.3251	0.002543
SAP	0.001035	0.0250	0.000462		-0.000654	0.6758	0.001564
SIEMENS	0.000180	0.1169	0.000115		-0.000447	0.7131	0.001215
THYSSENKRUPP	0.000165	0.6106	0.000324		0.001525	0.5622	0.002632
VOLKSWAGEN	9.97E-05	0.7625	0.000330		-0.000126	0.9114	0.001135
	FTSE100 UK						
	BEFORE CRISIS				DURING CRISIS		
	δ coef	p-value	se		δ coef	p-value	se
ADMIRAL GROUP	-0.002326	0.1051	0.001435		0.000748	0.7431	0.002282
ALLIANCE TRUST	-0.000199	0.2704	0.000180		-0.000244	0.6198	0.000492
AMEC	5.91E-05	0.9179	0.000573		7.91E-05	0.9658	0.001847
ANGLO AMERICAN	-6.48E-05	0.9091	0.000568		-0.000664	0.8623	0.003827
ANTOFAGASTA	0.001717	0.0021	0.000558		0.002624	0.4620	0.003567
ASSOCIATED BRIT.FOODS	0.000157	0.5955	0.000296		0.002363	0.2345	0.001987
ASTRAZENECA	-0.000978	0.0510	0.000501		0.001133	0.3377	0.001181
AUTONOMY CORP.	-0.001755	0.2836	0.001637		0.024531	0.0000	0.001912
AVIVA	0.000134	0.6941	0.000340		0.000422	0.7364	0.001253
BAE SYSTEMS	5.55E-06	0.9879	0.000365		0.001563	0.4922	0.002276
BARCLAYS	0.000155	0.6289	0.000322		0.003630	0.0136	0.001471
BG GROUP	0.000263	0.5138	0.000403		0.003895	0.1596	0.002769
BHP BILLITON	-0.000827	0.2348	0.000696		0.001693	0.3460	0.001797
BP	0.000194	0.5571	0.000330		0.000367	0.8736	0.002305
BRITISH AIRWAYS	-0.000391	0.3895	0.000454		0.002207	0.5747	0.003933
BRITISH AMERICAN TOBACCO	0.000307	0.3357	0.000319		-0.000921	0.5636	0.001594
BRITISH LAND	-0.000375	0.4156	0.000461		-0.001850	0.3409	0.001942
BRITISH SKY BCAST.GROUP	-8.10E-05	0.8882	0.000576		0.000751	0.6305	0.001561
BT GROUP	9.43E-05	0.7510	0.000297		-0.009603	0.0978	0.005799
BUNZL	0.000769	0.0792	0.000438		-0.002013	0.3739	0.002263
BURBERRY GROUP	0.000168	0.8394	0.000827		-0.000438	0.8744	0.002771
CABLE & WIRELESS	0.000161	0.6938	0.000409		-0.000845	0.8002	0.003338
CADBURY	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION, ITERATIONS=500)						
CAIRN ENERGY	0.000865	0.2945	0.000825		0.000130	0.9569	0.002402
CAPITA GROUP	0.000445	0.2118	0.000356		0.001031	0.5173	0.001593
CARNIVAL	0.001347	0.0759	0.000759		-0.001025	0.6129	0.002025
CENTRICA	0.000879	0.1677	0.000637		-0.000437	0.8095	0.001812
COBHAM	0.000327	0.5658	0.000569		0.001731	0.3412	0.001818
COMPASS GROUP	0.000942	0.6151	0.001873		0.001010	0.7468	0.003128
DIAGEO	1.58E-05	0.9504	0.000253		-0.000888	0.5866	0.001633

EURASIAN NATRES.CORP	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION					
EXPERIAN	0.000282	0.9219	0.002877	0.006382	0.2875	0.006001
FRESNILLO	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION					
FRIENDS PROVIDENT GROUP	0.000255	0.6543	0.000570	-0.000647	0.6988	0.001672
G4S	6.37E-05	0.9293	0.000718	0.005028	0.0829	0.002899
GLAXOSMITHKLINE	-5.46E-05	0.9109	0.000488	0.002270	0.2439	0.001948
HAMMERSON	0.000328	0.4582	0.000442	-0.000162	0.9422	0.002231
HOME RETAIL GROUP	-0.000200	0.4372	0.000257	0.000589	0.8454	0.003021
HSBC HDG. (ORD $0.50)	0.000417	0.0284	0.000190	0.000283	0.7553	0.000907
ICAP	0.001295	0.1933	0.000996	0.004160	0.1175	0.002658
IMPERIAL TOBACCO GP.	0.000199	0.6777	0.000478	-0.000568	0.6694	0.001331
INMARSAT	0.006205	0.0689	0.003411	-0.000316	0.9158	0.002994
ICTL.HTLS.GP.	-0.000162	0.8942	0.001217	-0.001092	0.6824	0.002668
INTERNATIONAL POWER	0.003502	0.4405	0.004539	-0.001739	0.5081	0.002628
INTERTEK GROUP	0.001377	0.2992	0.001327	-4.52E-05	0.9806	0.001860
INVENSYS	-0.000185	0.5390	0.000301	0.002163	0.5638	0.003748
JOHNSON MATTHEY	0.000192	0.5800	0.000346	0.000224	0.9147	0.002089
KAZAKHMYS	0.000665	0.7467	0.002058	-0.000717	0.7966	0.002782
KINGFISHER	0.000410	0.2985	0.000395	0.003241	0.2355	0.002732
LAND SECURITIES GROUP	-0.000261	0.4778	0.000368	-0.001313	0.3821	0.001503
LEGAL & GENERAL	-0.000123	0.7390	0.000369	0.000376	0.7648	0.001257
LIBERTY INTL.	0.000635	0.0887	0.000373	-0.002777	0.2506	0.002418
LLOYDS BANKING GROUP	-9.86E-05	0.7262	0.000282	0.000790	0.4127	0.000964
LONDON STOCK EX.GROUP	-0.003368	0.0000	0.000171	-1.16E-05	0.9966	0.002750
LONMIN	0.000457	0.4423	0.000595	-0.014096	0.3897	0.016387
MAN GROUP	0.001635	0.0032	0.000554	-0.001569	0.4021	0.001873
MARKS & SPENCER GROUP	-0.000111	0.7375	0.000332	-0.001597	0.0000	0.000134
MORRISON(WM)SPMKTS.	-0.000697	0.2305	0.000582	0.000913	0.8405	0.004538
NATIONAL GRID	-0.000435	0.2862	0.000407	-0.001820	0.1759	0.001345
NEXT	0.000588	0.1842	0.000443	0.003508	0.1439	0.002400
OLD MUTUAL	0.000266	0.6717	0.000627	-0.000203	0.9055	0.001707
PEARSON	0.000219	0.4620	0.000298	0.001476	0.5970	0.002792
PETROFAC	-0.008790	0.0661	0.004783	-0.002327	0.5689	0.004084
PRUDENTIAL	-0.000390	0.2987	0.000375	0.001330	0.2705	0.001206
RANDGOLD RESOURCES	0.001689	0.1594	0.001200	0.005812	0.1220	0.003758
RECKITT BENCKISER GR	8.60E-05	0.7879	0.000320	-0.001742	0.2376	0.001475
REED ELSEVIER	0.000198	0.5322	0.000317	-0.176578	0.0000	0.004660
RENTOKIL INITIAL	-8.54E-05	0.8719	0.000530	-0.003664	0.6542	0.008178
REXAM	7.29E-05	0.8224	0.000325	0.007711	0.4465	0.010129
RIO TINTO	0.000593	0.0939	0.000354	0.001013	0.5275	0.001604
ROLLS-ROYCE GROUP	0.000174	0.7291	0.000504	0.003129	0.1695	0.002278
ROYAL BANK OF SCTL.GP.	0.000531	0.0875	0.000311	0.002115	0.1260	0.001382
ROYAL DUTCH SHELL	0.000716	0.8678	0.004301	0.000423	0.7980	0.001651
ROYAL DUTCH SHELL B	7.49E-05	0.7896	0.000281	0.000120	0.9473	0.001821
RSA INSURANCE GROUP	-0.000134	0.7782	0.000476	-0.000490	0.7545	0.001569

SABMILLER	-0.001285	0.0406	0.000627		0.000367	0.8328	0.001736
SAGE GROUP	0.001336	0.0000	0.000316		-0.000643	0.7230	0.001815
SAINSBURY (J)	4.47E-05	0.9121	0.000405		0.000740	0.6441	0.001602
SCHRODERS	-0.000355	0.2745	0.000325		-0.000865	0.6871	0.002147
SCHRODERS NV	-6.03E-05	0.8513	0.000322		-0.000571	0.7966	0.002217
SCOT.& SOUTHERN ENERGY	0.000221	0.4587	0.000299		-0.002070	0.1613	0.001478
SEGRO	0.000312	0.5566	0.000531		0.001325	0.5119	0.002020
SERCO GROUP	-5.93E-06	0.9802	0.000239		0.000503	0.7460	0.001553
SEVERN TRENT	2.58E-05	0.9520	0.000429		-0.000974	0.6220	0.001976
SHIRE	0.002108	0.0865	0.001229		-0.000539	0.8370	0.002623
SMITH & NEPHEW	0.000768	0.0235	0.000339		-0.005263	0.0578	0.002774
SMITHS GROUP	-0.000468	0.1829	0.000352		0.000705	0.5259	0.001111
STANDARD CHARTERED	0.000164	0.6147	0.000325		0.000347	0.8031	0.001391
STANDARD LIFE	-0.000937	0.6243	0.001914		0.000617	0.7148	0.001690
TESCO	-8.97E-05	0.8184	0.000391		0.000952	0.5686	0.001670
THOMAS COOK GROUP	0.001217	0.9311	0.014070		-3.71E-05	0.9882	0.002513
TUI TRAVEL	0.002311	0.0669	0.001261		0.000753	0.7447	0.002311
TULLOW OIL	0.000204	0.7213	0.000573		-0.027238	0.2462	0.023490
UNILEVER (UK)	-8.30E-06	0.9775	0.000294		0.002836	0.2117	0.002271
UNITED UTILITIES GROUP	1.68E-05	0.9662	0.000396		0.001548	0.4876	0.002230
VEDANTA RESOURCES	-0.001665	0.4704	0.002306		0.000692	0.7962	0.002678
VODAFONE GROUP	0.000234	0.5752	0.000417		-0.002326	0.3931	0.002724
WHITBREAD	0.000442	0.2260	0.000365		0.022129	0.2738	0.020221
WOLSELEY	7.35E-05	0.8647	0.000431		-0.000807	0.9404	0.010796
WPP	0.000398	0.1996	0.000310		0.001377	0.4480	0.001814

	MGARCH(1,1) AR(1) MODEL						
	FRCAC40						
	BEFORE CRISIS				DURING CRISIS		
	δ coef	p-value	se		δ coef	p-value	se
AIR LIQUIDE	0.000256	0.5166	0.000395		0.001322	0.2026	0.001038
ALCATEL-LUCENT	0.001160	0.0072	0.000432		0.006605	0.0760	0.003723
ALSTOM	-0.001257	0.2408	0.001072		0.000792	0.7717	0.002731
ARCELORMITTAL	0.002018	0.1299	0.001332		-0.000173	0.9320	0.002025
AXA	0.000746	0.1128	0.000471		0.002995	0.0273	0.001357
BNP PARIBAS	0.000338	0.5374	0.000548		0.002652	0.0924	0.001576
BOUYGUES	0.001112	0.0128	0.000447		0.000474	0.8689	0.002868
CAP GEMINI	0.000545	0.3825	0.000624		-0.001873	0.5592	0.003208
CARREFOUR	-1.31E-06	0.9977	0.000450		-0.000791	0.6431	0.001706
CREDIT AGRICOLE	-0.001107	0.2205	0.000904		0.002609	0.0643	0.001410
DANONE	0.000393	0.3519	0.000422		-0.001050	0.5672	0.001835
DEXIA	-0.000279	0.4927	0.000407		0.000500	0.8054	0.002028
EADS (PAR)	0.000849	0.2908	0.000803		-0.003286	0.2144	0.002647
EDF	-0.000833	0.7671	0.002812		-0.001683	0.3468	0.001789

ESSILOR INTL.	0.000221	0.6646	0.000510	-0.000532	0.6700	0.001250
FRANCE TELECOM	-1.55E-05	0.9757	0.000507	-0.001132	0.6674	0.002634
GDF SUEZ	-0.002043	0.5487	0.003407	-0.002126	0.2005	0.001661
L'OREAL	0.000270	0.5464	0.000448	0.000356	0.8454	0.001828
LAFARGE	0.000226	0.6532	0.000503	0.000498	0.8029	0.001994
LAGARDERE GROUPE	0.000131	0.7559	0.000420	0.002728	0.1147	0.001729
LVMH	0.000243	0.5417	0.000399	0.002449	0.0970	0.001476
MICHELIN	8.24E-05	0.8926	0.000611	0.007039	0.1175	0.004496
PERNOD-RICARD	0.000375	0.4776	0.000528	4.88E-05	0.9638	0.001077
PEUGEOT	0.000705	0.2029	0.000554	0.001086	0.6908	0.002730
PPR	0.000874	0.0479	0.000442	0.002541	0.2239	0.002089
RENAULT	0.000419	0.4951	0.000614	0.001867	0.5376	0.003029
SAINT GOBAIN	0.000961	0.0222	0.000420	0.005096	0.0254	0.002280
SANOFI-AVENTIS	0.000457	0.3322	0.000472	0.000635	0.7567	0.002048
SCHNEIDER ELECTRIC	6.83E-05	0.8891	0.000490	0.001824	0.4486	0.002407
SOCIETE GENERALE	0.000872	0.0474	0.000440	0.002710	0.1731	0.001989
STMICROELECTRONICS (PAR)	0.001009	0.0739	0.000565	0.003334	0.2446	0.002865
SUEZ ENVIRONNEMENT	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION, ITERATIONS=500)					
TECHNIP	0.000231	0.7652	0.000772	-0.000558	0.8077	0.002291
TOTAL	-0.000100	0.7981	0.000393	-0.000551	0.6994	0.001426
UNIBAIL-RODAMCO	-0.002142	0.0014	0.000671	0.000544	0.8139	0.002312
VALLOUREC	0.000972	0.3779	0.001102	-0.003605	0.2573	0.003182
VEOLIA ENVIRONMENT	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION,					
VINCI (EX SGE)	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION,					
VIVENDI	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION,					

	DAX30					
	BEFORE CRISIS			DURING CRISIS		
	δ coef	p-value	se	δ coef	p-value	se
ADIDAS	-0.000240	0.7168	0.000661	-0.000914	0.6552	0.002048
ALLIANZ	0.000364	0.3056	0.000355	0.003077	0.0291	0.001410
BASF	0.000702	0.1267	0.000460	0.001308	0.2302	0.001090
BMW	9.86E-05	0.7796	0.000352	0.001323	0.5880	0.002443
BAYER	0.000759	0.0424	0.000374	5.98E-05	0.9746	0.001877
BEIERSDORF	0.000384	0.3075	0.000376	0.001455	0.4385	0.001878
COMMERZBANK	0.000553	0.1856	0.000418	0.001942	0.3605	0.002124
DAIMLER	0.000312	0.6884	0.000778	0.002933	0.0761	0.001654
DEUTSCHE BANK	0.000767	0.0169	0.000321	0.002995	0.0211	0.001298
DEUTSCHE BOERSE	0.001393	0.2331	0.001168	-0.001485	0.5524	0.002500
DEUTSCHE POST	-0.001608	0.0281	0.000732	0.001637	0.3682	0.001819
DEUTSCHE TELEKOM	0.000219	0.5724	0.000388	-0.001637	0.2276	0.001357
E ON	-1.00E-05	0.9756	0.000327	-0.001617	0.1258	0.001056
FRESENIUS MED.CARE	-0.000459	0.3604	0.000502	0.000486	0.7789	0.001732
FRESENIUS PREF.	-0.000363	0.5746	0.000647	-0.000516	0.8477	0.002688
HENKEL PREF.	0.000656	0.1248	0.000427	-0.000130	0.9555	0.002330

INFINEON TECH	-0.000902	0.2251	0.000744	0.005732	0.0119	0.002279
K + S	0.000640	0.4455	0.000839	-0.007157	0.1121	0.004505
LINDE	0.000446	0.2855	0.000418	-0.000843	0.5435	0.001388
DEUTSCHE LUFTHANSA	0.000507	0.3860	0.000585	0.002239	0.4230	0.002795
MAN	0.001111	0.0442	0.000552	0.000707	0.7219	0.001985
MERCK KGAA	-0.000134	0.8517	0.000718	0.006758	0.0214	0.002937
METRO	0.000399	0.4478	0.000526	0.004423	0.0091	0.001696
MUENCHENER RUCK.	0.000710	0.0532	0.000367	0.000357	0.7518	0.001129
RWE	0.000177	0.5951	0.000332	3.47E-05	0.9817	0.001512
SALZGITTER	0.000763	0.3262	0.000777	0.002353	0.3139	0.002337
SAP	0.001274	0.0079	0.000480	0.001361	0.3672	0.001509
SIEMENS	0.000377	0.2113	0.000302	0.001288	0.6157	0.002567
THYSSENKRUPP	0.000396	0.3937	0.000464	0.002140	0.3294	0.002194
VOLKSWAGEN	-0.000123	0.8323	0.000580	-0.000810	0.4923	0.001180

	FTSE100UK					
	BEFORE CRISIS			DURING CRISIS		
	δ coef	p-value	se	δ coef	p-value	se
ADMIRAL GROUP	-0.001121	0.3254	0.001140	-0.001202	0.4777	0.001693
ALLIANCE TRUST	0.000456	0.0542	0.000237	0.002919	0.0108	0.001145
AMEC	-0.000122	0.8258	0.000554	-0.000920	0.6139	0.001824
ANGLO AMERICAN	0.000435	0.5252	0.000684	0.002219	0.4297	0.002810
ANTOFAGASTA	0.001082	0.0241	0.000480	0.006733	0.0801	0.003847
ASSOCIATED BRIT.FOODS	-3.55E-05	0.9050	0.000298	0.001235	0.4202	0.001532
ASTRAZENECA	-0.000221	0.6781	0.000532	0.000462	0.7517	0.001460
AUTONOMY CORP.	-0.002381	0.1484	0.001647	-4.78E-05	0.9930	0.005466
AVIVA	-5.58E-05	0.8952	0.000423	0.003431	0.0241	0.001521
BAE SYSTEMS	-0.000605	0.1346	0.000405	0.002976	0.1136	0.001881
BARCLAYS	0.000168	0.6730	0.000399	0.005080	0.0005	0.001453
BG GROUP	0.000373	0.4779	0.000525	-0.000524	0.8468	0.002710
BHP BILLITON	-0.000688	0.4838	0.000983	0.001372	0.6476	0.003002
BP	8.73E-05	0.8447	0.000446	-0.003040	0.0803	0.001739
BRITISH AIRWAYS	-0.000427	0.4002	0.000508	0.001830	0.6923	0.004625
BRITISH AMERICAN TB	-8.61E-05	0.8517	0.000461	-0.000458	0.7195	0.001275
BRITISH LAND	-0.000179	0.7136	0.000487	0.001395	0.6307	0.002902
BRITISH SKY BCAST.Gr	8.73E-05	0.8754	0.000556	-0.000505	0.7267	0.001444
BT GROUP	-9.63E-05	0.8017	0.000383	0.000211	0.9392	0.002761
BUNZL	0.000670	0.1571	0.000473	-0.001363	0.4921	0.001983
BURBERRY GROUP	0.000442	0.6104	0.000868	0.000481	0.8521	0.002579
CABLE & WIRELESS	-0.000568	0.3036	0.000552	-0.002382	0.4640	0.003253
CADBURY	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION,					
CAIRN ENERGY	0.000334	0.6548	0.000748	-0.000975	0.7606	0.003198
CAPITA GROUP	0.000391	0.2513	0.000340	0.000402	0.7432	0.001228
CARNIVAL	0.001296	0.0987	0.000785	0.001866	0.3626	0.002050
CENTRICA	0.001064	0.1079	0.000662	0.002758	0.1910	0.002109
COBHAM	2.83E-05	0.9623	0.000597	0.002870	0.1455	0.001972
COMPASS GROUP	0.001301	0.3614	0.001426	2.79E-05	0.9907	0.002392
DIAGEO	-0.000223	0.4808	0.000316	0.000402	0.7583	0.001306

EURASIAN NATRES.CORP.	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING THE LOG L FUNCTION, ITERATIONS=500)					
EXPERIAN	-0.000965	0.7194	0.002686	-0.000534	0.7285	0.001538
FRESNILLO	NA (UNABLE TO ACHIVE CONVERGENCE IN MAXIMIZING					
FRIENDS PROVIDENT GROUP	-0.000571	0.3372	0.000594	0.000273	0.8879	0.001933
G4S	0.000591	0.4953	0.000867	0.001734	0.3211	0.001747
GLAXOSMITHKLINE	-0.000112	0.8295	0.000519	0.001368	0.4147	0.001677
HAMMERSON	0.000439	0.3081	0.000430	4.57E-05	0.9879	0.003020
HOME RETAIL GROUP	-0.000277	0.2324	0.000232	-0.001389	0.6609	0.003167
HSBC HDG. (ORD $0.50)	0.000339	0.1610	0.000242	0.002659	0.0584	0.001405
ICAP	0.000619	0.4986	0.000915	0.002486	0.3542	0.002683
IMPERIAL TOBACCO GP.	0.000206	0.6993	0.000534	-0.000584	0.6554	0.001309
INMARSAT	0.000735	0.8092	0.003045	-0.003508	0.2049	0.002767
ICTL.HTLS.GP.	0.000383	0.7175	0.001059	0.000592	0.8758	0.003786
INTERNATIONAL POWER	-0.003153	0.1943	0.002429	0.001093	0.6351	0.002302
INTERTEK GROUP	0.001060	0.3802	0.001208	0.000436	0.8413	0.002178
INVENSYS	-0.000182	0.5726	0.000322	0.000607	0.8679	0.003650
JOHNSON MATTHEY	0.000388	0.2825	0.000361	0.000296	0.9059	0.002508
KAZAKHMYS	0.001103	0.6906	0.002771	0.002395	0.4506	0.003175
KINGFISHER	0.000816	0.0818	0.000469	0.000139	0.9500	0.002215
LAND SECURITIES GROUP	-0.000244	0.5483	0.000407	0.000162	0.9454	0.002373
LEGAL & GENERAL	-0.000158	0.7176	0.000438	0.003275	0.0337	0.001542
LIBERTY INTL.	0.000598	0.0758	0.000337	-0.000964	0.7433	0.002944
LLOYDS BANKING GROUP	8.43E-05	0.8149	0.000360	0.002478	0.1164	0.001578
LONDON STOCK EX.GROUP	-0.000910	0.2391	0.000773	-0.001589	0.6202	0.003206
LONMIN	0.000438	0.4834	0.000625	-0.000140	0.9618	0.002910
MAN GROUP	0.001473	0.0014	0.000461	0.000999	0.6044	0.001928
MARKS & SPENCER GROUP	-0.000186	0.6245	0.000379	-0.025643	0.0000	0.004945
MORRISON(WM)SPMKTS.	-0.000549	0.2929	0.000522	-0.000340	0.9000	0.002705
NATIONAL GRID	-0.000361	0.4522	0.000480	-0.001237	0.4124	0.001509
NEXT	0.000499	0.2826	0.000464	-0.000980	0.7099	0.002634
OLD MUTUAL	-0.000597	0.4068	0.000720	0.002151	0.3078	0.002109
PEARSON	0.000226	0.5489	0.000376	0.002612	0.3241	0.002649
PETROFAC	-0.006518	0.0533	0.003373	-0.001338	0.7076	0.003568
PRUDENTIAL	-0.000375	0.4514	0.000498	0.004327	0.0455	0.002164
RANDGOLD RESOURCES	0.002475	0.0367	0.001185	0.006372	0.1455	0.004378
RECKITT BENCKISER GROUP	-9.21E-05	0.8080	0.000379	-0.001800	0.1530	0.001260
REED ELSEVIER	6.81E-05	0.8493	0.000359	0.002253	0.4084	0.002725
RENTOKIL INITIAL	-0.000122	0.8181	0.000530	-0.022073	0.0000	0.000407
REXAM	0.000172	0.6348	0.000361	-0.001125	0.9476	0.017108
RIO TINTO	0.000323	0.4191	0.000399	3.60E-05	0.9905	0.003028
ROLLS-ROYCE GROUP	2.24E-05	0.9755	0.000730	-0.000163	0.9443	0.002339
ROYAL BANK OF SCTL.GP.	0.000681	0.0820	0.000392	0.003483	0.0575	0.001834
ROYAL DUTCH SHELL A	0.000881	0.6098	0.001727	-0.001755	0.2976	0.001685
ROYAL DUTCH SHELL B	9.93E-05	0.7703	0.000340	-0.001792	0.3195	0.001800

RSA INSURANCE GROUP	-0.001047	0.0799	0.000598		0.000572	0.7946	0.002196
SABMILLER	-0.001170	0.0852	0.000680		-0.001645	0.4242	0.002059
SAGE GROUP	0.001131	0.0003	0.000309		-0.000730	0.7579	0.002369
SAINSBURY (J)	0.000113	0.8130	0.000479		0.005989	0.1964	0.004636
SCHRODERS	0.000148	0.5442	0.000244		0.001932	0.5762	0.003456
SCHRODERS NV	0.000217	0.4286	0.000274		0.000163	0.9584	0.003118
SCOT.& SOUTHERN ENERGY	0.000198	0.5398	0.000323		-0.002182	0.1316	0.001447
SEGRO	0.000433	0.3809	0.000494		0.002627	0.3021	0.002546
SERCO GROUP	-0.000265	0.2681	0.000240		0.000564	0.7178	0.001561
SEVERN TRENT	-0.000134	0.7652	0.000450		0.000485	0.8283	0.002238
SHIRE	0.000208	0.7909	0.000785		-6.24E-05	0.9806	0.002570
SMITH & NEPHEW	0.000687	0.0902	0.000406		0.000132	0.9304	0.001506
SMITHS GROUP	-0.000153	0.6752	0.000364		-0.000803	0.6794	0.001943
STANDARD CHARTERED	3.04E-05	0.9456	0.000445		0.001678	0.3929	0.001964
STANDARD LIFE	-0.000361	0.8309	0.001691		0.000884	0.6586	0.002002
TESCO	-0.000378	0.3949	0.000444		0.000684	0.6550	0.001531
THOMAS COOK GROUP	0.002266	0.8721	0.014076		0.001931	0.3971	0.002280
TUI TRAVEL	0.001986	0.1147	0.001259		0.004938	0.1027	0.003026
TULLOW OIL	0.000175	0.7611	0.000575		-0.002851	0.5261	0.004498
UNILEVER (UK)	5.62E-05	0.8563	0.000310		-0.001022	0.6704	0.002400
UNITED UTILITIES GROUP	8.86E-05	0.8318	0.000417		0.002129	0.3249	0.002162
VEDANTA RESOURCES	0.001683	0.4632	0.002295		0.002527	0.4571	0.003399
VODAFONE GROUP	0.000114	0.8089	0.000473		-0.001431	0.5126	0.002185
WHITBREAD	0.000266	0.5139	0.000407		-0.000139	0.9679	0.003458
WOLSELEY	-1.39E-05	0.9757	0.000458		0.002920	0.4696	0.004038
WPP	7.92E-05	0.8372	0.000385		0.002140	0.3745	0.002409

Where: δ-coefficient= relationship between risk and return measured as the logarithm of conditional variance.

p-value= statistical importance of δ

se= standard error or regression

In table 5 the negative δs' are market red and the positive ones' are marked black or green.

The green color stands for the stock that during the crisis sub period have a change in the sign of the relationship between return and risk. From negative (higher risk - lower return) to positive (higher risk - higher return).

The above table does not give as a clear picture of the hypothesized trade-off between risk and return.

On the other hand, Table 5 imports the statistical significance of δ-coefficient and as we can all observe the time varying risk phenomenon is strongly verified. The following table , Table 6, provides greater conclusions about the risk and return relationship.

TABLE 6

MGARCH(1,1) TEST RESULTS: δ-coefficient sign								
			before crisis			during crisis		
			negative	positive		negative	positive	
		AGGREGATE CONFORMING STOCKS	*PERCENTAGE*		*AGGREGATE CONFORMING STOCKS*	*PERCENTAGE*		
MARKET MODEL	FRCAC40	31	38,71	61,29	35	42,86	57,14	
	DAX30	29	27,59	72,41	27	40,74	59,26	
	FTSE100UK	90	34,44	65,56	93	44,09	55,91	
AR(1)	FRCAC40	29	27,59	72,41	33	36,36	63,64	
	DAX30	25	28	72	25	36	64	
	FTSE100UK	94	41,49	58,51	90	41,11	58,89	

This table shows the sign of δ in every case. The percentage figures stand for the number of stocks- in every sub-period, Model used and Market-that develop negative of positive deltas'.

Aggregate conforming stocks:

Due to programming and testing adversities some stocks had to be excluded from Table 6. There are two reasons for that:

-Maximization of the LogL function could not be achieved during the M-GARCH regression and after 500 iterations.

-Some deltas were not statistically significant (reported on Table 5)

The main conclusion from Table 6 is that during the crisis and in most cases (AR(1)-M_GARCH(1,1) is excluded) the number of stocks with negative deltas increased.

This negative relation affects a significant quota of all stocks and confirms the time varying risk premium hypothesis. Nevertheless, it seems to disagree with Modern Portfolio Theory (higher risk suggests higher return). Perhaps this finding corresponds to another hypothesis that in the introduction I promise to study. This hypothesis is mentioned in the third question raised in the introduction and involves the leverage effect.

Can we detect asymmetric reaction due to price falls (leverage effect)?

This is tested through Threshold _GARCH (1,1) parameterization:

Threshold Garch is actually a more general model than Garch. The difference is that in a simple Garch Model the variance (h_t) or the mean equation error is not affected from negative residuals. If $u_{t-1} < 0$ there should be an additional effect in the value of the variance h_t.Hence, in T-Garch and only when negative residuals appear we could add these residuals in squared values and estimate their coefficients (Theta). These negative residuals are actually negative shocks and their effect on the mean equation is strengthened through this process. If the estimated coefficients are positive we say that we observe a leverage effect on the return of the stock due to bad news arrivals. The following table shows the results of T-GARCH (1,1) model for both Market Model and AR(1) and the range of the test is again divided to before and during crisis sub-periods.

TABLE 7:THRESHOLD GARCH RESULTS OF THETA COEFFICIENT

	BEFORE CRISIS			DURING CRISIS		
	TGARCH(1,1) MARKET MODEL FRANCE					
	COEF	ST ERROR	PROB	COEF	ST ERROR	PROB
ESSILOR INTL.	0.047670	0.005416	0.0000	0.260778	0.044276	0.0000
LVMH	0.039494	0.005229	0.0000	0.076913	0.018323	0.0000
PPR	0.022034	0.005365	0.0000	0.073837	0.011825	0.0000
RENAULT	0.030519	0.005226	0.0000	0.035329	0.005973	0.0000
SANOFI-AVENTIS	-0.029595	0.003948	0.0000	-0.089204	0.014081	0.0000
TECHNIP	0.035212	0.014969	0.0187	0.041151	0.007457	0.0000
LAGARDERE GROUPE	0.009266	0.006380	0.1464	0.796438	0.110448	0.0000
STMICROELECTRONICS (PAR)	0.002887	0.005239	0.5815	0.028814	0.002796	0.0000
MICHELIN	-0.002515	0.011383	0.8251	0.047828	0.007070	0.0000
LAFARGE	-0.011667	0.004740	0.0139	0.063077	0.015622	0.0001

LAFARGE	-0.011667	0.004740	0.0139	0.063077	0.015622	0.0001
L'OREAL	-0.021448	0.004441	0.0000	-0.305962	0.086171	0.0004
CAP GEMINI	0.024386	0.003943	0.0000	0.171674	0.049982	0.0006
GDF SUEZ	-0.012988	0.079580	0.8704	0.113192	0.037842	0.0028
VINCI (EX SGE)	0.025982	0.004413	0.0000	0.124187	0.041783	0.0030
PERNOD-RICARD	-0.021020	0.005404	0.0001	0.130077	0.044866	0.0037
DEXIA	-0.071112	0.011316	0.0000	0.085380	0.034290	0.0128
VIVENDI	0.055574	0.005808	0.0000	0.040120	0.016232	0.0135
ALSTOM	0.080076	0.013055	0.0000	0.105287	0.053149	0.0476
CARREFOUR	0.046023	0.005656	0.0000	0.072954	0.038933	0.0610
ALCATEL-LUCENT	-0.060116	0.013192	0.0000	0.041561	0.022545	0.0653
VEOLIA ENVIRONNEMENT	0.070781	0.014357	0.0000	0.138113	0.075837	0.0686
SOCIETE GENERALE	0.023451	0.005203	0.0000	0.097888	0.058785	0.0959
EDF	-0.268604	0.097797	0.0060	0.080976	0.049099	0.0991
ARCELORMITTAL	0.059530	0.012163	0.0000	0.040658	0.029857	0.1733
AXA	0.041389	0.005769	0.0000	0.032695	0.025247	0.1953
DANONE	0.002968	0.006222	0.6334	0.043435	0.037360	0.2450
TOTAL	-0.021096	0.004199	0.0000	-0.039398	0.034578	0.2545
VALLOUREC	0.075669	0.012486	0.0000	0.020396	0.017993	0.2570
SCHNEIDER ELECTRIC	0.031114	0.007035	0.0000	0.025433	0.028522	0.3725
FRANCE TELECOM	0.026966	0.006812	0.0001	-0.078543	0.103611	0.4484
UNIBAIL-RODAMCO	0.024954	0.008172	0.0023	0.036102	0.049390	0.4648
AIR LIQUIDE	-0.014425	0.005443	0.0080	0.040377	0.066847	0.5458
CREDIT AGRICOLE	-0.031086	0.012529	0.0131	0.014911	0.026557	0.5745
PEUGEOT	0.014432	0.003993	0.0003	-0.029708	0.053939	0.5818
BOUYGUES	0.010055	0.007900	0.2031	-0.023405	0.045452	0.6066
EADS (PAR)	0.035863	0.014119	0.0111	-0.012577	0.025226	0.6181
SAINT GOBAIN	0.036600	0.007402	0.0000	0.006797	0.028585	0.8120
BNP PARIBAS	-0.000349	0.004569	0.9391	-0.004089	0.019376	0.8329
SUEZ ENVIRONNEMENT	NA (INSUFFICIENT DATA)					
	TGARCH(1,1) MARKET MODEL GERMANY					
	COEF	ST ERR	PROB	COEF	ST ERROR	PROB
ALLIANZ	0.036968	0.006468	0.0000	0.225872	0.044265	0.0000
FRESENIUS MED.CARE	0.033580	0.005204	0.0000	0.490496	0.119263	0.0000
DEUTSCHE LUFTHANSA	0.025452	0.004398	0.0000	0.528152	0.119617	0.0000
THYSSENKRUPP	-0.025891	0.004656	0.0000	0.067510	0.015460	0.0000
MERCK KGAA	0.004932	0.005106	0.3341	0.581012	0.116671	0.0000
INFINEON TECHNOLOGIES	0.012889	0.016587	0.4371	0.208216	0.040129	0.0000
BASF	-0.037575	0.003595	0.0000	0.132012	0.033784	0.0001
SAP	0.100836	0.013454	0.0000	0.242202	0.061894	0.0001
COMMERZBANK	0.003050	0.004701	0.5165	0.227973	0.059947	0.0001
ADIDAS	0.055238	0.007857	0.0000	0.350594	0.095066	0.0002
DAIMLER	-0.019978	0.017195	0.2453	0.148613	0.040077	0.0002
DEUTSCHE POST	-0.031960	0.019638	0.1036	0.119007	0.035130	0.0007
DEUTSCHE BANK	0.011109	0.006270	0.0764	0.090905	0.028082	0.0012
LINDE	0.011801	0.006029	0.0503	0.091571	0.029138	0.0017

VOLKSWAGEN	-0.016397	0.004191	0.0001	-0.129650	0.046182	0.0050
K + S	0.039857	0.008002	0.0000	0.161988	0.061207	0.0081
BAYER	0.023924	0.003122	0.0000	0.091915	0.036862	0.0126
MAN	0.022648	0.005670	0.0001	0.108468	0.045247	0.0165
HENKEL PREF.	-0.005270	0.004367	0.2275	0.145273	0.068754	0.0346
SIEMENS	0.016273	0.002334	0.0000	0.118261	0.056176	0.0353
MUENCHENER RUCK.	0.020698	0.005238	0.0001	-0.167543	0.086006	0.0514
METRO	0.022712	0.006514	0.0005	0.158774	0.103002	0.1232
BEIERSDORF	0.014897	0.004326	0.0006	0.065210	0.043572	0.1345
BMW	-0.005755	0.005957	0.3340	0.078755	0.063458	0.2146
DEUTSCHE BOERSE	0.058732	0.026253	0.0253	0.041496	0.039673	0.2956
SALZGITTER	-0.007196	0.002500	0.0040	0.032869	0.033247	0.3228
E ON	-0.047591	0.004970	0.0000	-0.032865	0.064928	0.6127
RWE	-0.000162	0.005361	0.9759	0.024829	0.053088	0.6400
DEUTSCHE TELEKOM	0.030068	0.011970	0.0120	0.006609	0.037042	0.8584
FRESENIUS PREF.	0.020115	0.004944	0.0000	0.007629	0.067061	0.9094
TGARCH(1,1) MARKET MODEL BRITAIN						
	COEF	ST ERROR	PROB	COEF	ST ERROR	PROB
ASSOCIATED BRIT.FOODS	0.025551	0.003234	0.0000	0.106392	0.024370	0.0000
BUNZL	0.014721	0.002271	0.0000	-0.718427	0.103945	0.0000
FRIENDS PROVIDENT GROUP	0.037929	0.008245	0.0000	0.644631	0.107042	0.0000
ICAP	0.150243	0.027369	0.0000	0.104318	0.020564	0.0000
INVENSYS	0.032223	0.001409	0.0000	0.057038	0.004625	0.0000
REXAM	0.016861	0.002476	0.0000	0.027752	0.002279	0.0000
RSA INSURANCE GROUP	0.044702	0.002293	0.0000	-0.138574	0.026797	0.0000
SMITH & NEPHEW	0.064028	0.009540	0.0000	-0.333965	0.031598	0.0000
WOLSELEY	0.054421	0.005559	0.0000	0.275116	0.026472	0.0000
ADMIRAL GROUP	-0.144275	0.057426	0.0120	-0.114024	0.021277	0.0000
VODAFONE GROUP	0.012374	0.006060	0.0411	0.404533	0.079396	0.0000
ROYAL BANK OF SCTL.GP.	0.007124	0.003568	0.0459	0.881378	0.092038	0.0000
INTERNATIONAL POWER	0.022828	0.011585	0.0488	0.077131	0.017679	0.0000
LONMIN	0.018787	0.009847	0.0564	0.198954	0.026622	0.0000
TESCO	0.007854	0.004379	0.0729	0.153502	0.032257	0.0000
BT GROUP	0.006810	0.004332	0.1159	0.039235	0.002605	0.0000
PEARSON	0.007943	0.005824	0.1726	0.504800	0.095982	0.0000
RENTOKIL INITIAL	0.002393	0.001772	0.1769	0.018368	0.001478	0.0000
CADBURY	0.004573	0.009235	0.6205	-0.063194	0.000374	0.0000
MARKS & SPENCER GROUP	0.000620	0.003435	0.8569	0.451879	0.088645	0.0000
EXPERIAN	0.130336	0.107539	0.2255	0.291816	0.073852	0.0001
RECKITT BENCKISER GROUP	0.025416	0.004214	0.0000	0.200295	0.053906	0.0002
ROYAL DUTCH SHELL	-0.149344	0.106024	0.1590	-0.068501	0.018307	0.0002
CABLE & WIRELESS	0.134842	0.007196	0.0000	-0.113275	0.032546	0.0005
REED ELSEVIER	0.015694	0.002004	0.0000	0.163658	0.048416	0.0007
BARCLAYS	0.011536	0.006730	0.0865	0.117917	0.035057	0.0008
UNILEVER (UK)	-0.003437	0.002034	0.0910	0.284761	0.087929	0.0012
SCHRODERS NV	0.023617	0.005734	0.0000	-0.052646	0.016394	0.0013
AVIVA	0.007398	0.005140	0.1501	-0.149839	0.046590	0.0013

NATIONAL GRID	-0.016404	0.006957	0.0184		0.232856	0.072820	0.0014
BAE SYSTEMS	0.110187	0.011328	0.0000		0.222405	0.070007	0.0015
INTERTEK GROUP	0.049282	0.026507	0.0630		0.061935	0.019635	0.0016
BURBERRY GROUP	0.063241	0.013381	0.0000		0.082817	0.026830	0.0020
ALLIANCE TRUST	0.025989	0.010933	0.0175		-0.158838	0.052710	0.0026
JOHNSON MATTHEY	0.019067	0.002374	0.0000		0.083117	0.029060	0.0042
PRUDENTIAL	0.010836	0.009535	0.2558		0.128235	0.045853	0.0052
PETROFAC	0.223876	0.041028	0.0000		0.115505	0.041658	0.0056
STANDARD CHARTERED	0.038918	0.004742	0.0000		0.187439	0.067835	0.0057
WHITBREAD	0.020413	0.009442	0.0306		0.018846	0.006857	0.0060
AMEC	0.053365	0.004806	0.0000		0.051689	0.019311	0.0074
TULLOW OIL	0.034973	0.003591	0.0000		0.061989	0.023274	0.0077
RIO TINTO	0.002208	0.003266	0.4990		-0.265579	0.099705	0.0077
CAIRN ENERGY	0.086632	0.003745	0.0000		0.083607	0.031857	0.0087
INMARSAT	0.106540	0.036294	0.0033		-0.062014	0.026109	0.0175
LEGAL & GENERAL	-0.006852	0.004442	0.1229		-0.063887	0.028013	0.0226
SABMILLER	0.022122	0.006981	0.0015		0.041105	0.018055	0.0228
BG GROUP	-0.005588	0.008126	0.4917		0.052151	0.023583	0.0270
BRITISH LAND	0.044176	0.006946	0.0000		-0.136870	0.064988	0.0352
WPP	0.056531	0.002117	0.0000		0.033733	0.016459	0.0404
AUTONOMY CORP.	0.056502	0.003166	0.0000		-0.150672	0.074718	0.0437
COMPASS GROUP	0.133014	0.050025	0.0078		0.109592	0.057217	0.0554
KINGFISHER	0.033377	0.005935	0.0000		0.057840	0.030288	0.0562
ROLLS-ROYCE GROUP	0.042030	0.002515	0.0000		0.084970	0.044680	0.0572
BRITISH AMERICAN tob	0.091816	0.005382	0.0000		0.138105	0.073583	0.0605
UNITED UTILITIES GROUP	0.029145	0.002183	0.0000		-0.032237	0.017434	0.0644
MORRISON(WM)SPMKTS.	0.098432	0.018638	0.0000		0.192654	0.104215	0.0645
ASTRAZENECA	-0.004955	0.005420	0.3606		0.068405	0.040795	0.0936
GLAXOSMITHKLINE	-0.015758	0.008334	0.0587		0.036457	0.021799	0.0944
ICTL.HTLS.GP.	0.002657	0.007364	0.7183		0.060148	0.036783	0.1020
COBHAM	-0.016295	0.017147	0.3419		0.066516	0.042451	0.1171
SAGE GROUP	-0.024150	0.024062	0.3156		-0.193610	0.130125	0.1368
CARNIVAL	0.031854	0.009939	0.0014		-0.053084	0.035747	0.1375
SCHRODERS	0.048877	0.005799	0.0000		-0.039438	0.026741	0.1403
CAPITA GROUP	0.064784	0.009421	0.0000		-0.039786	0.027953	0.1546
VEDANTA RESOURCES	-0.001571	0.012509	0.9001		0.041365	0.029532	0.1613
ANTOFAGASTA	-0.029488	0.021490	0.1700		-0.037533	0.028455	0.1872
IMPERIAL TOBACCO GP.	0.017207	0.007561	0.0229		0.046740	0.035653	0.1899
SHIRE	-0.022938	0.024884	0.3566		0.054093	0.042759	0.2058
BRITISH SKY BCAST.GROUP	0.142399	0.012782	0.0000		0.042740	0.034795	0.2193
LONDON STOCK EX.GROUP	-0.518527	0.060261	0.0000		-0.052850	0.043526	0.2247
HSBC HDG. (ORD $0.50)	2.53E-05	0.003768	0.9947		0.049797	0.045928	0.2783
BRITISH AIRWAYS	0.025390	0.003565	0.0000		0.018032	0.017458	0.3017
OLD MUTUAL	0.035251	0.018990	0.0634		-0.023016	0.022528	0.3069
RANDGOLD RESOURCES	0.030384	0.005154	0.0000		0.024990	0.024949	0.3165
SEGRO	0.038560	0.005936	0.0000		0.031152	0.033604	0.3539
THOMAS COOK GROUP	-0.046557	0.005461	0.0000		-0.090166	0.097472	0.3549

LIBERTY INTL.	-0.000369	0.007726	0.9619	0.013968	0.016786	0.4054
MAN GROUP	0.030782	0.012342	0.0126	-0.016733	0.020738	0.4197
TUI TRAVEL	0.149623	0.014431	0.0000	0.025540	0.031882	0.4231
ROYAL DUTCH SHELL B	-0.006741	0.005586	0.2275	0.052182	0.067116	0.4369
BP	0.005356	0.005100	0.2936	-0.015688	0.021296	0.4613
SMITHS GROUP	0.024295	0.003173	0.0000	0.051267	0.072590	0.4800
SEVERN TRENT	0.037098	0.002949	0.0000	-0.032608	0.056112	0.5612
CENTRICA	0.015013	0.012808	0.2411	0.018854	0.037690	0.6169
SCOT.& SOUTHERN ENERGY	0.016799	0.009550	0.0786	0.014027	0.028820	0.6265
ANGLO AMERICAN	0.062706	0.012944	0.0000	0.016700	0.034780	0.6311
KAZAKHMYS	0.013546	0.045129	0.7641	-0.012279	0.028368	0.6651
NEXT	0.043880	0.003873	0.0000	0.011835	0.028218	0.6749
LLOYDS BANKING GROUP	-0.044503	0.008553	0.0000	0.010264	0.027934	0.7133
SERCO GROUP	0.066247	0.003057	0.0000	0.008330	0.023156	0.7190
HAMMERSON	0.030672	0.004020	0.0000	0.013394	0.039023	0.7314
LAND SECURITIES GROUP	0.007507	0.005619	0.1816	-0.013552	0.046250	0.7695
HOME RETAIL GROUP	0.030093	0.003202	0.0000	-0.010339	0.042064	0.8058
SAINSBURY (J)	0.041705	0.007019	0.0000	0.025891	0.106243	0.8075
STANDARD LIFE	0.009115	0.070802	0.8976	-0.005762	0.032645	0.8599
G4S	0.126458	0.011358	0.0000	-0.009404	0.084702	0.9116
DIAGEO	0.039492	0.006356	0.0000	0.000342	0.018690	0.9854
BHP BILLITON	0.003729	0.007869	0.6356	0.000426	0.031636	0.9892
EURASIAN NATRES.CORP.	NA (INSUFFICIENT DATA)					
FRESNILLO	NA (INSUFFICIENT DATA)					
TGARCH(1,1) AR(1) FRANCE						
	COEF	ST ERROR	PROB	COEF	ST ERROR	PROB
ALSTOM	0.087380	0.008220	0.0000	0.154293	0.035981	0.0000
ARCELORMITTAL	0.063237	0.012400	0.0000	0.128843	0.028392	0.0000
AXA	0.071312	0.007276	0.0000	0.249700	0.038069	0.0000
BNP PARIBAS	0.044488	0.006526	0.0000	0.213702	0.034230	0.0000
BOUYGUES	0.047579	0.007271	0.0000	0.101453	0.024514	0.0000
CAP GEMINI	0.049032	0.006570	0.0000	0.147538	0.020900	0.0000
CARREFOUR	0.042987	0.006254	0.0000	0.152885	0.030148	0.0000
ESSILOR INTL.	0.060790	0.005670	0.0000	0.132623	0.027454	0.0000
LVMH	0.044941	0.005778	0.0000	0.139955	0.003325	0.0000
PPR	0.048081	0.005091	0.0000	0.094636	0.000844	0.0000
RENAULT	0.048422	0.007064	0.0000	0.075289	0.017375	0.0000
SAINT GOBAIN	0.092852	0.006297	0.0000	0.148909	0.032046	0.0000
SCHNEIDER ELECTRIC	0.059149	0.007606	0.0000	0.131353	0.027315	0.0000
SOCIETE GENERALE	0.041224	0.006492	0.0000	0.133261	0.030460	0.0000
STMICROELECTRONICS PAR	0.032850	0.007338	0.0000	0.042042	0.009978	0.0000
VINCI (EX SGE)	0.033222	0.005115	0.0000	0.190770	0.039352	0.0000
VIVENDI	0.060783	0.006219	0.0000	0.136454	0.022721	0.0000
VEOLIA ENVIRONNEMENT	0.032316	0.008692	0.0002	0.225165	0.047870	0.0000
L'OREAL	0.028511	0.007605	0.0002	0.139593	0.030613	0.0000
VALLOUREC	0.019630	0.007497	0.0088	0.132008	0.032021	0.0000

TECHNIP	0.015120	0.007147	0.0344	0.177354	0.037402	0.0000
MICHELIN	0.033057	0.017881	0.0645	0.173317	0.033486	0.0000
PEUGEOT	0.069939	0.047612	0.1419	0.154555	0.035051	0.0000
EADS (PAR)	-0.05025	0.100389	0.6167	0.141610	0.036860	0.0001
AIR LIQUIDE	0.100696	0.014697	0.0000	0.072832	0.020413	0.0004
LAFARGE	0.019437	0.007326	0.0080	0.136728	0.039479	0.0005
UNIBAIL-RODAMCO	0.014847	0.008840	0.0930	0.131754	0.038157	0.0006
SANOFI-AVENTIS	0.038391	0.008428	0.0000	0.130046	0.041962	0.0019
PERNOD-RICARD	0.094442	0.013253	0.0000	0.079477	0.027264	0.0036
FRANCE TELECOM	0.005289	0.006236	0.3964	0.103859	0.035794	0.0037
TOTAL	0.018045	0.007566	0.0171	0.172792	0.060102	0.0040
CREDIT AGRICOLE	0.007501	0.009888	0.4481	0.075938	0.026515	0.0042
DANONE	0.086751	0.017094	0.0000	0.086016	0.030510	0.0048
GDF SUEZ	0.028412	0.006380	0.0000	0.072857	0.029116	0.0123
ALCATEL-LUCENT	0.007564	0.007661	0.3235	0.058137	0.025995	0.0253
LAGARDERE GROUPE	0.023837	0.008074	0.0032	0.085961	0.040717	0.0348
DEXIA	0.030793	0.007403	0.0000	0.065982	0.036356	0.0695
EDF	0.132639	0.020224	0.0000	0.045188	0.027997	0.1065
SUEZ ENVIRONNEMENT	NA (INSUFFICIENT DATA)					
TGARCH(1,1) AR(1) GERMANY						
ALLIANZ	0.064995	0.007703	0.0000	0.187543	0.018707	0.0000
FRESENIUS MED.CARE	0.040587	0.005375	0.0000	0.453777	0.106639	0.0000
METRO	0.038606	0.006625	0.0000	0.162866	0.034767	0.0000
MUENCHENER RUCK.	0.067420	0.006984	0.0000	0.150212	0.031853	0.0000
SAP	0.122716	0.014427	0.0000	0.201670	0.020644	0.0000
INFINEON TECHNOLOGIES	0.053514	0.013272	0.0001	0.071610	0.007566	0.0000
DAIMLER	0.038831	0.012705	0.0022	0.125010	0.027585	0.0000
SIEMENS	0.019142	0.006289	0.0023	0.201168	0.031226	0.0000
DEUTSCHE BANK	0.020033	0.006848	0.0034	0.116389	0.022425	0.0000
THYSSENKRUPP	0.016505	0.006711	0.0139	0.101927	0.021031	0.0000
DEUTSCHE POST	0.040561	0.018754	0.0306	0.117616	0.016363	0.0000
BAYER	0.064804	0.006603	0.0000	0.169650	0.042047	0.0001
HENKEL PREF.	0.034743	0.005734	0.0000	0.091559	0.023462	0.0001
RWE	0.043090	0.007115	0.0000	0.210794	0.054862	0.0001
ADIDAS	0.060530	0.008717	0.0000	0.107831	0.029353	0.0002
BMW	0.046867	0.007221	0.0000	0.146192	0.038832	0.0002
BASF	0.056223	0.009157	0.0000	0.126700	0.035691	0.0004
LINDE	0.054860	0.006560	0.0000	0.094182	0.026410	0.0004
COMMERZBANK	0.023342	0.006511	0.0003	0.137833	0.038740	0.0004
MAN	0.054298	0.008803	0.0000	0.135305	0.038630	0.0005
DEUTSCHE LUFTHANSA	0.035321	0.004438	0.0000	0.146122	0.045236	0.0012
DEUTSCHE BOERSE	0.101013	0.024380	0.0000	0.135765	0.042836	0.0015
K + S	0.041051	0.007485	0.0000	0.149691	0.052752	0.0045
DEUTSCHE TELEKOM	0.022387	0.008708	0.0101	0.106112	0.038238	0.0055
MERCK KGAA	0.029324	0.006932	0.0000	0.196643	0.075930	0.0096
FRESENIUS PREF.	0.025517	0.005128	0.0000	0.104812	0.040700	0.0100
SALZGITTER	-0.01016	0.002441	0.0000	0.086756	0.037236	0.0198
E ON	0.026681	0.006765	0.0001	0.084975	0.038441	0.0271
BEIERSDORF	0.016932	0.005471	0.0020	0.097111	0.047671	0.0416

VOLKSWAGEN	0.021250	0.006988	0.0024		0.004905	0.045866	0.9148
TGARCH(1,1) AR(1) BRITAIN							
	COEF	ST ERROR	PROB		COEF	ST ERROR	PROB
ALLIANCE TRUST	0.088392	0.010177	0.0000		0.232484	0.045786	0.0000
ASSOCIATED BRIT.FOODS	0.039923	0.004393	0.0000		0.160810	0.026420	0.0000
BAE SYSTEMS	0.097170	0.012009	0.0000		0.185581	0.040785	0.0000
BARCLAYS	0.062816	0.009686	0.0000		0.187797	0.030250	0.0000
BRITISH SKY BCAST.GROUP	0.105846	0.011209	0.0000		0.123256	0.012491	0.0000
BT GROUP	0.037767	0.006851	0.0000		0.047848	0.005570	0.0000
CAIRN ENERGY	0.094769	0.003642	0.0000		0.099285	0.023868	0.0000
FRIENDS PROVIDENT	0.080682	0.012952	0.0000		0.314481	0.059627	0.0000
INTERNATIONAL POWER	-0.017463	0.001884	0.0000		0.117251	0.017115	0.0000
INVENSYS	0.038529	0.002372	0.0000		0.073505	0.007914	0.0000
JOHNSON MATTHEY	0.031604	0.003955	0.0000		0.068576	0.010193	0.0000
LEGAL & GENERAL	0.036331	0.006595	0.0000		0.131278	0.032318	0.0000
MARKS & SPENCER GROUP	0.027006	0.006333	0.0000		0.457572	0.088705	0.0000
MORRISON(WM)SPMKTS.	0.108534	0.017269	0.0000		0.119298	0.007567	0.0000
PEARSON	0.040452	0.006668	0.0000		0.335261	0.059567	0.0000
PETROFAC	0.125372	0.029585	0.0000		0.077228	0.011073	0.0000
PRUDENTIAL	0.049354	0.008979	0.0000		0.195593	0.031790	0.0000
RECKITT BENCKISER	0.038574	0.004358	0.0000		0.209213	0.042886	0.0000
REED ELSEVIER	0.025877	0.005156	0.0000		0.244848	0.059430	0.0000
RENTOKIL INITIAL	0.045636	0.008022	0.0000		0.026816	0.000851	0.0000
ROLLS-ROYCE GROUP	0.049979	0.003088	0.0000		0.122667	0.029737	0.0000
ROYAL BANK OF SCTL.GP.	0.047327	0.006462	0.0000		0.410205	0.050354	0.0000
SCHRODERS	0.057878	0.006334	0.0000		0.201750	0.043200	0.0000
SCHRODERS NV	0.041776	0.005622	0.0000		0.167012	0.023613	0.0000
STANDARD CHARTERED	0.051748	0.005847	0.0000		0.124095	0.029035	0.0000
TESCO	0.025700	0.005586	0.0000		0.197536	0.037536	0.0000
TULLOW OIL	0.036763	0.003664	0.0000		0.090609	0.014305	0.0000
UNILEVER (UK)	0.022972	0.005332	0.0000		0.121111	0.023462	0.0000
WOLSELEY	0.070772	0.006669	0.0000		0.214861	0.029201	0.0000
COBHAM	0.048040	0.012082	0.0001		0.139726	0.032054	0.0000
HSBC HDG. (ORD $0.50)	0.021087	0.006146	0.0006		0.154913	0.026603	0.0000
LLOYDS BANKING GROUP	0.032900	0.010208	0.0013		0.151667	0.033167	0.0000
LONMIN	0.031972	0.010110	0.0016		0.252002	0.024481	0.0000
ROYAL DUTCH SHELL	0.165461	0.063599	0.0093		0.160534	0.038943	0.0000
BP	0.033875	0.006582	0.0000		0.153896	0.038083	0.0001
BRITISH AMERICAN TOBA	0.081002	0.004573	0.0000		0.180165	0.047161	0.0001
OLD MUTUAL	0.056359	0.012023	0.0000		0.116720	0.029670	0.0001
ROYAL DUTCH SHELL B	0.033472	0.007295	0.0000		0.134929	0.033745	0.0001
INTERTEK GROUP	0.063328	0.023217	0.0064		0.075793	0.019235	0.0001
BURBERRY GROUP	0.142612	0.023411	0.0000		0.132862	0.035546	0.0002
SHIRE	0.062025	0.005894	0.0000		0.128698	0.034409	0.0002
BG GROUP	0.033082	0.008847	0.0002		0.156060	0.041524	0.0002
ICAP	0.180823	0.026368	0.0000		0.165825	0.045604	0.0003
SAINSBURY (J)	0.036433	0.006675	0.0000		0.240086	0.066732	0.0003

TUI TRAVEL	0.137421	0.015704	0.0000	0.119493	0.033144	0.0003
STANDARD LIFE	0.138856	0.056948	0.0148	0.141600	0.039959	0.0004
SABMILLER	0.066514	0.009213	0.0000	0.135648	0.038955	0.0005
VODAFONE GROUP	0.030180	0.007021	0.0000	0.139134	0.040012	0.0005
BHP BILLITON	0.033613	0.009453	0.0004	0.090442	0.026052	0.0005
GLAXOSMITHKLINE	0.011907	0.007160	0.0963	0.144311	0.041426	0.0005
NATIONAL GRID	-4.69E-05	0.007264	0.9948	0.141496	0.040544	0.0005
ANGLO AMERICAN	0.096925	0.014499	0.0000	0.123567	0.035855	0.0006
CARNIVAL	0.090058	0.014221	0.0000	0.104514	0.030549	0.0006
ICTL.HTLS.GP.	0.033152	0.010322	0.0013	0.085594	0.024851	0.0006
AMEC	0.068654	0.005695	0.0000	0.157628	0.048377	0.0011
COMPASS GROUP	0.170976	0.041188	0.0000	0.118336	0.036322	0.0011
RANDGOLD RESOURCES	0.035534	0.008136	0.0000	0.089323	0.027328	0.0011
AVIVA	0.060169	0.009367	0.0000	0.175323	0.054618	0.0013
RSA INSURANCE GROUP	0.079053	0.005520	0.0000	0.104966	0.034308	0.0022
UNITED UTILITIES GROUP	0.061726	0.004231	0.0000	0.132486	0.043499	0.0023
ASTRAZENECA	0.013157	0.006827	0.0540	0.094366	0.030962	0.0023
DIAGEO	0.027739	0.005320	0.0000	0.131068	0.043253	0.0024
CENTRICA	0.049343	0.013087	0.0002	0.126731	0.041933	0.0025
SEGRO	0.042282	0.006639	0.0000	0.069617	0.023801	0.0034
BRITISH AIRWAYS	0.063548	0.004067	0.0000	0.095357	0.034050	0.0051
SEVERN TRENT	0.055736	0.003875	0.0000	0.155213	0.056562	0.0061
WPP	0.052003	0.002305	0.0000	0.069328	0.025899	0.0074
MAN GROUP	0.049687	0.013168	0.0002	0.080941	0.030398	0.0078
ANTOFAGASTA	0.002151	0.017887	0.9043	0.084297	0.031969	0.0084
KINGFISHER	0.058008	0.006613	0.0000	0.082692	0.031880	0.0095
CAPITA GROUP	0.110324	0.013202	0.0000	0.061329	0.025015	0.0142
HAMMERSON	0.031699	0.004770	0.0000	0.054326	0.022635	0.0164
SAGE GROUP	-0.006238	0.025500	0.8068	0.112024	0.047452	0.0182
IMPERIAL TOBACCO GP.	0.050644	0.008721	0.0000	0.098531	0.042386	0.0201
RIO TINTO	0.019853	0.005366	0.0002	0.110760	0.049544	0.0254
WHITBREAD	0.078840	0.012003	0.0000	0.073450	0.033042	0.0262
BUNZL	0.022057	0.003396	0.0000	0.069197	0.031192	0.0265
G4S	0.180631	0.021425	0.0000	0.115055	0.053126	0.0303
THOMAS COOK GROUP	0.012418	0.014239	0.3831	0.080669	0.037538	0.0316
EXPERIAN	0.239634	0.128878	0.0630	0.078022	0.036519	0.0326
SERCO GROUP	0.074070	0.003278	0.0000	0.047804	0.022458	0.0333
LAND SECURITIES GROUP	0.033634	0.007514	0.0000	0.096779	0.047502	0.0416
ADMIRAL GROUP	-0.015007	0.032781	0.6471	0.053691	0.031541	0.0887
LIBERTY INTL.	0.011906	0.007012	0.0895	0.044095	0.027477	0.1085
NEXT	0.062242	0.004729	0.0000	0.038581	0.024799	0.1198
REXAM	0.021602	0.003430	0.0000	0.050463	0.033691	0.1342
SMITHS GROUP	0.051388	0.005308	0.0000	0.058137	0.042046	0.1668
CADBURY	0.038157	0.008215	0.0000	0.022786	0.016592	0.1697
KAZAKHMYS	0.112701	0.056875	0.0475	0.040038	0.038081	0.2931
HOME RETAIL GROUP	0.037104	0.003763	0.0000	0.029201	0.030614	0.3402

	COEF	ST ERROR	PROB		COEF	ST ERROR	PROB
VEDANTA RESOURCES	0.043608	0.020967	0.0375		0.042550	0.044632	0.3404
INMARSAT	0.116826	0.038356	0.0023		0.055246	0.058574	0.3456
CABLE & WIRELESS	0.097713	0.007407	0.0000		-0.031605	0.033691	0.3482
AUTONOMY CORP.	0.058377	0.002882	0.0000		0.021164	0.024273	0.3833
SCOT&SOUTHERN ENERGY	0.011206	0.007721	0.1467		0.030511	0.043691	0.4850
LONDON STOCK EX.GROUP	-0.286719	0.048877	0.0000		0.014851	0.043660	0.7337
BRITISH LAND	0.055150	0.008060	0.0000		-0.010635	0.039491	0.7877
SMITH & NEPHEW	0.074729	0.008787	0.0000		0.015832	0.073507	0.8295
EURASIAN NATRES.CORP.	NA (INSUFFICIENT DATA)						
FRESNILLO	NA (INSUFFICIENT DATA)						

COEF: Coefficient Theta

ST ERROR: Standard Error

PROB: Probability of Z-statistic

Table 7 shows clearly that most stocks do not exhibit positive and statistically significant Thetas'. On the other hand, I can search for major alterations in theta values before and during the crisis as long as these coefficients are statistically significant. In any other case the theta coefficient value is zero.

TABLE 8: Δ% THETA COEFFICIENT BEFORE AND DURING CRISIS

	Market Model		AR(1)	
	In absolute values	Δ%	In absolute values	Δ%
FRANCE	BNP PARIBAS	0,37	LAGARDERE GROUPE	0,53
	VEOLIA ENVIRONNEMENT	13,81	PEUGEOT	6,95
GERMANY	DEUTSCHE TELEKOM	0,66	VOLKSWAGEN	1,63
	MUENCHENER RUCK,	16,75	DEUTSCHE POST	7,71
UNITED KINGDOM	DIAGEO	0,03	NATIONAL GRID	0,00
	MORRISON(WM)SPMKTS,	19,27	EXPERIAN	23,96

The stocks in green color cells exhibit near zero Theta variation and the stocks in red cells exhibit the maximum change in Theta value before and during the crisis. The sample used is all stocks with statistically significant thetas.

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APPENDIX

Programs used in Eviews environment:

```
table results_mgarchmmB

results_mgarchmmB.save(t=txt) resultsMgarchmmB

smpl @first 08/31/2007

for !i=4 to 42

if @obs(french_log!i)>20 then

equation mgarchmmB_french_!i.arch(1,1,archm=log,b) french_log!i c frcac39_log

series res_frenchmgarchmmB_!i=resid

mgarchmmB_french_!i.makegarch cvar

series cvarMgarchmmB!i=cvar!i

results_mgarchmmB(!i,1)=@coefs(1)

results_mgarchmmB(!i,2)=@coefs(2)

results_mgarchmmB(!i,3)=@tstats(2)

results_mgarchmmB(!i,4)=@sddep

results_mgarchmmB(!i,5)=@se

endif

next

for !j=43 to 72

if @obs(deutsch_log!j)>20 then

equation mgarchmmB_deutsch_!j.arch(1,1,archm=log,b) deutsch_log!j c dax30_log

series res_deutschmgarchmm_!j=resid

mgarchmmB_deutsch_!j.makegarch cvar

series cvarMgarchmmB!j=cvar!j

results_mgarchmmB(!j,1)=@coefs(1)

results_mgarchmmB(!j,2)=@coefs(2)

results_mgarchmmB(!j,3)=@tstats(2)
```

```
results_mgarchmmB(!j,4)=@sddep

results_mgarchmmB(!j,5)=@se

endif

next

for !h=73 to 174

if @obs(british_log!h)>20 then

equation mgarchmmB_british_!h.arch(1,1,archm=log,b) british_log!h c ftse100uk_log

series res_britishmgarchmm_!h=resid

mgarchmmB_british_!h.makegarch cvar

series cvarMgarchmmB!h=cvar!h

results_mgarchmmB(!h,1)=@coefs(1)

results_mgarchmmB(!h,2)=@coefs(2)

results_mgarchmmB(!h,3)=@tstats(2)

results_mgarchmmB(!h,4)=@sddep

results_mgarchmmB(!h,5)=@se

endif

next



table results_lsmmc

results_lsmmc.save(t=txt) resultsCLSMM

table results_archmmc

results_archmmc.save(t=txt) resultsCARCHMMM

smpl 09/1/2007 @last

for !i=4 to 42

if @obs(french_log!i)>20 then

equation french!i.ls french_log!i c frcac39_log

series res_french_!i=resid

results_lsmmc(!i,1)=@coefs(1)
```

```
results_lsmmc(!i,2)=@coefs(2)

results_lsmmc(!i,3)=@tstats(2)

results_lsmmc(!i,4)=@sddep

results_lsmmc(!i,5)=@se

freeze(arch_frenchmmc_!i) french!i.archtest(10)

equation arch_french_!i.arch(1,1,b) french_log!i c frcac39_log

arch_french_!i.makegarch cvar!i

series cvarAmm!i=cvar!i

results_archmmc(!i,1)=@coefs(1)

results_archmmc(!i,2)=@coefs(2)

results_archmmc(!i,3)=@tstats(2)

results_archmmc(!i,4)=@sddep

results_archmmc(!i,5)=@se

endif

next

for !j=43 to 72

if @obs(deutsch_log!j)>20 then

equation deutsch!j.ls deutsch_log!j c dax30_log

series res_deutsch_!j=resid

results_lsmmc(!j,1)=@coefs(1)

results_lsmmc(!j,2)=@coefs(2)

results_lsmmc(!j,3)=@tstats(2)

results_lsmmc(!j,4)=@sddep

results_lsmmc(!j,5)=@se

freeze(arch_deutschmmc_!j) deutsch!j.archtest(10)

equation arch_deutsch_!j.arch(1,1,b) deutsch_log!j c dax30_log

arch_deutsch_!j.makegarch cvar!j

series cvarAmm!j=cvar!j
```

```
results_archmmc(!j,1)=@coefs(1)
results_archmmc(!j,2)=@coefs(2)
results_archmmc(!j,3)=@tstats(2)
results_archmmc(!j,4)=@sddep
results_archmmc(!j,5)=@se
endif
next
for !h=73 to 174
if @obs(british_log!h)>20 then
equation british!h.ls british_log!h c ftse100uk_log
series res_british_!h=resid
results_lsmmc(!h,1)=@coefs(1)
results_lsmmc(!h,2)=@coefs(2)
results_lsmmc(!h,3)=@tstats(2)
results_lsmmc(!h,4)=@sddep
results_lsmmc(!h,5)=@se
freeze(arch_britishmmc_!h) british!h.archtest(10)
equation arch_british_!h.arch(1,1,b) british_log!h c ftse100uk_log
arch_british_!h.makegarch cvar!h
series cvarAmm!h=cvar!h
results_archmmc(!h,1)=@coefs(1)
results_archmmc(!h,2)=@coefs(2)
results_archmmc(!h,3)=@tstats(2)
results_archmmc(!h,4)=@sddep
results_archmmc(!h,5)=@se
endif
next
```

```
table results_mgarchmmB

results_mgarchmmB.save(t=txt) resultsMgarchmmB

smpl @first 08/31/2007

for !i=4 to 42

if @obs(french_log!i)>20 then

equation mgarchmmB_french_!i.arch(1,1,archm=log,b) french_log!i c frcac39_log

series res_frenchmgarchmmB_!i=resid

mgarchmmB_french_!i.makegarch cvar

series cvarMgarchmmB!i=cvar!i

results_mgarchmmB(!i,1)=@coefs(1)

results_mgarchmmB(!i,2)=@coefs(2)

results_mgarchmmB(!i,3)=@tstats(2)

results_mgarchmmB(!i,4)=@sddep

results_mgarchmmB(!i,5)=@se

endif

next

for !j=43 to 72

if @obs(deutsch_log!j)>20 then

equation mgarchmmB_deutsch_!j.arch(1,1,archm=log,b) deutsch_log!j c dax30_log

series res_deutschmgarchmm_!j=resid

mgarchmmB_deutsch_!j.makegarch cvar

series cvarMgarchmmB!j=cvar!j

results_mgarchmmB(!j,1)=@coefs(1)

results_mgarchmmB(!j,2)=@coefs(2)

results_mgarchmmB(!j,3)=@tstats(2)

results_mgarchmmB(!j,4)=@sddep

results_mgarchmmB(!j,5)=@se
```

```
endif
next
for !h=73 to 174
if @obs(british_log!h)>20 then
equation mgarchmmB_british_!h.arch(1,1,archm=log,b) british_log!h c ftse100uk_log
series res_britishmgarchmm_!h=resid
mgarchmmB_british_!h.makegarch cvar
series cvarMgarchmmB!h=cvar!h
results_mgarchmmB(!h,1)=@coefs(1)
results_mgarchmmB(!h,2)=@coefs(2)
results_mgarchmmB(!h,3)=@tstats(2)
results_mgarchmmB(!h,4)=@sddep
results_mgarchmmB(!h,5)=@se
endif
next

table results_lsAR1c
results_lsAR1c.save(t=txt) resultsLSCar1
table results_archAR1c
results_archAR1c.save(t=txt) resultsARCHCar1
smpl 09/1/2007 @last
for !i=4 to 42
if @obs(french_log!i)>20 then
equation french!i.ls french_log!i c french_log!i(-1)
series res_french_!i=resid
results_lsAR1c(!i,1)=@coefs(1)
results_lsAR1c(!i,2)=@coefs(2)
results_lsAR1c(!i,3)=@tstats(2)
```

```
results_lsAR1c(!i,4)=@sddep

results_lsAR1c(!i,5)=@se

freeze(arch_frenchAR1c_!i) french!i.archtest(10)

equation arch_french_!i.arch(1,1,b) french_log!i c french_log!i(-1)

arch_french_!i.makegarch cvar!i

series cvarAar1!i=cvar!i

results_archAR1c(!i,1)=@coefs(1)

results_archAR1c(!i,2)=@coefs(2)

results_archAR1c(!i,3)=@tstats(2)

results_archAR1c(!i,4)=@sddep

results_archAR1c(!i,5)=@se

endif

next

for !j=43 to 72

if @obs(deutsch_log!j)>20 then

equation deutsch!j.ls deutsch_log!j c deutsch_log!j(-1)

series res_deutsch_!j=resid

results_lsAR1c(!j,6)=@coefs(1)

results_lsAR1c(!j,7)=@coefs(2)

results_lsAR1c(!j,8)=@tstats(2)

results_lsAR1c(!j,9)=@sddep

results_lsAR1c(!j,10)=@se

freeze(arch_deutschAR1c_!j) deutsch!j.archtest(10)

equation arch_deutsch_!j.arch(1,1,b) deutsch_log!j c deutsch_log!j(-1)

arch_deutsch_!j.makegarch cvar!j

series cvarAar1!j=cvar!j

results_archAR1c(!j,6)=@coefs(1)

results_archAR1c(!j,7)=@coefs(2)
```

```
results_archAR1c(!j,8)=@tstats(2)

results_archAR1c(!j,9)=@sddep

results_archAR1c(!j,10)=@se

endif

next

for !h=73 to 174

if @obs(british_log!h)>20 then

equation british!h.ls british_log!h c british_log!h(-1)

series res_british_!h=resid

results_lsAR1c(!h,11)=@coefs(1)

results_lsAR1c(!h,12)=@coefs(2)

results_lsAR1c(!h,13)=@tstats(2)

results_lsAR1c(!h,14)=@sddep

results_lsAR1c(!h,15)=@se

freeze(arch_britishAR1c_!h) british!h.archtest(10)

equation arch_british_!h.arch(1,1,b) british_log!h c british_log!h(-1)

arch_british_!h.makegarch cvar!h

series cvarAar1!h=cvar!h

results_archAR1c(!h,11)=@coefs(1)

results_archAR1c(!h,12)=@coefs(2)

results_archAR1c(!h,13)=@tstats(2)

results_archAR1c(!h,14)=@sddep

results_archAR1c(!h,15)=@se

endif

next
```

```
table results_tgarchmmC

results_tgarchmmC.save(t=txt) resultTgarchmmC

smpl 09/01/2007 @last

for !i=4 to 42

series resultTGmmC!i

series tstatTHETAmmC!i

if @obs(french_log!i)>20 then

equation tgarchmmC_french_!i.arch(1,1,thrsh=1,b) french_log!i c frcac39_log

tgarchmmC_french_!i.makegarch cvar!i

series cvarTGarchmmC!i=cvar!i

series res_frenchTGmmC_!i=resid

results_tgarchmmC(!i,1)=@coefs(1)

results_tgarchmmC(!i,2)=@coefs(2)

results_tgarchmmC(!i,3)=@tstats(2)

results_tgarchmmC(!i,4)=@sddep

results_tgarchmmC(!i,5)=@se

resultTGmmC!i=@coefs(5)

tstatTHETAmmC!i=@tstats(5)

endif

next

for !j=43 to 72

series resultTGmmC!j

series tstatTHETAmmC!j

if @obs(deutsch_log!j)>20 then

equation tgarchmmC_deutsch_!j.arch(1,1,thrsh=1,b) deutsch_log!j c dax30_log

tgarchmmC_deutsch_!j.makegarch cvar!j

series cvarTGarchmmC!j=cvar!j
```

```
series res_deutschTGmmC_!j=resid
results_tgarchmmC(!j,1)=@coefs(1)
results_tgarchmmC(!j,2)=@coefs(2)
results_tgarchmmC(!j,3)=@tstats(2)
results_tgarchmmC(!j,4)=@sddep
results_tgarchmmC(!j,5)=@se
resultTGmmC!j=@coefs(5)
tstatTHETAmmC!j=@tstats(5)
endif
next
for !h=73 to 174
series resultTGmmC!h
series tstatTHETAmmC!h
if @obs(british_log!h)>20 then
equation  tgarchmmC_british_!h.arch(1,1,thrsh=1,b) british_log!h c ftse100uk_log
tgarchmmC_british_!h.makegarch cvar!h
series cvarTGarchmmC!h=cvar!h
series res_britishTGmmC_!h=resid
results_tgarchmmC(!h,1)=@coefs(1)
results_tgarchmmC(!h,2)=@coefs(2)
results_tgarchmmC(!h,3)=@tstats(2)
results_tgarchmmC(!h,4)=@sddep
results_tgarchmmC(!h,5)=@se
resultTGmmC!h=@coefs(5)
tstatTHETAmmC!h=@tstats(5)
endif
next
```

```
table results_tgarchar1C

smpl 09/01/2007 @last

for !i=4 to 42

series resultTGAR1C!i

series tstatTHETAAR1C!i

if @obs(french_log!i)>20 then

equation tgarchar1C_french_!i.arch(1,1,b,thrsh=1) french_log!i c french_log!i(-1)

tgarchar1C_french_!i.makegarch cvar!i

series cvarTGarchar1C!i=cvar!i

series res_frenchTGar1C_!i=resid

results_tgarchar1C(!i,1)=@coefs(1)

results_tgarchar1C(!i,2)=@coefs(2)

results_tgarchar1C(!i,3)=@coefs(3)

results_tgarchar1C(!i,4)=@sddep

results_tgarchar1C(!i,5)=@se

resultTGAR1C!i=@coefs(5)

tstatTHETAAR1C!i=@tstats(5)

endif

next

for !j=43 to 72

series resultTGAR1C!j

series tstatTHETAAR1C!j

if @obs(deutsch_log!j)>20 then

equation tgarchar1c_deutsch_!j.arch(1,1,b,thrsh=1) deutsch_log!j c deutsch_log!j(-1)

tgarchar1C_deutsch_!j.makegarch cvar!j

series cvarTGarchar1C!j=cvar!j

series res_deutschTGar1C_!j=resid
```

```
results_tgarchar1C(!j,1)=@coefs(1)
results_tgarchar1C(!j,2)=@coefs(2)
results_tgarchar1C(!j,3)=@coefs(3)
results_tgarchar1C(!j,4)=@sddep
results_tgarchar1C(!j,5)=@se
resultTGAR1C!j=@coefs(5)
tstatTHETAAR1C!j=@tstats(5)
endif
next
for !h=73 to 174
series resultTGAR1C!h
series tstatTHETAAR1C!h
if @obs(british_log!h)>20 then
equation  tgarchar1C_british_!h.arch(1,1,b,thrsh=1) british_log!h c british_log!h(-1)
tgarchar1C_british_!h.makegarch cvar!h
series cvarTGarchar1C!h=cvar!h
series res_britTGar1C_!h=resid
results_tgarchar1C(!h,11)=@coefs(1)
results_tgarchar1C(!h,12)=@coefs(2)
results_tgarchar1C(!h,13)=@coefs(3)
results_tgarchar1C(!h,14)=@sddep
results_tgarchar1C(!h,15)=@se
resultTGAR1C!h=@coefs(5)
tstatTHETAAR1C!h=@tstats(5)
endif
next
```

```
table tgarch_mm_france

tgarch_mm_france.save(t=csv) h:\

table tgarch_mm_britain

tgarch_mm_britain.save(t=csv) h:\

table tgarch_mm_germany

tgarch_mm_germany.save(t=csv) h:\

table tgarch_AR1_france

tgarch_AR1_france.save(t=csv) h:\

table tgarch_AR1_britain

tgarch_AR1_britain.save(t=csv) h:\

table tgarch_AR1_germany

tgarch_AR1_germany.save(t=csv) h:\

for !i=4 to 42

if !i<>35 then

freeze(tgarchmmb1_french_!i) tgarchmmb_french_!i

freeze(tgarchmmc1_french_!i) tgarchmmc_french_!i

freeze(tgarchar1b1_french_!i) tgarchar1b_french_!i

freeze(tgarchar1c1_french_!i) tgarchar1c_french_!i

tgarch_mm_france(!i,1)=tgarchmmb1_french_!i(20,2)

tgarch_mm_france(!i,2)=tgarchmmb1_french_!i(20,3)

tgarch_mm_france(!i,3)=tgarchmmb1_french_!i(20,4)

tgarch_mm_france(!i,4)=tgarchmmb1_french_!i(20,5)

tgarch_mm_france(!i,6)=tgarchmmc1_french_!i(20,2)

tgarch_mm_france(!i,7)=tgarchmmc1_french_!i(20,3)

tgarch_mm_france(!i,8)=tgarchmmc1_french_!i(20,4)

tgarch_mm_france(!i,9)=tgarchmmc1_french_!i(20,5)

tgarch_AR1_france(!i,1)=tgarchar1b1_french_!i(20,2)
```

```
tgarch_AR1_france(!i,2)=tgarchar1b1_french_!i(20,3)
tgarch_AR1_france(!i,3)=tgarchar1b1_french_!i(20,4)
tgarch_AR1_france(!i,4)=tgarchar1b1_french_!i(20,5)
tgarch_AR1_france(!i,6)=tgarchar1c1_french_!i(20,2)
tgarch_AR1_france(!i,7)=tgarchar1c1_french_!i(20,3)
tgarch_AR1_france(!i,8)=tgarchar1c1_french_!i(20,4)
tgarch_AR1_france(!i,9)=tgarchar1c1_french_!i(20,5)
endif
next
for !i=43 to 72
freeze(tgarchmmb1_deutsch_!i) tgarchmmb_deutsch_!i
freeze(tgarchmmc1_deutsch_!i) tgarchmmc_deutsch_!i
freeze(tgarchar1b1_deutsch_!i) tgarchar1b_deutsch_!i
freeze(tgarchar1c1_deutsch_!i) tgarchar1c_deutsch_!i
tgarch_mm_germany(!i,1)=tgarchmmb1_deutsch_!i(20,2)
tgarch_mm_germany(!i,2)=tgarchmmb1_deutsch_!i(20,3)
tgarch_mm_germany(!i,3)=tgarchmmb1_deutsch_!i(20,4)
tgarch_mm_germany(!i,4)=tgarchmmb1_deutsch_!i(20,5)
tgarch_mm_germany(!i,6)=tgarchmmc1_deutsch_!i(20,2)
tgarch_mm_germany(!i,7)=tgarchmmc1_deutsch_!i(20,3)
tgarch_mm_germany(!i,8)=tgarchmmc1_deutsch_!i(20,4)
tgarch_mm_germany(!i,9)=tgarchmmc1_deutsch_!i(20,5)
tgarch_AR1_germany(!i,1)=tgarchar1b1_deutsch_!i(20,2)
tgarch_AR1_germany(!i,2)=tgarchar1b1_deutsch_!i(20,3)
tgarch_AR1_germany(!i,3)=tgarchar1b1_deutsch_!i(20,4)
tgarch_AR1_germany(!i,4)=tgarchar1b1_deutsch_!i(20,5)
tgarch_AR1_germany(!i,6)=tgarchar1c1_deutsch_!i(20,2)
tgarch_AR1_germany(!i,7)=tgarchar1c1_deutsch_!i(20,3)
```

```
tgarch_AR1_germany(!i,8)=tgarchar1c1_deutsch_!i(20,4)

tgarch_AR1_germany(!i,9)=tgarchar1c1_deutsch_!i(20,5)

next



for !i=73 to 172

if !i<>103 then

if !i<>105 then

freeze(tgarchmmb1_british_!i) tgarchmmb_british_!i

freeze(tgarchmmc1_british_!i) tgarchmmc_british_!i

freeze(tgarchar1b1_british_!i) tgarchar1b_british_!i

freeze(tgarchar1c1_british_!i) tgarchar1c_british_!i

tgarch_mm_britain(!i,1)=tgarchmmb1_british_!i(20,2)

tgarch_mm_britain(!i,2)=tgarchmmb1_british_!i(20,3)

tgarch_mm_britain(!i,3)=tgarchmmb1_british_!i(20,4)

tgarch_mm_britain(!i,4)=tgarchmmb1_british_!i(20,5)

tgarch_mm_britain(!i,6)=tgarchmmc1_british_!i(20,2)

tgarch_mm_britain(!i,7)=tgarchmmc1_british_!i(20,3)

tgarch_mm_britain(!i,8)=tgarchmmc1_british_!i(20,4)

tgarch_mm_britain(!i,9)=tgarchmmc1_british_!i(20,5)

tgarch_AR1_britain(!i,1)=tgarchar1b1_british_!i(20,2)

tgarch_AR1_britain(!i,2)=tgarchar1b1_british_!i(20,3)

tgarch_AR1_britain(!i,3)=tgarchar1b1_british_!i(20,4)

tgarch_AR1_britain(!i,4)=tgarchar1b1_british_!i(20,5)

tgarch_AR1_britain(!i,6)=tgarchar1c1_british_!i(20,2)

tgarch_AR1_britain(!i,7)=tgarchar1c1_british_!i(20,3)

tgarch_AR1_britain(!i,8)=tgarchar1c1_british_!i(20,4)

tgarch_AR1_britain(!i,9)=tgarchar1c1_british_!i(20,5)

endif
```

```
endif
next

table mgarch_mm_france
table mgarch_mm_britain
table mgarch_mm_germany
table mgarch_AR1_france
table mgarch_AR1_britain
table mgarch_AR1_germany
for !i=4 to 39
if !i<>35 then
freeze(mgarchmmb1_french_!i) mgarchmmb_french_!i
freeze(mgarchmmc1_french_!i) mgarchmmc_french_!i
freeze(mgarchar1b1_french_!i) mgarchar1b_french_!i
freeze(mgarchar1c1_french_!i) mgarchar1c_french_!i
mgarch_mm_france(!i,1)=mgarchmmb1_french_!i(12,2)
mgarch_mm_france(!i,2)=mgarchmmb1_french_!i(12,5)
mgarch_mm_france(!i,3)=mgarchmmb1_french_!i(12,3)
mgarch_mm_france(!i,6)=mgarchmmc1_french_!i(12,2)
mgarch_mm_france(!i,7)=mgarchmmc1_french_!i(12,5)
mgarch_mm_france(!i,8)=mgarchmmc1_french_!i(12,3)
mgarch_AR1_france(!i,1)=mgarchar1b1_french_!i(12,2)
mgarch_AR1_france(!i,2)=mgarchar1b1_french_!i(12,5)
mgarch_AR1_france(!i,3)=mgarchar1b1_french_!i(12,3)
mgarch_AR1_france(!i,6)=mgarchar1c1_french_!i(12,2)
mgarch_AR1_france(!i,7)=mgarchar1c1_french_!i(12,5)
mgarch_AR1_france(!i,8)=mgarchar1c1_french_!i(12,3)
endif
```

```
next
for !i=43 to 72
freeze(mgarchmmb1_deutsch_!i) mgarchmmb_deutsch_!i
freeze(mgarchmmc1_deutsch_!i) mgarchmmc_deutsch_!i
freeze(mgarchar1b1_deutsch_!i) mgarchar1b_deutsch_!i
freeze(mgarchar1c1_deutsch_!i) mgarchar1c_deutsch_!i
mgarch_mm_germany(!i,1)=mgarchmmb1_deutsch_!i(12,2)
mgarch_mm_germany(!i,2)=mgarchmmb1_deutsch_!i(12,5)
mgarch_mm_germany(!i,3)=mgarchmmb1_deutsch_!i(12,3)
mgarch_mm_germany(!i,6)=mgarchmmc1_deutsch_!i(12,2)
mgarch_mm_germany(!i,7)=mgarchmmc1_deutsch_!i(12,5)
mgarch_mm_germany(!i,8)=mgarchmmc1_deutsch_!i(12,3)
mgarch_AR1_germany(!i,1)=mgarchar1b1_deutsch_!i(12,2)
mgarch_AR1_germany(!i,2)=mgarchar1b1_deutsch_!i(12,5)
mgarch_AR1_germany(!i,3)=mgarchar1b1_deutsch_!i(12,3)
mgarch_AR1_germany(!i,6)=mgarchar1c1_deutsch_!i(12,2)
mgarch_AR1_germany(!i,7)=mgarchar1c1_deutsch_!i(12,5)
mgarch_AR1_germany(!i,8)=mgarchar1c1_deutsch_!i(12,3)
next
for !i=73 to 172
if !i<>95 then
if !i<>103 then
if !i<>105 then
freeze(mgarchmmb1_british_!i) mgarchmmb_british_!i
freeze(mgarchmmc1_british_!i) mgarchmmc_british_!i
freeze(mgarchar1b1_british_!i) mgarchar1b_british_!i
freeze(mgarchar1c1_british_!i) mgarchar1c_british_!i
mgarch_mm_britain(!i,1)=mgarchmmb1_british_!i(12,2)
```

```
mgarch_mm_britain(!i,2)=mgarchmmb1_british_!i(12,5)

mgarch_mm_britain(!i,3)=mgarchmmb1_british_!i(12,3)

mgarch_mm_britain(!i,6)=mgarchmmc1_british_!i(12,2)

mgarch_mm_britain(!i,7)=mgarchmmc1_british_!i(12,5)

mgarch_mm_britain(!i,8)=mgarchmmc1_british_!i(12,3)

mgarch_AR1_britain(!i,1)=mgarchar1b1_british_!i(12,2)

mgarch_AR1_britain(!i,2)=mgarchar1b1_british_!i(12,5)

mgarch_AR1_britain(!i,3)=mgarchar1b1_british_!i(12,3)

mgarch_AR1_britain(!i,6)=mgarchar1c1_british_!i(12,2)

mgarch_AR1_britain(!i,7)=mgarchar1c1_british_!i(12,5)

mgarch_AR1_britain(!i,8)=mgarchar1c1_british_!i(12,3)

endif

endif

endif

next
```