



: Non Interest Income and Return
Measures of Banks (ROA, ROE)

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4:	40
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	42
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5:	55
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1(-).....		58
2().....		59
3().....		60
4(ROAA).....		61
5(ROAE).....		62
	63

2:

(non interest income),

(Frederic S. Mishkin, 2000

(Adverse Selection)

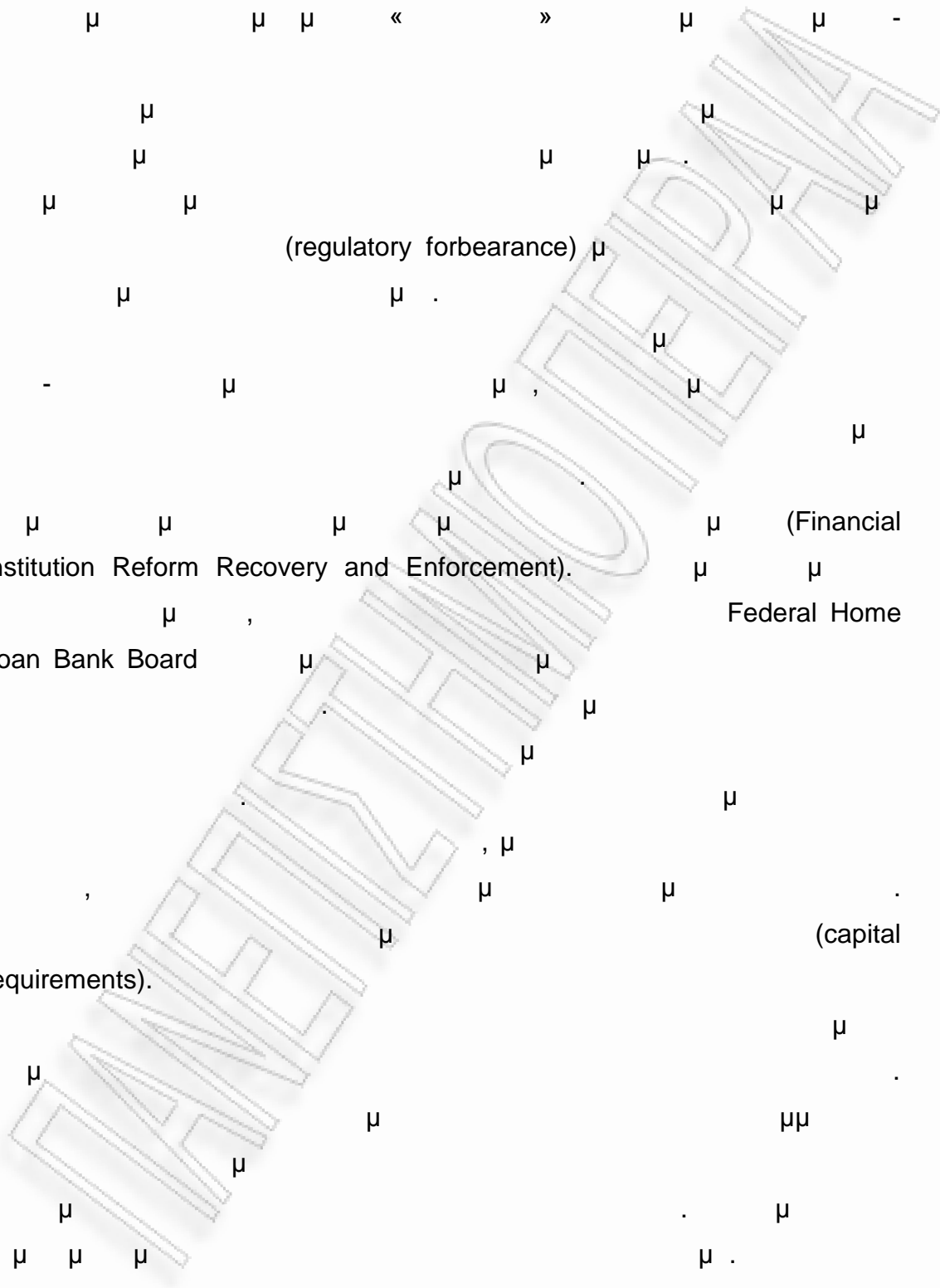
(Moral Hazard).

(

1980

U.S.A.!

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 (regulatory forbearance)
 (Financial Institution Reform Recovery and Enforcement).
 Loan Bank Board
 Federal Home
 requirements).
 (capital requirements).
 requirements).



(Financial Repression) ; (Financial Development)

(David O. Beim and Charles W. Calomiris, McGraw-Hill Irwin, 2001)

(Reserves)

(manager)

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budget

(privatization)

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(corporate form)

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(financial liberalization).

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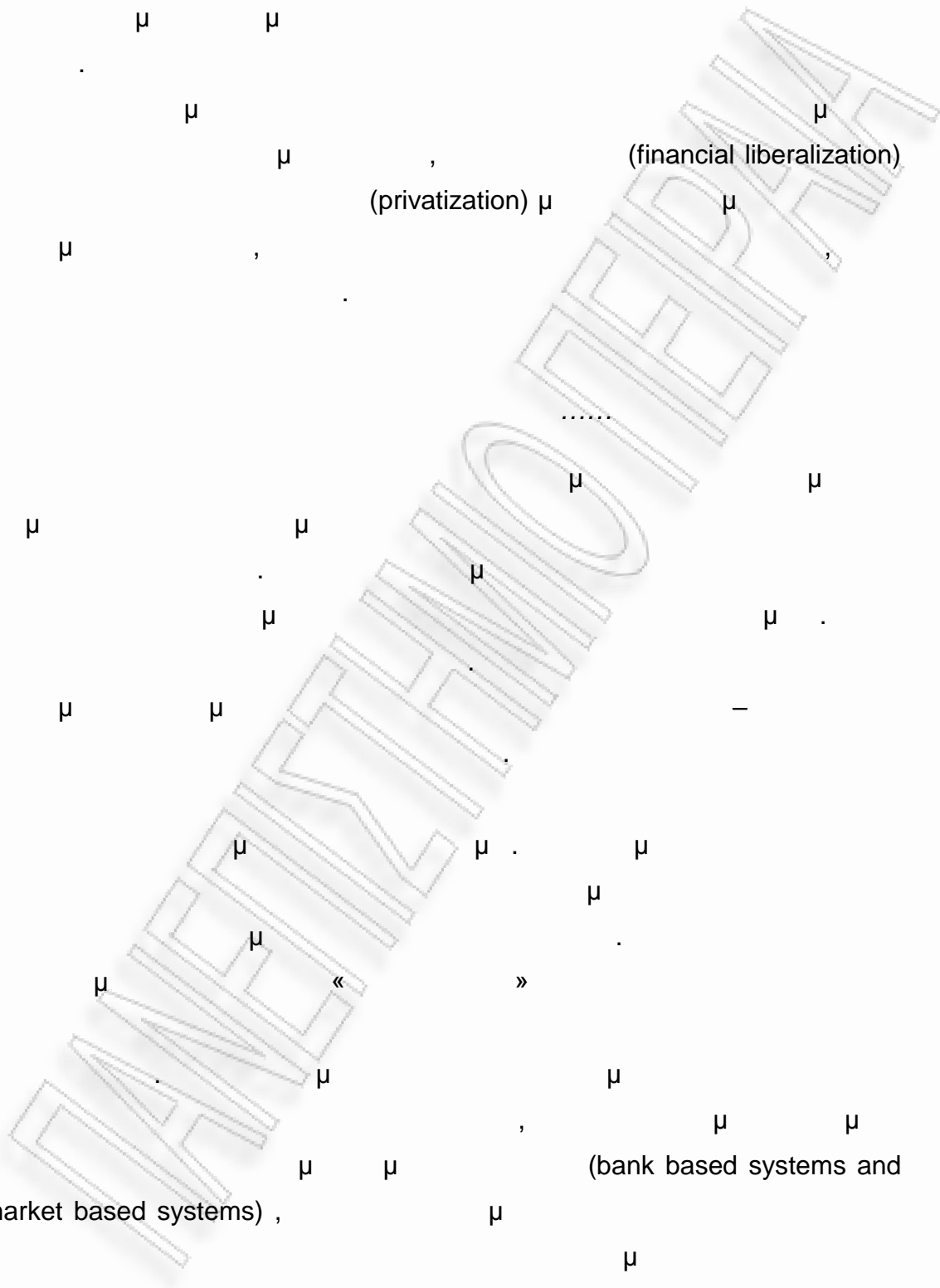
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(capital inflows).

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(financial liberalization) ,
 (financial liberalization)
 (privatization) μ
 (financial liberalization)
 (bank based systems and
 market based systems) ,
 thrifts institutions 1980.)



μ , () μ - μ μ μ .

μ μ μ .

μ (interest income non interest income).

(μ μ) μ μ .

μ μ μ μ μ .

μ μ μ μ μ μ μ μ .

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μ Single European Act 1986 Maastricht Treaty 1992.

(John Goddard, Philip Molyneux, John Wilson Manouche Tavakoli, 2007) μ

(integration) μ

(retail banking).

μ μ (interest margins on saving deposits) μ μ

μ μ μ

μ ,

operational efficiency

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μ (James Crotty, 2007)

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1990

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1980

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(deregulation)

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(globalization),

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(securitization).

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(derivatives).

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(over the counter),

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John Wilson, John Goddard

Donal

McKillop

2008.

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(credit unions).

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(financial cooperatives)

12,25%

1998

John Goddard,

Donal McKillop John O.S Wilson

(ROA, ROE),

(standard deviation)

(risk adjusted rate of return)

(ROA/STANDARD DEVIATION OF ROA ROE/STANDARD DEVIATION OF ROE).

(non interest income to operating income loan to assets).

(revenue diversification)

(direct exposure effect)

(indirect exposure)

non

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Rous (Laetitia Lepetit, Emmanuelle Nys, Philippe Amine Tarazi, 2007)

trading income.

(non traditional) (commissions and fees).

(cross selling).

trading income. (risk premium) W_SPREAD (/ - net interest income/total earnings assets - government bond rate) N_SPREAD (

(interest from loans/net loans - government bond rate).

W_MARGIN ((net interest income/total earning assets) N_MARGIN (

(interest from loans/net loans) (interest

expense/total liabilities).

(cross-selling).

(fee income)

μ trading income.
 μ (loan prices)
 μ (trading).
 μ , (credit
risk) μ trading
income μ
 μ μ μ μ μ μ
 μ μ (default risk)
trading income μ μ
 μ μ
 μ (cross-selling), μ ,
 μ μ , μ
 μ μ μ

μ μ μ μ (Laetitia Lepetit, Emmanuelle Nys,
Philippe Rous Amine Tarazi, 2008a). μ μ

μ μ μ μ . μ :
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(Kevin Stiroh, 2006) μ

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(idiosyncratic risk).

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Kevin Stiroh.

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(commissions, fees),

trading

income,

μ

μ

μ

(diversification discount)

ΠΑΝΕΠΙΣΤΗΜΙΟ ΠΕΡΠΑ

μ (5) (trailing five year standard deviation). μ , μ

μ . μ μ

2 μ . μ

μ μ μ μ μ μ

μ μ μ μ μ μ μ μ

μ - μ μ μ μ μ Bank Scope

• μ / (non interest income/gross revenue), μ μ μ μ

(non interest income).

• μ .

• / (loans/customer deposits).

• / μ (non interest expense/average assets), μ

• / μ (net interest revenue / average assets).

• / (net loans/total assets).

• / (non interest expense/gross revenues).

• / (equity/total assets).

• μ / (loans loss provisions/net loans).

• / (other interest income/total assets).

- $\mu = \frac{\text{net commission and fees}}{\text{net interest income}}$ (net commission and fees/net interest income).

- $\mu = \frac{\text{total non interest income}}{\text{total assets}}$ (total non interest income/total assets).

- μ (growth in assets), μ

μ .

μ , (

μ , μ (GDP)

(CPI%), μ , μ (long-short term spread).

μ .

μ ,

μ .

(16) (7).
 1994. 1990 2006
 Stream Data Stream Bloomberg, If
 spread ((3-month Treasury Bill). (money market rate)
 Eviews
 (non interest income).

$$+ (1 - 4)^2 \} \mu = \{ (4)^2$$

5:

8:

9:

11:

14:

18:

μ
ROAA)

(Return On Average Assets,

(Return On Average Equity, ROAE).

(Risk adjusted ROAA)

(Risk adjusted R),

1) _____
 _____ (ROAA):

$$ROAA_{i,t} = c + b_1(Z)_{i,t} + b_2(X4)_{i,t} + b_3(X5)_{i,t} + b_4(X8)_{i,t} + b_5(X9)_{i,t} + b_6(X11)_{i,t} + b_7(X14)_{i,t} + b_8(X18)_{i,t} + \mu_{i,t}$$

2) _____
 _____ (ROAE):

$$ROAE_{i,t} = c + b_1(Z)_{i,t} + b_2(X4)_{i,t} + b_3(X5)_{i,t} + b_4(X8)_{i,t} + b_5(X9)_{i,t} + b_6(X11)_{i,t} + b_7(X14)_{i,t} + b_8(X18)_{i,t} + \mu_{i,t}$$

3) _____
 _____ (RISK ADJUSTED ROAA):

$$RISK ADJUSTED ROAE_{i,t} = c + b_1(Z)_{i,t} + b_2(X4)_{i,t} + b_3(X5)_{i,t} + b_4(X8)_{i,t} + b_5(X9)_{i,t} + b_6(X11)_{i,t} + b_7(X14)_{i,t} + b_8(X18)_{i,t} + \mu_{i,t}$$

4) _____
 _____ (RISK ADJUSTED ROAE):

$$RISK ADJUSTED ROAE_{i,t} = c + b_1(Z)_{i,t} + b_2(X4)_{i,t} + b_3(X5)_{i,t} + b_4(X8)_{i,t} + b_5(X9)_{i,t} + b_6(X11)_{i,t} + b_7(X14)_{i,t} + b_8(X18)_{i,t} + \mu_{i,t}$$

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 μ μ μ μ μ μ Eviews.
 μ μ μ μ μ μ
 μ (Unit Root Test). μ μ
 μ μ μ - Eviews.
 Common Root Levin, Lin, Chu μ Individual Root Im, Pesaram,
 Shin. μ μ μ μ (probability)
 μ μ μ μ μ μ
 μ μ μ μ (μ μ
) 13
 μ μ μ μ μ Eviews
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 μ panel analysis
 μ Pooled Least Squares.
 μ (balanced) 540.
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 μ (AR1), μ μ μ μ
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 μ (general to
 specific). μ μ μ μ μ μ
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 μ μ (probability) coefficient.

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 (μ μ μ μ μ
 μ μ μ μ μ
 (Risk adjusted Return On Average
 Assets)
 μ μ μ (Risk adjusted Return n Average
 Equity), μ μ μ
 μ μ μ
 (5) (trailing 5 year standard deviation).

μ μ μ μ μ
 (ROAA):

		<u>Coefficient</u>	<u>t-statistic</u>
z		-0.0004	-1.84
X4	non interest income/gross revenue	+0.003	2.17
X9	non interest expense/average assets	-0.133	-2.78
X14	loans loss provisions/net loans	-0.310	-12.38
X18	growth in assets	+0.001	1.77

- Adj. R-squared = 0.51
- Ar(1) = 0.57
- D.-W. stat = 2.36

$$ROAA_{i,t} = 0.009370 - 0.000484 ()_{i,t} + 0.003710 (X4)_{i,t} - 0.133530(9)_{i,t} - 0.310014 (X14)_{i,t} + 0.001834 (18)_{i,t}$$

$$ROAA_{i,t} = 0.009370 - 0.000484 ()_{i,t} + 0.003710 (X4)_{i,t} - 0.133530(9)_{i,t} - 0.310014 (X14)_{i,t} + 0.001834 (18)_{i,t}$$

(Return On Average Assets).

(systemic risk)

4 (non interest income/gross revenue)

ROAA 0.003710!

9 (non interest expense/average assets)

μ μ μ . μ μ μ

μ μ

0.133530, μ ROAA

μ μ μ

μ (ROAA).

μ μ μ 14 (loans

loss provisions/net loans)

μ μ μ μ

μ μ

μ ROAA 0.310014,

μ μ

μ 18 (growth in assets) μ

(ROAA) μ μ

μ μ

Return On Average

Assets. μ μ μ μ

μ ROAA

0.001834!

μ μ μ

μ coefficient μ μ

μ μ 7%.

μ Adjusted R-squared μ

μ μ 50%

μ 51.2729%

2 μ Durbin-Watson stat

2.36!

(ROAE):

		Coefficient	t-statistic
z		-0.0129	-1.77
X4	non interest income/gross revenue	+0.123	3.10
X9	non interest expense/average assets	+2.790	3.35
X14	loans loss provisions/net loans	+1.543	2.60
X18	growth in assets	+0.052	1.77

- Adjusted R-squared = 0.17
- Ar(1) = 0.30
- Dw stat = 2.23

$$ROAE_{i,t} = -0.012725 - 0.012909 ()_{i,t} + 0.123579 (X4)_{i,t} + 2.790842 ()_{i,t} + 1.543252 (X14)_{i,t} + 0.052892 ()_{i,t}$$

(Return On Average Equity).

μ μ ,

ROAE.

μ

μ

μ

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μ

ROAE

0.012909!

μ

μ

μ

4 (non interest income/gross revenue)

ROAE.

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ROAE

0.123579!

μ

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9 (non interest expense/average assets)

μ

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ROAE

2.790842!

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Return On Average Equity.

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14 (loans loss provisions/net loans)

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ROAE

μ

1.543252!

μ

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5:

μ (non interest income)
 2006)
 μ (Risk adjusted ROAA Risk adjusted ROAE),
 μ ,
 (non interest income)
 (Return On Average Assets Return On Average Equity).
 (growth of assets)
 {Return On Average Assets Return On Average Equity}}
 μ

1(-)

Aareal Bank AG
Axa Banque
Bank Degroof NV-Banque Degroof SA
Bank für Arbeit und Wirtschaft und Österreichische Postsparkasse Aktiengesellschaft
Bank of Valletta Plc
Bankhaus Carl Spaengler & Co.
Banque CIC Est
Crédit Industriel de l'Ouest-Banque CIO
Banque de Financement et de Trésorerie - BFT
Banque de Gestion Privée Indosuez
Banque de la Réunion
Banque de Savoie
Banque Delen NV
Banque FINAMA
Banque Martin Maurel
Banque Palatine
Banque Privée Anjou
Banque SBA
Banque Transatlantique SA
Beroepskrediet NV-Crédit professionnel s.a.
BGL BNP Paribas
BNP Paribas
Calyon
Commerzbank AG
Crédit du Nord
Crédit Industriel d'Alsace et de Lorraine - Banque CIAL
Crédit Industriel et Commercial - CIC
Crédit Lyonnais
Deutsche Bank AG
Dexia Banque Internationale à Luxembourg SA - Dexia BIL
Dresdner Bank AG
DVB Bank SE
Fortis Banque France SA

HSBC Bank Malta Plc
ING-ING Belgium SA/NV
ING Luxembourg
La Compagnie Financière Edmond
de Rothschild Banque
Lyonnaise de Banque
Meinl Bank AG
Monte Paschi Banque S.A.
Pohjola Pankki Oyj-Pohjola Bank
plc
Sal Oppenheim Jr. & Cie KGAA
Société Générale
Société Générale Bank & Trust
Société Marseillaise de Crédit

2 ()

(NET INTEREST INCOME)

		(NON
INTEREST EXPENSE)		
/		(NON
INTEREST INCOME/ASSETS)		
/	(CORE	
DEPOSITS/ASSETS)		
/	(LOANS/ASSETS)	(LOAN
LOSS ALLOWANCE/ASSETS)		
/	(FULL TIME	
EMPLOYEES/DEPOSITS)		(GROWTH IN
ASSETS)		
/	(REAL ESTATE	
LOANS/TOTAL LOANS)		
/	(COMMERCIAL	
LOANS/TOTAL LOANS)		(CREDIT
/		

CARDS LOANS/TOTAL LOANS)
 /
(ADVERTISEMENT
EXPENSE/TOTAL EXPENSE)
 /
(NON INTEREST
INCOME/OPERATING INCOME)
 /
(EQUITY / TOTAL
ASSETS)
 /
(LOANS LOSS PROVISIONS/NET LOANS)
 /
(NET COMMISSION AND FEES/NET INTEREST INCOME)
 /
(NET TRADING INCOME/NET OPERATING
INCOME)

3()

y1	ROAA
x1	ROAE
x2	RISK ADJUSTED ROAA
x3	RISK ADJUSTED ROAE
x4	NON INTEREST INCOME/GROSS REVENUE%
x5	CPI%CHANGE
x6	SPREAD
x7	GDP%
x8	LOANS/CUSTOMER DEPOSITS
x9	NON INTEREST EXPENSE/AVERAGE ASSETS
x10	NET INTEREST REVENUE/AVERAGE ASSETS
x11	NET LOANS/TOTAL ASSETS
x12	NON INTEREST EXPENSE/GROSS REVENUES
x13	EQUITY/TOTAL ASSETS
x14	LOANS LOSS PROVISIONS/NET LOANS

x15	OTHER INTEREST INCOME/TOTAL ASSETS
x16	NET COMMISSION AND FEES/NET INTEREST INCOME
x17	TOTAL NON INTEREST OPER.INCOME/TOTAL ASSETS
x18	GROWTH IN ASSETS

4 (ROAA)

Dependent Variable: ROAA
Method: Pooled Least Squares
Date: 01/04/10 Time: 18:46
Sample (adjusted): 1995 2006
Included observations: 12 after adjustments
Cross-sections included: 45
Total pool (balanced) observations: 540
Convergence achieved after 17 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.009370	0.001522	6.155811	0.0000
Z?	-0.000484	0.000263	-	0.0658
			1.843428	
X4?	0.003710	0.001706	2.174473	0.0301
X9?	-0.133530	0.047896	-	0.0055
			2.787925	
X14?	-0.310014	0.025028	-	0.0000
			12.38691	
X18?	0.001834	0.001032	1.777988	0.0760
AR(1)	0.572995	0.038756	14.78481	0.0000
R-squared	0.518153	Mean dependent var		0.005441
Adjusted R-squared	0.512729	S.D. dependent var		0.011030
S.E. of regression	0.007700	Akaike info criterion		-6.882418
Sum squared resid	0.031598	Schwarz criterion		-6.826787
Log likelihood	1865.253	F-statistic		95.52665
Durbin-Watson stat	2.369679	Prob(F-statistic)		0.000000

5 (

ROAE)

Dependent Variable: ROAE
 Method: Pooled Least Squares
 Date: 01/04/10 Time: 19:03
 Sample (adjusted): 1995 2006
 Included observations: 12 after adjustments
 Cross-sections included: 45
 Total pool (balanced) observations: 540
 Convergence achieved after 7 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.012725	0.028627	-	0.6568
Z?	-0.012909	0.007279	-	0.0767
X4?	0.123579	0.039741	3.109637	0.0020
X9?	2.790842	0.831788	3.355234	0.0008
X14?	1.543252	0.591478	2.609145	0.0093
X18?	0.052892	0.029733	1.778900	0.0758
AR(1)	0.295694	0.034391	8.598133	0.0000
R-squared	0.177582	Mean dependent var		0.120812
Adjusted R-squared	0.168324	S.D. dependent var		0.222131
S.E. of regression	0.202575	Akaike info criterion		-0.342535
Sum squared resid	21.87253	Schwarz criterion		-0.286903
Log likelihood	99.48439	F-statistic		19.18144
Durbin-Watson stat	2.232226	Prob(F-statistic)		0.000000

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РАНЕЕЗНАМО ПЕРПАА