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風險揭露與風險管理對銀行風險值的影響：

全球銀行的實證分析

**Risk Disclosure, Risk Management, and Bank Value-at-Risk:  
International Study**

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論文題目：風險揭露與風險管理對銀行風險值的影響：全球銀行的實證分析

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論文摘要內容：

本文收集全球總資產排名前五百大之上市銀行的年報資料，探討風險揭露、內部風險管理機制、以及公司治理對銀行下方風險(以風險值衡量)的影響，而研究結果可提供金融監管管理當局特別在風險揭露與風險管理上之重要參考意涵。實證結果發現，銀行具有較高品質的風險揭露與風險管理時，將可分別顯著地降低 90%、95% 以及 99% 的風險值。儘管較高的機構投資人持股與董事薪酬水準時會降低銀行 VaR，但是銀行有較大的董事規模卻會提高銀行風險值。此外高收益多角化銀行在國家有高金融業資本比例水準下會顯著降低銀行的風險值。

關鍵詞：風險揭露、風險管理、風險值、全球研究

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## **Abstract**

Using hand-collected data on top 500 banks around the world, this theses empirically investigates the joint impacts of risk disclosure and internal risk management on bank Value-at-Risk (VaR) in context of international evidence. Our empirical evidences indicate that banks with higher quality of risk disclosure and better risk management show lower VaR. Regarding the bank corporate governance, banks with higher board compensations and independent board ratio would significantly reduce bank's downside risk while banks with larger boards would increase bank VaR. Banks with higher degree of income diversification enjoy lower downside risk, especially in higher capital ratio of banking sector.

**Keywords:** Risk Disclosure, Risk management, Value-at-Risk,  
International Study

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## **1. Introduction**

### *1.1 Motivation*

Since both the ongoing Eurozone sovereign debt crisis and the 2007-09 global financial crisis the imperative to enhance bank's risk disclosures on financial instruments and internal risk profile seems to be more apparent based on the global perspectives from stringent banking supervision. Even though risk disclosure requirement from Basel committee in 1998 has been initiated to disclose more and better risk information in the banking sector, however, mandatory risk disclosure is still focused on market risk primarily related to financial instruments and derivatives. The risk disclosures addressed concurrently in global banking should be more comprehensive to include dynamic risk information on credit, liquidity, market and hedging activities. Therefore, this paper empirically investigates how risk disclosure of Value-at-Risk (VaR) and the quality of internal risk management affects bank risk during the recent financial crisis in context of public-listed banks around the world.

VaR have been advocated to quantify market risk in response to capital

requirements for large banks by USA and international banking authorities since the *Market Risk Amendment to Basle Accord* in 1996. In addition, VaR has become a very standard measure of financial market risk, which intensively utilized by both financial and even non-financial firms. Besides, Perignon and Smith (2013) initially create *VaR Disclosure Index* (hereafter, VarDIS) to proximate and measure the quality of VaR disclosure by banks. In USA, market risks disclosure are required under *Financial Reporting Release Number 48 (FRR48)* first published by the US Securities and Exchange Commission (SEC) in 1997. These practices cast an important framework on bank risk management where best accurate risk management for bank is requested for practice and useful risk disclosure information for regulatory authority.

However, there is few empirical literature related to the impacts of risk disclosure and risk management on bank VaR for global listed banks. For recent financial crisis, some listed banks were inspected by the regulations of authority. Moreover, earlier literature on risk management mainly focused on single types of risk while missing out on the interdependence to other risks (Miller, 1992). Research about VaR DIS, internal risk management and disclosure is minority in explaining how these risk factors during recent financial crises really influences bank performance. This paper attempts to exam risk disclosure and risk management of global listed banks before, during, and after

global financial crisis.

### *1.2 Research Objective*

Based on the motivation mentioned above, this paper has their research objectives as follows:

- 1) Risk disclosure index is composed of comprehensive risk measures including VaR, financial instrument, and credit risk in bank.
- 2) Risk management index is consisted in the number of internal risk control including corporate governance in bank.
- 3) The joint impacts of risk disclosure and internal risk management on bank VaR is empirically investigated under consideration of potential endogeneity from risk management decision on risk disclosure and risk control.

### *1.3 Major Contribution*

- 1) Different from Pérignon and Smith (2010), risk disclosure index would cover not

only VaR disclosure but also financial instrument and credit risk in bank. We also verify the accuracy of the disclosed VaR figures reported by bank. Regardless of how much information banks provide about their VaR, disclosure is only useful if the VaR numbers themselves are accurate while VaR is “related to actual performance” (Greenspan, 1996). Following Perignon and Smith (2013), the backtesting test is applied to check the number of VaR exceptions disclosed by banks, which corresponding to its expected value which is 2.5 per year with a 1-day/99% VaR.

- 2) Based on the risk management index constructed by Ellul and Yerramilli (2013) for US banking holding company, we would apply this index to evaluate the validation in the international public-listed banks.
- 3) Different from Ellul and Yerramilli (2013) focusing on US study, this paper presents the international evidence on the joint impacts of risk disclosure and internal risk management on bank risk using bank’s VaR as downside risk measure.

## **2. Related Literature**

### *2.1 Risk Disclosure*

In the US, market risk disclosures are required mandatory for all public filers that make material use of derivatives (not just banks) under FRR 48 published by the US Securities and Exchange Commission (1997). Moreover, Hirtle (2003) shows that US banks' quarterly market risk charges contain valuable information about future risk exposures (see also Liu et al., 2004; Bali et al., 2007; Taylor, 2007; Alexander and Sheedy, 2008). Barth et al. (2012) focus on credit risk, and provide evidence that disclosures of retained interests are positively associated with banks' credit risk as measured by their credit ratings and bond spreads. However, Linsmeier and Pearson (1997) indicate that VaR disclosure is, along with tabular presentation and sensitivity analysis, one of the three reporting methods described in FRR 48. Well-known consequence of this multi-format disclosure environment is that VaR public disclosures are not mandatory for all 10-K filings as long while an alternative quantitative disclosure format is used.

## *2.2 Risk Management and Corporate Governance*

For risks to be successfully managed, they must first be identified and

measured. As highlighted by Stein (2002), the organizational structure of the risk management function seems to be crucial in determining how effectively qualitative and quantitative information on risk is shared between top managers and the individual business segments. Earlier literature on risk management most focused on single types of risk while neglecting the interdependence to other risks (Miller, 1992). A strong risk management function should be essential to correctly identify risks and prevent such excessive risk-taking (Kashyap, Rajan, and Stein, 2008; Stulz, 2008), which cannot be controlled entirely by regulatory supervision or external market discipline. Some other aspects of corporate governance in banks, such as board characteristics and CEO (Chief Executive Officer) pay and ownership, have been addressed in a few recent academic studies (e.g., Beltratti and Stulz, 2013; Erkens et al., 2010; Fahlenbrach and Stulz, 2011; Minton et al., 2010).

However, the literature on corporate governance and the valuation effect of corporate governance in financial firms is still very limited. Some papers contribute to the large literature that examines risk-taking by banks, such as Keeley (1990), Demsetz and Strahan (1997), Demsetz, Saidenberg, and Strahan (1997), Hellmann, Murdock, and Stiglitz (2000), Demirgüç-Kunt and Detragiache (2002), and Laeven and Levine (2009), by examining how the strength and independence of the risk management function

affects risk-taking. Finally, some papers are also related to the small, but growing literature on the corporate governance of financial institutions, which examines the impact of board characteristics and ownership structure on bank performance and risk-taking (e.g., see Beltratti and Stulz, 2009; Erkens, Hung, and Matos, 2012; Minton, Taillard, and Williamson, 2010).

Chief Risk Officer (CRO) and risk governance in the banking industry has been more generally highlighted in the newspapers, in various reports (Brancato et al., 2006), as well as in practitioner-oriented studies (Banham, 2000), unfortunately it has been largely neglected in the academic literature so far. In recent, Ellul and Yerramilli (2013) investigate whether a strong and independent risk management is significantly related to bank risk taking and performance during the credit crisis in a sample of 74 large US bank holding companies. They construct a Risk Management Index (RMI) which is based on five variables related to the strength of a bank's risk management, including a dummy variable whether the bank's CRO is a member of the executive board and other proxy measures for the CRO's power within the bank's management board.

Regarding the risk governance, Fama and Jensen (1983) and Jensen (1993) argue that agency costs in large organizations can be reduced by separating decision



management from decision control, and that the board of directors is only an effective device for decision control if it limits the decision discretion of top managers. However, the majority of empirical studies find no significant difference in valuation between firms with separated and firms with combined CEO/chairman positions (e.g., Brickley et al., 1997; Dahya and Travlos, 2000; Schmid and Zimmermann, 2008). Besides, Brickley et al. (1997) conclude that the costs associated with a breakup of a combined position are larger than the benefits for the majority of firms.

### 2.3 *Value-at Risk (VaR)*

The recent worldwide financial crisis has dramatically revealed that risk management pursued by financial institutions is far from optimal. This paper proposes to illustrate an economic evaluation of the impact of model uncertainty on VaR estimates based on a back-testing framework. The VaR are used in asset management policies as well as micro-prudential regulations in both Banking (Basel II) and Insurance (Solvency II). This extreme risk measure serves to fix the required capital (Pillar I of Basel II regulation) and to monitor the risk by means of internal risk models (Pillar II of Basel II regulation). Risk estimates are thus used to determine capital

requirements and associated capital costs of financial institutions, depending in part on the ex post quality of the recent VaR forecasts.

VaR methods in this study are selected with current practice on commercial banks. In recent international survey of VaR usage, Pérignon and Smith (2007) show that Historical Simulation (HS) is at the heart of most VaR models currently in use at commercial banks. They find that 73% of the firms that disclose their VaR methodology in their 2005 annual reports use HS or related techniques. HS is a basic and non-parametric technique that forecasts future potential price changes using actual shocks on state variables that occurred in the past (Christoffersen, 2004; Pritsker, 2006; Campbell, 2006; Jorion, 2006).

Our VaR approach is based on the GARCH model, showing the desirable feature of removing clusters in the VaR exceptions. We rely on the simplest possible GARCH specification, which is a GARCH (1,1) model with a basic mean equation:

$$R_t = \alpha + \varepsilon_t$$

$$\sigma_t^2 = \beta_0 + \beta_1 \varepsilon_t^2 + \beta_2 \sigma_{t-1}^2$$

$$VaR_t^{GARCH} = -(\hat{R}_t - 2.33 \times \hat{\sigma}_t)$$

VaR estimation has been fully discussed in the literature (see Gibson et al., 1999;

Talay and Zheng, 2002). Particularly, Pritsker (1997) is one of the first to discuss the estimation risk for VaR in the identically and independently distributed return setting which has the same set with the Expected Shortfall proposed by Inui and Kijima (2005). Later, Lönnbark (2010) quantifies the uncertainty due to the estimation by forecasting multiple period VaR. Actually, banks might be inclined to underestimate their VaR in order to reduce their market risk charge (Lucas, 2001) or to decrease the quality of its risk management system (Danielsson et al., 2002). Conversely, in their theoretical analysis of VaR-based capital requirements, Cuoco and Liu (2006) conclude that VaR-based capital requirements can be very effective in inducing truthful revelation of market risk. While many (conflicting) theoretical models of the accuracy of VaR are available in the literature, little is known on the accuracy of disclosed VaRs. We intend here to contribute to fill this gap.

### **3. Data and Method**

#### *3.1 Data Sources*

The primary data source on sample bank in this paper is from *Mergent Online*

database ([www.mergentonline.com](http://www.mergentonline.com)) which covers broad-defined financial information on banks worldwide. Banks in our sample would be selected both because of the availability of balance sheet and income statement data in Bankscope, as well as the availability of stock price data from *Datastream* database. Moreover, the number of board of directors, independent directors, derivatives used for both trading and hedging, large-scale M&A activity, and corporate governance would be hand-collected from the annual report or webpage. Data on bank corporate governance would include CEO compensation characteristics (CEO Delta and CEO Vega), management turnover (Change in CEO), CEO entrenchment (CEO Tenure). Appendix A demonstrates whole sample of public-listed banks for empirical study.

### *3.2 Empirical Specification*

We would like to examine whether bank that had strong and independent risk disclosure and management functions in place had lower VaR (downside or tail risk), after controlling for the underlying risk of the bank's business activities. Accordingly, we estimate the following panel regressions over 2007 to 2011

periods.

$$|VaR|_{i,j,t} = \alpha + \beta \times RDI_{i,j,t} + \gamma \times RMI_{i,j,t} + \sum \delta \times Z_{i,j,t} + \theta \times Year_t + \mu \times Country_j + \varepsilon_{i,j,t}$$

In the above equation,  $i$  denotes the bank,  $j$  stands for country, and  $t$  denotes the year. Our main independent variable of interest focuses on the bank's both RDI (risk disclosure index) and RMI (risk management index), defined the next two sections. We also control for bank characteristics and year dummies are included in all specifications. The standard errors are robust to heteroskedasticity and clustered at the bank level. VaR is the independent variable defined as follows: VaR ( $\rho$ ) is the empirical  $\rho$ -percentile of the trading revenue distribution. For instance, with a sample of 100 observations, the VaR(1%) is given by the 5<sup>th</sup> smallest trading revenue. Based on Jorion (2006), VaR is defined as the  $p^{th}$  lower tail percentile of trading revenue over the next  $h$  period  $R_{t,t+h}$ , formally  $p = Pr(R_{t,t+h} < VaR_{t+h|t})$ , and has become a standard market risk measure.

We control for important bank characteristics that may affect risk, including financial characteristics such as size, profitability, balance sheet composition, quality of loan portfolio, and reliance on off-balance-sheet activity. To account for a possible nonlinear relationship between risk and size, we either explicitly control for both

Size<sub>*t-1*</sub> and Size<sub>*t-1*</sub><sup>2</sup> or include size-decile fixed effects. We attempt to mitigate any omitted variable bias by directly controlling for other time-varying bank characteristics that are likely to be related to bank risk. These include the bank's reliance on derivatives for hedging (Deriv. Hedging/Assets) and trading (Deriv. Trading/Assets) purposes, institutional characteristics such as Inst. Ownership and quality of governance (G-Index), CEO compensation characteristics (CEO Delta and CEO Vega), management turnover (Change in CEO), CEO entrenchment (CEO Tenure), and large-scale M&A activity (Large M&A).

Finally, Laeven and Levine (2007) and Schmid and Walter (2009) show that a functional diversification of financial institutions is negatively associated with firm value. As diversification may be related to both firm value and corporate governance, we additionally control for the banks' diversification activities. Our measure of the diversity of a bank's business is based on Laeven and Levine (2007) and attempts to measure where a bank lies along the spectrum from pure commercial banking (i.e., lending) to specialized investment banking (i.e., fee/trading-based activities). The variable Income diversity is defined as follows:

$$\text{Income diversity} = 1 - \left| \frac{\text{Net interest income} - \text{other operating income}}{\text{Total operating income}} \right|.$$

Net interest income is interest income minus interest expense. Other operating income includes net fee income, net commission income, and net trading income. Total operating income includes net interest income, net fee income, net trading income, and net commission income. A specialized loan-making bank will have a larger ratio of net interest income to total operating income, while a specialized investment bank is expected to have a larger share of other operating income (fees, commissions, and trading income). Income diversity takes on values between zero and one with higher values indicating greater diversification.

### *3.3 Risk Disclosure Index*

Our risk disclosure index mainly include six components of VaR and three exposures self-reported in bank's annual report: (1) VaR characteristics (holding period and confidence level), (2) summary VaR statistics (high, low, average, year-end VaR, VaR by risk category, and diversification effect), (3) summary information about the previous year's VaR, (4) histogram or plot of daily VaRs, (5) definition of trading revenues (hypothetical revenues and non-inclusion of trading fees) and histogram or

plot of daily trading revenues, (6) backtesting (number of exceptions, i.e., days when actual trading loss is greater than VaR, and explanations of these exceptions), (7) Credit risk exposures, (8) foreign exchange rate exposure, and (9) interest rate exposures.

### *3.4 Risk Management Index*

Our risk management index include the following nine variables: (1) CRO Present: A dummy variable that identifies whether the company's has a designated Chief Risk Officer (or an equivalent designation, such as Chief Credit Officer, Chief Lending Officer, or Chief Compliance Officer) with an enterprise-wide remit. (2) CRO Executive: A dummy variable that identifies whether the CRO (or the official with an equivalent designation) is an executive officer. (3) CRO Top5: A dummy variable that identifies whether the CRO (or the official with an equivalent designation) is among the five highest-paid executives. (4) CRO Centrality: Ratio of the CRO's total compensation, excluding stock and option awards, to the CEO's total compensation. When the company's has a CRO who does not figure among the five highest-paid executives, we calculate CRO



Centrality based on the compensation of the fifth highest-paid executive, and subtract a percentage point from the resultant ratio. In the case in which company's do not report having a CRO, we define CRO Centrality based on the total compensation of the Chief Financial Officer if available; if CFO compensation is not available, then we compute CRO Centrality based on the compensation of the fifth highest-paid executive, and subtract a percentage point from the resulting ratio. (5) Risk Committee Experience: A dummy variable that takes the value of one if at least one of the independent directors serving on the board's risk committee has prior banking and financial industry experience, and zero otherwise. (6) Freq. Meetings of Risk Committee: The number of times the company's board risk committee met during the year. (7) Active Risk Committee: A dummy variable that takes the value of one if the frequency with which the company's board risk committee met during the year is higher than the average frequency across all companies during the year, and zero otherwise. (8) Quality of Oversight: Equals the simple average of the dummy variables Risk Committee Experience and Active Risk Committee. (9) Reports to Board: A dummy variable that identifies whether the key management-level risk committee (usually called the "Asset and Liability Committee") reports directly to the company's board of directors, instead of to the CEO. Therefore, RMI could be computed as the first principal component of

the following six risk management variables: CRO Present, CRO Executive, CRO Top5, CRO Centrality, Risk Committee Experience, and Active Risk Committee. Alternatively, robust RMI also could be calculated as the first principal component of the following seven risk management variables: CRO Present, CRO Executive, CRO Top5, CRO Centrality, Risk Committee Experience, Reports to Board, and Active Risk Committee. Table 2 presents the detail definition on these variables.

#### **4. Empirical Results**

As Table 3 shown, the mean of VaR estimates for confidence level of 90%, 95%, and 99%, are -11.026, -14.114, and -19.917, respectively. Specifically, mean Value of RDI and RMI are 34.932 and 49.988. Table 4 shows the correlation coefficient for the series of variable used in our empirical specification. The negative correlation coefficient of RDI (RMI) is -0.0716 (-0.0744) and statistically significant at 5%.

#### *4.1 The Impact of Risk Disclosure on VaR*

Table 5 provides stronger evidences that higher quality of risk disclosure in VaR leads to the decreases in Bank's VaRs with respect to 90%, 95%, and 99%. In addition, there is evidence that larger board size lead to increases in bank's downside risk, but marginally decreasing with board size. A concern with our evidence is that some theories predict that bank risk could fall as board size increases while the number of board is high enough. Besides, we find significant impacts of total executive compensations and institutional holdings on bank's VaR.

In summary, banks with higher quality of risk disclosure and independent board ratio significantly decline their VaRs. However, larger board size economically enhance bank VaR, while executive compensations and institutional holdings show significant effects on reducing bank VaR. The result is very similar to the finding from 90% VaR. Some of control variables are also robust to show that bank with higher income diversification in a country with higher capital ratio of banking sector would significantly reduce bank VaR.

#### *4.2 The Impact of Risk Management on VaR*

Table 6 reports the estimates from regressions in which the dependent variable is used alternatively for VaR of 90%, 95%, and 99%, namely. To capture bank's downside risk, we control for bank level of capital ratio, cost ratio, equity/total assets, ROE, and country level of GDP growth rate and strength of credit, and year and country fixed effects in all specifications. The t-statistics are based on robust standard errors clustered by bank. In the model (1) of Table 6, using 90% VaR, we find that the RMI is negatively related to the VaR. This is consistent with better internal risk control to mitigate bank downside risks.

However, we also recognize that fewer forced CEO departures can be consistent with stonger monitoring. In model (2), the coefficient on the total compensations is significantly positive, indicating that as the fraction of executive compensations rises, risk-taking incentives turnover to bank's downside risks also rises. The similar finding also shows the impact of board sizes on bank VaR in model (3), indicating larger boards are positively associated with the higher VaR, as a result of possible agency problem by insiders. Surprisingly, in model (4) our primary findings for boards with a greater proportion of independent directors

could mitigate the bank VaR. Conversely, mode (5) shows the positive effect of institutional holdings on increasing bank downside risk.

Overall, Banks with higher quality of risk management and independent board ratio significantly lower their VaRs. However, larger board size, higher executive compensations and institutional holdings economically enhance bank VaR.

#### *4.3 Joint Impacts of Risk Disclosure and Risk Management on VaR*

We further investigate whether there is a complementary effect of risk management and risk disclosure in mitigating bank's downside risk. Table 7 reports the strong and consistent evidence that both internal risk control and risk disclosure significantly decrease bank's VaR of 90%, 95%, and 99%, respectively. All the coefficients of total compensations and institutional holdings are significantly negatively in all specifications, implying higher total compensations and higher institutional holdings motivate bank's VaR.

Hence, banks with higher quality of both risk disclosure and risk management significantly reduce VaR estimates in terms of 90%, 95%, and 99%, respectively. Larger board compensations and higher institutional holdings would inversely increase bank

VaR estimates.

## **5 . Conclusions**

Using hand-collected data on top 500 banks around the world over 2007 to 2011 with global financial crisis and ongoing Eurozone sovereign debt crisis, this paper empirically assesses bank level estimates of Value-at-Risk (VaR) and investigates how VaR risk disclosure, internal risk management, and corporate governance shape bank VaR. We find that the trend of either risk disclosure index or risk management index has been increasing over 2007 to 2011, implicating that global banks have devoted to not only increasing their risk information disclosure in their annual report and but also enhancing internal risk control to avoid the adverse risk effect.

Our empirical evidences also indicate that banks with higher quality of both risk disclosure and risk management significantly reduce 90%, 95%, and 99% VaR estimates, respectively. Surprisingly, when independent board ratio to reach a certain level, the effect will gradually slow down to reduce VaR. larger board size would be incremental to bank VaR estimates, implying the possible agency

problem. Specifically, banks with higher Tier1 Capital Ratio in a country with stringent strength of credit significantly reduce bank VaR. However, higher executive compensations of bank and institutional holdings conditionally enhance bank VaR.

## **6. Cohort Study**

In this study, the sample period is 2007-2011, during this five-year national accounting system affect the sample is a very interesting question, if we can make up for this shortcoming will allow more to enhance the study of this article on the practice of contribution.

In addition, the results presented in this study were not associated with the results of previous literature to compare differences in comparing the results presented in the following variables will be displayed after the increase, the conclusions of these differences may have on the practice further assistance.

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Table 1

## Variable Definition of Risk Disclosure

Category	Variable	Definition
VaR	VaR Characteristics.	1) Score of 1 if Holding Period (e.g. 1 day, 1 month). 2) Score of 1 if Confidence Level (e.g. 99%, 95%).
	Summary VaR Statistics.	1) Score of 1 if High, Low, or Average VaR. 2) Score of 1 if Year-End VaR. 3) Score of 1 if VaR by Risk Category (e.g. Currency, Fixed Income, Equity). 4) Score of 1 if Diversification Effect is accounted for.
	Intertemporal Comparison.	1) Score of 1 if Summary Information about the Previous Year VaR.
	Daily VaR Figures.	1) Score of 1 if Histogram of Daily VaRs, or score of 2 if Plot of Daily VaRs.
	Trading Revenues.	1) Score of 1 if Hypothetical Revenues. 2) Score of 1 if Revenues without Trading Fees. 3) Score of 1 if Histogram of Daily Revenues, or score of 2 if Plot of Daily Revenues.
	Backtesting.	1) Score of 1 if Number of Exceptions, or score of 2 if Zero Exceptions. 2) Score of 1 if Explanation of Exceptions.
	Market Risk	Interest rate risk
Equity price risk		Score of 1 if equity price risk indicated.
Foreign exchange risk		Score of 1 if foreign exchange risk indicated.
Commodity price risk		Score of 1 if commodity price risk indicated.
Money and capital market risk		Score of 1 if money and capital market risk indicated.
Equity instruments risk		Score of 1 if equity instruments risk indicated.
Currency risk		Score of 1 if currency risk indicated.
Credit Risk	Effect of netting	Score of 1 if effect of netting indicated.
	Credit risk	Score of 1 if credit risk indicated.
	Credits pre ad	Score of 1 if credits pre ad indicated.
	Credit specific risk	Score of 1 if credit specific risk indicated.
	Credit derivatives risk	Score of 1 if credit derivatives risk indicated.
Derivatives Risk	Structured derivatives	Score of 1 if structured derivatives indicated.
	Financial assets risk	Score of 1 if financial assets risk indicated.
	Fixed income	Score of 1 if fixed income indicated.
	Covariance	Score of 1 if covariance indicated.
	Variable Income	Score of 1 if variable Income indicated.
	Inflation risk	Score of 1 if inflation risk indicated.
	Vega	Score of 1 if Vega indicated.
	correlation	Score of 1 if correlation indicated.
	Volatility risk	Score of 1 if volatility risk indicated.
	Stock market risk	Score of 1 if stock market risk indicated.
	Debt specific risk	Score of 1 if debt specific risk indicated.
	Option risk	Score of 1 if option risk indicated.
	Precious Metals	Score of 1 if precious metals indicated.
	Compensation effect	Score of 1 if compensation effect indicated.
	CDO	Score of 1 if CDO indicated.

Table 2

## Variable Definition of Internal Risk management

Variable	Definition
CRO in executive board	CRO in executive board is a dummy variable which is equal to one, if the bank's CRO is a member of the executive board.
Risk committee	Risk committee is a dummy variable whether the bank has a risk committee.
% directors w. finance background	% directors w. finance background is the percentage of directors with experience (present or past) as an executive officer in a bank or insurance company.
Number of meetings of the risk committee	Number of meetings of the risk committee is the number of times the risk committee of the respective banks met in 2006.
% of indep. directors in risk committee	% of independent directors in risk committee is the percentage of independent directors in the risk committee.
Nr. of directors in risk committee	Nr. of directors in risk committee is the number of independent directors in the risk committee.
CRO reports to board	CRO reports to board and CRO reports to CEO, are dummy variables which are equal to one if the CRO directly reports to the board of directors or to the CEO, respectively.
CRO reports to CEO	
CRO Present	A dummy variable that identifies whether the company's has a designated Chief Risk Officer (or an equivalent designation, such as Chief Credit Officer, Chief Lending Officer, or Chief Compliance Officer) with an enterprise-wide remit.
CRO Executive	A dummy variable that identifies whether the CRO (or the official with an equivalent designation) is an executive officer.
Risk Committee Experience	A dummy variable that takes the value of one if at least one of the independent directors serving on the board's risk committee has prior banking and financial industry experience, and zero otherwise.
Quality of Oversight	Equals the simple average of the dummy variables Risk Committee Experience and Active Risk Committee.
RMI Index	Computed as the first principal component of the following six risk management variables: CRO Present, CRO Executive, CRO Top5, CRO Centrality, Risk Committee Experience, and Active Risk Committee.
Alternative RMI	Computed as the first principal component of the following seven risk management variables: CRO Present, CRO Executive, CRO Top5, CRO Centrality, Risk Committee Experience, Reports to Board, and Active Risk Committee.

Table 3  
Descriptive Statistics

Variables	Observations	Mean	SD	Min.	Max.
<b>Market Risk measures</b>					
VaR90%	1,856	-11.026	11.334	-192.265	-0.120
VaR95%	1,856	-14.114	14.538	-246.817	-0.147
VaR99%	1,856	-19.917	20.558	-349.327	-0.198
<b>Risk Disclosures and management</b>					
Risk Disclosure Index (RDI)	1,856	34.932	41.809	0	100.209
Risk Management Index(RMI)	1,856	49.988	32.533	20	154.097
<b>Corporate Governance</b>					
Institutional Holdings	1,856	0.201	0.266	0	1
Independent Board Ratio (%)	1,856	0.194	0.242	0	1
Independent Board Ratio <sup>2</sup> (%)	1,856	0.096	0.191	0	1
Board Size	1,856	11.315	3.843	0	30
Board Size <sup>2</sup>	1,856	142.795	97.966	0	900
Ln (Total Board Compensations)	1,856	12.623	9.072	0	29.586
<b>Bank Financial Characteristics</b>					
Income Diversification	1,856	0.335	0.188	0	0.998
Ln (Total Assets)	1,856	24.091	1.387	20.002	28.678
Capital Ratio (%)	1,856	8.114	3.868	-12.080	38.030
Capital Ratio <sup>2</sup> (%)	1,856	80.793	84.690	0.003	1446.281
ROA	1,856	0.935	1.137	-13.239	4.579
Cost Ratio (%)	1,856	56.420	23.088	13.544	503.124
<b>Macroeconomic and Banking Characteristics</b>					
GDP Growth Rate	1,856	0.641	11.719	-0.144	230.676
Banking Industry Capital Ratio	1,856	7.439	2.979	-8.500	17.700
Strength of Credit	1,856	6.192	2.014	2	10

Table 4  
Correlation Matrix of Variables

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	(20)
(1) VaR90%	1																			
(2) VaR95%	1.0000*	1																		
(3) VaR99%	1.0000*	1.0000*	1																	
(4) Risk Disclosure Index (RDI)	-0.0716*	-0.0716*	-0.0717*	1																
(5) Risk Management Index(RMI)	-0.0744*	-0.0744*	-0.0743*	0.1531*	1															
(6) Institutional Holdings	-0.0679*	-0.0679*	-0.0678*	0.0990*	0.0596*	1														
(7) Independent Board Ratio	-0.0228	-0.0227	-0.0227	0.1751*	0.1571*	-0.0301	1													
(8) Independent Board Ratio <sup>2</sup>	0.0154	0.0154	0.0154	0.1373*	0.1112*	-0.0609*	0.9293*	1												
(9) Board Size	-0.0092	-0.0092	-0.0091	0.2180*	0.1738*	-0.012	0.1376*	0.0961*	1											
(10) Board Size <sup>2</sup>	-0.0227	-0.0227	-0.0226	0.2334*	0.1673*	-0.0182	0.1216*	0.0814*	0.9550*	1										
(11) Ln (Total Board Compensations)	-0.0315	-0.0313	-0.031	0.0497*	0.1133*	0.1737*	0.1159*	0.0013	-0.0757*	-0.1260*	1									
(12) Income Diversification	-0.0052	-0.0052	-0.0051	0.1814*	0.1172*	0.1754*	0.1599*	0.1518*	-0.0013	-0.0111	0.2258*	1								
(13) Ln (Total Assets)	0.0075	0.0073	0.0072	0.3154*	0.0919*	-0.1177*	0.1818*	0.2074*	0.4466*	0.4707*	-0.0138	-0.3035*	1							
(14) Capital Ratio	0.0448	0.0449	0.0451	0.0209	0.0117	0.1369*	0.0816*	0.0179	-0.1319*	-0.1352*	0.1964*	0.2879*	-0.3745*	1						
(15) Capital Ratio <sup>2</sup>	-0.0037	-0.0036	-0.0034	0.0176	0.0062	0.1050*	0.0561*	0.0074	-0.1127*	-0.1103*	0.1639*	0.2356*	-0.3395*	0.9288*	1					
(16) ROA	0.2085*	0.2085*	0.2086*	0.0072	0.0223	0.1061*	0.0804*	0.0457*	-0.1215*	-0.1473*	0.2414*	0.2407*	-0.1905*	0.5335*	0.4007*	1				
(17) Cost Ratio	-0.0599*	-0.0599*	-0.0599*	-0.0113	-0.0483*	-0.0311	-0.1541*	-0.0919*	0.0873*	0.1117*	-0.0920*	-0.1405*	0.0325	-0.3042*	-0.2079*	-0.4767*	1			
(18) GDP Growth Rate	0.0391	0.0391	0.039	0.0458*	0.0599*	0.0786*	-0.0249	-0.0223	-0.0156	-0.0205	0.0304	0.0249	-0.0534*	-0.0305	-0.0288	0.0111	-0.0178	1		
(19) Banking Industry Capital Ratio	-0.0459*	-0.0457*	-0.0454	0.1381*	0.0898*	0.1761*	0.0727*	-0.0044	-0.1043*	-0.1025*	0.1264*	0.2938*	-0.2205*	0.4784*	0.3765*	0.3869*	-0.2548*	-0.1063*	1	
(20) Strength of Credit	0.0449	0.0449	0.0449	-0.1021*	-0.0355	-0.0212	0.0453	0.1167*	-0.0176	-0.0333	0.0691*	-0.0897*	0.0799*	-0.3357*	-0.2941*	-0.2098*	0.1497*	-0.0067	-0.3686*	1



Table 5

## The Impacts of Risk Disclosure on Bank VaR with respect to confident intervals of 90%, 95%, and 99%

Variables	VaR90%					VaR95%					VaR99%				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Constant	-27.017*** (-9.068)	-25.836*** (-8.667)	-24.331*** (-7.959)	-27.273*** (-8.503)	-25.707*** (-7.869)	-34.602*** (-9.053)	-33.086*** (-8.656)	-31.168*** (-7.953)	-34.909*** (-8.490)	-32.915*** (-7.859)	-48.856*** (-9.037)	-46.709*** (-8.645)	-44.018*** (-7.948)	-49.259*** (-8.477)	-46.460*** (-7.849)
Risk Disclosure Index (RDI)	-0.016*** (-4.770)	-0.016*** (-4.734)	-0.014*** (-4.063)	-0.013*** (-3.763)	-0.012*** (-3.542)	-0.020*** (-4.750)	-0.020*** (-4.725)	-0.018*** (-4.073)	-0.017*** (-3.774)	-0.016*** (-3.552)	-0.028*** (-4.733)	-0.028*** (-4.716)	-0.025*** (-4.082)	-0.023*** (-3.784)	-0.022*** (-3.564)
Institutional Holdings		-1.386*** (-2.873)	-1.443*** (-2.910)	-1.393*** (-2.829)	-1.315*** (-2.658)		-1.784*** (-2.884)	-1.858*** (-2.922)	-1.793*** (-2.838)	-1.695*** (-2.669)		-2.532*** (-2.896)	-2.639*** (-2.934)	-2.544*** (-2.849)	-2.407*** (-2.682)
Independent Board Ratio			-8.559*** (-6.548)	-8.812*** (-6.633)	-7.859*** (-5.707)			-10.959*** (-6.540)	-11.285*** (-6.626)	-10.074*** (-5.706)			-15.468*** (-6.532)	-15.934*** (-6.620)	-14.237*** (-5.705)
Independent Board Ratio <sup>2</sup>			9.616*** (6.208)	9.788*** (6.219)	8.679*** (5.358)			12.298*** (6.196)	12.524*** (6.210)	11.115*** (5.354)			17.338*** (6.183)	17.667*** (6.200)	15.694*** (5.350)
Board				0.402*** (3.359)	0.449*** (3.703)				0.514*** (3.357)	0.575*** (3.697)				0.726*** (3.355)	0.811*** (3.691)
Board <sup>2</sup>				-0.017*** (-3.508)	-0.019*** (-3.876)				-0.022*** (-3.500)	-0.024*** (-3.863)				-0.031*** (-3.491)	-0.034*** (-3.849)
Ln (Total Compensation)					-0.037** (-2.535)					-0.047** (-2.512)					-0.066** (-2.488)
Income Diversification	-2.733*** (-4.055)	-2.441*** (-3.572)	-2.431*** (-3.427)	-2.544*** (-3.581)	-2.308*** (-3.218)	-3.508*** (-4.054)	-3.134*** (-3.575)	-3.114*** (-3.424)	-3.258*** (-3.577)	-2.960*** (-3.219)	-4.963*** (-4.053)	-4.437*** (-3.577)	-4.396*** (-3.421)	-4.599*** (-3.573)	-4.184*** (-3.220)
Ln (Total Assets)	0.558*** (5.312)	0.527*** (5.027)	0.500*** (4.614)	0.534*** (4.646)	0.464*** (3.914)	0.712*** (5.283)	0.673*** (5.004)	0.640*** (4.605)	0.682*** (4.629)	0.594*** (3.900)	1.002*** (5.254)	0.946*** (4.980)	0.903*** (4.595)	0.961*** (4.610)	0.836*** (3.885)
Capital Ratio	0.575*** (4.821)	0.537*** (4.429)	0.582*** (4.735)	0.599*** (4.848)	0.596*** (4.813)	0.740*** (4.833)	0.691*** (4.443)	0.745*** (4.726)	0.765*** (4.837)	0.762*** (4.802)	1.048*** (4.842)	0.979*** (4.456)	1.050*** (4.718)	1.078*** (4.825)	1.075*** (4.791)
Capital Ratio <sup>2</sup>	-0.024*** (-4.732)	-0.023*** (-4.365)	-0.025*** (-4.740)	-0.024*** (-4.660)	-0.025*** (-4.669)	-0.031*** (-4.735)	-0.029*** (-4.374)	-0.032*** (-4.729)	-0.031*** (-4.648)	-0.031*** (-4.658)	-0.044*** (-4.736)	-0.041*** (-4.382)	-0.045*** (-4.719)	-0.044*** (-4.636)	-0.044*** (-4.646)
ROA	1.597*** (8.291)	1.572*** (7.965)	1.585*** (7.955)	1.527*** (7.613)	1.530*** (7.626)	2.044*** (8.273)	2.013*** (7.956)	2.032*** (7.958)	1.959*** (7.620)	1.963*** (7.632)	2.884*** (8.256)	2.842*** (7.947)	2.871*** (7.961)	2.770*** (7.628)	2.774*** (7.637)
Cost Ratio	0.026*** (3.195)	0.025*** (3.035)	0.022*** (2.625)	0.022*** (2.705)	0.020** (2.464)	0.034*** (3.203)	0.033*** (3.042)	0.028*** (2.615)	0.028*** (2.695)	0.026** (2.456)	0.048*** (3.212)	0.046*** (3.048)	0.039*** (2.605)	0.040*** (2.685)	0.037** (2.448)
GDP Growth Rate	0.031*** (10.230)	0.033*** (7.922)	0.032*** (6.835)	0.031*** (6.768)	0.031*** (6.860)	0.039*** (10.248)	0.042*** (7.947)	0.041*** (6.859)	0.040*** (6.791)	0.040*** (6.883)	0.056*** (10.267)	0.060*** (7.973)	0.058*** (6.884)	0.056*** (6.815)	0.057*** (6.907)
Banking Capital Ratio	-0.314*** (-6.066)	-0.304*** (-5.859)	-0.287*** (-5.386)	-0.295*** (-5.526)	-0.273*** (-5.075)	-0.400*** (-6.001)	-0.387*** (-5.803)	-0.365*** (-5.340)	-0.375*** (-5.483)	-0.347*** (-5.034)	-0.561*** (-5.936)	-0.542*** (-5.746)	-0.510*** (-5.291)	-0.525*** (-5.438)	-0.486*** (-4.992)
Strength of Credit	0.343*** (4.918)	0.330*** (4.717)	0.288*** (3.935)	0.282*** (3.850)	0.301*** (4.070)	0.445*** (4.975)	0.427*** (4.762)	0.372*** (3.970)	0.365*** (3.882)	0.388*** (4.102)	0.638*** (5.033)	0.610*** (4.807)	0.532*** (4.008)	0.521*** (3.917)	0.554*** (4.136)
Observations	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856
Number of Bank	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384
$\chi^2$	393.4***	271.1***	304.2***	321.3***	327.3***	393.9***	271.1***	303.9***	320.9***	326.7***	394.4***	271.1***	303.5***	320.4***	326.1***

Note: \*, \*\*, \*\*\* are denoted statistically significant at 10%, 5%, and 1%.

Table 6

## The Impacts of Risk Management on Bank VaR with respect to confident intervals of 90%, 95%, and 99%

Variables	VaR90					VaR95					VaR99				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Constant	-21.864*** (-7.768)	-21.265*** (-7.670)	-20.518*** (-7.214)	-23.540*** (-7.695)	-22.126*** (-7.112)	-28.012*** (-7.758)	-27.221*** (-7.657)	-26.272*** (-7.205)	-30.127*** (-7.682)	-28.326*** (-7.101)	-39.566*** (-7.747)	-38.417*** (-7.644)	-37.088*** (-7.197)	-42.507*** (-7.669)	-39.980*** (-7.091)
Risk Management Index(RMI)	-0.123*** (-4.049)	-0.127*** (-4.128)	-0.125*** (-4.059)	-0.124*** (-3.984)	-0.119*** (-3.825)	-0.157*** (-4.035)	-0.163*** (-4.122)	-0.160*** (-4.052)	-0.159*** (-3.979)	-0.153*** (-3.821)	-0.222*** (-4.020)	-0.230*** (-4.114)	-0.226*** (-4.044)	-0.225*** (-3.973)	-0.216*** (-3.816)
Institutional Holdings		-1.395*** (-2.846)	-1.443*** (-2.871)	-1.395*** (-2.795)	-1.321*** (-2.638)		-1.796*** (-2.858)	-1.857*** (-2.882)	-1.794*** (-2.803)	-1.701*** (-2.648)		-2.550*** (-2.870)	-2.637*** (-2.894)	-2.544*** (-2.812)	-2.414*** (-2.658)
Independent Board Ratio			-8.385*** (-6.452)	-8.649*** (-6.544)	-7.747*** (-5.667)			-10.738*** (-6.446)	-11.080*** (-6.540)	-9.931*** (-5.667)			-15.159*** (-6.439)	-15.648*** (-6.536)	-14.037*** (-5.667)
Independent Board Ratio <sup>2</sup>			9.515*** (6.475)	9.736*** (6.487)	8.707*** (5.623)			12.173*** (6.465)	12.462*** (6.481)	11.153*** (5.621)			17.168*** (6.455)	17.586*** (6.474)	15.751*** (5.619)
Board				0.416*** (3.491)	0.465*** (3.849)				0.533*** (3.495)	0.596*** (3.850)				0.755*** (3.499)	0.843*** (3.852)
Board <sup>2</sup>				-0.017*** (-3.496)	-0.019*** (-3.866)				-0.022*** (-3.495)	-0.025*** (-3.862)				-0.031*** (-3.494)	-0.035*** (-3.859)
Ln (Total Compensation)					-0.037** (-2.512)					-0.047** (-2.493)					-0.066** (-2.473)
Income Diversification	-2.750*** (-4.039)	-2.436*** (-3.536)	-2.485*** (-3.499)	-2.588*** (-3.643)	-2.352*** (-3.283)	-3.536*** (-4.049)	-3.128*** (-3.542)	-3.183*** (-3.497)	-3.314*** (-3.640)	-3.016*** (-3.284)	-5.012*** (-4.060)	-4.431*** (-3.550)	-4.496*** (-3.495)	-4.680*** (-3.637)	-4.264*** (-3.286)
Ln (Total Assets)	0.379*** (3.847)	0.365*** (3.780)	0.368*** (3.698)	0.402*** (3.684)	0.337*** (2.996)	0.485*** (3.833)	0.466*** (3.762)	0.471*** (3.687)	0.513*** (3.667)	0.430*** (2.983)	0.683*** (3.817)	0.656*** (3.744)	0.664*** (3.676)	0.722*** (3.649)	0.605*** (2.969)
Capital Ratio	0.534*** (4.340)	0.521*** (4.219)	0.547*** (4.395)	0.554*** (4.424)	0.557*** (4.436)	0.682*** (4.324)	0.666*** (4.209)	0.699*** (4.380)	0.707*** (4.409)	0.711*** (4.422)	0.961*** (4.307)	0.938*** (4.198)	0.983*** (4.364)	0.995*** (4.393)	1.001*** (4.406)
Capital Ratio <sup>2</sup>	-0.024*** (-4.617)	-0.024*** (-4.510)	-0.024*** (-4.604)	-0.024*** (-4.439)	-0.024*** (-4.486)	-0.031*** (-4.581)	-0.030*** (-4.491)	-0.031*** (-4.585)	-0.030*** (-4.422)	-0.031*** (-4.468)	-0.043*** (-4.545)	-0.043*** (-4.470)	-0.044*** (-4.563)	-0.042*** (-4.402)	-0.043*** (-4.449)
ROA	1.588*** (8.380)	1.556*** (7.981)	1.554*** (7.883)	1.501*** (7.545)	1.503*** (7.556)	2.035*** (8.370)	1.995*** (7.982)	1.993*** (7.889)	1.925*** (7.554)	1.927*** (7.562)	2.875*** (8.359)	2.820*** (7.983)	2.817*** (7.895)	2.722*** (7.562)	2.724*** (7.568)
Cost Ratio	0.020** (2.460)	0.020** (2.404)	0.017** (2.040)	0.017** (2.088)	0.015* (1.852)	0.026** (2.458)	0.026** (2.400)	0.021** (2.030)	0.022** (2.079)	0.019* (1.844)	0.037** (2.457)	0.036** (2.397)	0.030** (2.021)	0.031** (2.069)	0.027* (1.836)
GDP Growth Rate	0.028*** (8.994)	0.031*** (7.378)	0.030*** (6.762)	0.030*** (6.826)	0.030*** (6.950)	0.036*** (9.022)	0.039*** (7.406)	0.039*** (6.782)	0.038*** (6.846)	0.039*** (6.970)	0.051*** (9.049)	0.056*** (7.434)	0.055*** (6.803)	0.054*** (6.867)	0.055*** (6.991)
Banking Capital Ratio	-0.364*** (-7.088)	-0.352*** (-6.805)	-0.320*** (-6.042)	-0.325*** (-6.115)	-0.301*** (-5.598)	-0.463*** (-7.022)	-0.447*** (-6.753)	-0.408*** (-6.000)	-0.414*** (-6.077)	-0.383*** (-5.561)	-0.650*** (-6.955)	-0.628*** (-6.699)	-0.572*** (-5.956)	-0.580*** (-6.036)	-0.537*** (-5.522)
Strength of Credit	0.340*** (4.954)	0.328*** (4.732)	0.287*** (3.957)	0.280*** (3.855)	0.297*** (4.064)	0.441*** (5.001)	0.424*** (4.767)	0.371*** (3.989)	0.361*** (3.884)	0.383*** (4.093)	0.631*** (5.050)	0.604*** (4.805)	0.528*** (4.023)	0.515*** (3.914)	0.546*** (4.124)
Observations	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856
Number of Bank	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384
$\chi^2$	343.8***	263.6***	300.9***	318.3***	325.2***	343.4***	263.2***	300.3***	317.7***	324.4***	343.1***	262.8***	299.7***	317.2***	323.7***

Note: \*, \*\*, \*\*\* are denoted statistically significant at 10%, 5%, and 1%.

Table 7

## The Joint Impacts of Risk Disclosure and Risk Management on Bank VaR with respect to confident intervals of 90%, 95%, and 99%

Variables	VaR90					VaR95					VaR99				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Constant	-26.397*** (-8.844)	-25.675*** (-8.688)	-24.508*** (-8.103)	-27.326*** (-8.542)	-25.875*** (-7.936)	-33.827*** (-8.833)	-32.883*** (-8.678)	-31.404*** (-8.101)	-34.986*** (-8.532)	-33.138*** (-7.929)	-47.794*** (-8.822)	-46.431*** (-8.668)	-44.365*** (-8.098)	-49.381*** (-8.522)	-46.789*** (-7.922)
Risk Disclosure Index (RDI)	-0.015*** (-4.457)	-0.015*** (-4.419)	-0.013*** (-3.839)	-0.012*** (-3.590)	-0.012*** (-3.432)	-0.019*** (-4.440)	-0.019*** (-4.414)	-0.017*** (-3.851)	-0.016*** (-3.601)	-0.015*** (-3.444)	-0.027*** (-4.424)	-0.026*** (-4.409)	-0.024*** (-3.863)	-0.022*** (-3.613)	-0.021*** (-3.456)
Risk Management Index(RMI)	-0.115*** (-3.724)	-0.115*** (-3.764)	-0.114*** (-3.731)	-0.114*** (-3.689)	-0.111*** (-3.579)	-0.147*** (-3.713)	-0.148*** (-3.759)	-0.146*** (-3.724)	-0.146*** (-3.684)	-0.142*** (-3.575)	-0.207*** (-3.701)	-0.209*** (-3.754)	-0.206*** (-3.717)	-0.207*** (-3.679)	-0.200*** (-3.571)
Institutional Holdings		-1.327*** (-2.737)	-1.341*** (-2.724)	-1.301*** (-2.666)	-1.230** (-2.512)		-1.710*** (-2.751)	-1.727*** (-2.736)	-1.674*** (-2.675)	-1.584** (-2.523)		-2.430*** (-2.765)	-2.452*** (-2.750)	-2.375*** (-2.685)	-2.250** (-2.535)
Independent Board Ratio			-7.914*** (-6.127)	-8.240*** (-6.261)	-7.429*** (-5.461)		-10.134*** (-6.121)	-10.553*** (-6.256)	-9.522*** (-5.460)		-14.307*** (-6.114)	-14.901*** (-6.251)	-13.457*** (-5.460)		
Independent Board Ratio <sup>2</sup>			9.062*** (6.093)	9.316*** (6.136)	8.377*** (5.354)		11.591*** (6.082)	11.920*** (6.128)	10.728*** (5.350)		16.345*** (6.072)	16.815*** (6.120)	15.146*** (5.347)		
Board				0.417*** (3.496)	0.458*** (3.789)			0.534*** (3.496)	0.586*** (3.786)				0.755*** (3.496)	0.827*** (3.782)	
Board <sup>2</sup>				-0.017*** (-3.517)	-0.019*** (-3.830)			-0.022*** (-3.512)	-0.024*** (-3.821)				-0.031*** (-3.506)	-0.034*** (-3.812)	
Ln (Total Compensation)				-0.033** (-2.267)				-0.042** (-2.247)						-0.059** (-2.226)	
Income Diversification	-2.319*** (-3.441)	-2.090*** (-3.078)	-2.087*** (-2.964)	-2.227*** (-3.151)	-2.024*** (-2.840)	-2.983*** (-3.449)	-2.687*** (-3.085)	-2.674*** (-2.962)	-2.852*** (-3.147)	-2.595*** (-2.842)	-4.232*** (-3.457)	-3.810*** (-3.093)	-3.778*** (-2.961)	-4.026*** (-3.144)	-3.669*** (-2.843)
Ln (Total Assets)	0.559*** (5.296)	0.540*** (5.181)	0.522*** (4.862)	0.543*** (4.716)	0.478*** (4.025)	0.713*** (5.272)	0.689*** (5.160)	0.668*** (4.856)	0.694*** (4.703)	0.612*** (4.015)	1.005*** (5.247)	0.971*** (5.138)	0.943*** (4.849)	0.978*** (4.688)	0.862*** (4.004)
Capital Ratio	0.546*** (4.518)	0.526*** (4.328)	0.554*** (4.506)	0.571*** (4.610)	0.572*** (4.601)	0.701*** (4.525)	0.676*** (4.335)	0.708*** (4.496)	0.730*** (4.597)	0.730*** (4.589)	0.993*** (4.531)	0.956*** (4.342)	0.997*** (4.486)	1.027*** (4.584)	1.029*** (4.577)
Capital Ratio <sup>2</sup>	-0.024*** (-4.644)	-0.023*** (-4.416)	-0.024*** (-4.608)	-0.024*** (-4.511)	-0.024*** (-4.539)	-0.031*** (-4.637)	-0.029*** (-4.419)	-0.031*** (-4.595)	-0.030*** (-4.498)	-0.031*** (-4.527)	-0.043*** (-4.627)	-0.041*** (-4.420)	-0.043*** (-4.581)	-0.043*** (-4.484)	-0.043*** (-4.513)
ROA	1.569*** (8.183)	1.533*** (7.811)	1.541*** (7.795)	1.484*** (7.444)	1.488*** (7.464)	2.008*** (8.166)	1.963*** (7.805)	1.975*** (7.799)	1.903*** (7.452)	1.908*** (7.470)	2.834*** (8.149)	2.772*** (7.799)	2.791*** (7.802)	2.690*** (7.460)	2.697*** (7.476)
Cost Ratio	0.023*** (2.769)	0.022*** (2.660)	0.019** (2.357)	0.020** (2.431)	0.018** (2.211)	0.029*** (2.778)	0.028*** (2.662)	0.025** (2.348)	0.025** (2.421)	0.023** (2.203)	0.041*** (2.787)	0.040*** (2.666)	0.035** (2.339)	0.036** (2.410)	0.033** (2.195)
GDP Growth Rate	0.033*** (8.663)	0.035*** (8.527)	0.035*** (8.283)	0.034*** (8.286)	0.034*** (8.377)	0.042*** (8.676)	0.045*** (8.557)	0.044*** (8.315)	0.043*** (8.315)	0.044*** (8.406)	0.060*** (8.689)	0.064*** (8.588)	0.063*** (8.348)	0.061*** (8.347)	0.062*** (8.437)
Banking Capital Ratio	-0.315*** (-6.163)	-0.302*** (-5.875)	-0.280*** (-5.276)	-0.286*** (-5.364)	-0.267*** (-4.960)	-0.401*** (-6.088)	-0.383*** (-5.813)	-0.355*** (-5.226)	-0.363*** (-5.321)	-0.339*** (-4.919)	-0.562*** (-6.012)	-0.537*** (-5.749)	-0.496*** (-5.174)	-0.509*** (-5.276)	-0.474*** (-4.876)
Strength of Credit	0.326*** (4.737)	0.319*** (4.601)	0.279*** (3.856)	0.281*** (3.863)	0.298*** (4.065)	0.425*** (4.800)	0.413*** (4.646)	0.361*** (3.892)	0.363*** (3.893)	0.384*** (4.095)	0.610*** (4.866)	0.590*** (4.694)	0.516*** (3.931)	0.517*** (3.926)	0.547*** (4.128)
Observations	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856	1,856
Number of Bank	384	384	384	384	384	384	384	384	384	384	384	384	384	384	384
$\chi^2$	312.8***	293.4***	342.8***	362.4***	368.4***	311.9***	293.3***	342.6***	362.2***	368.0***	311.2***	293.2***	342.3***	361.9***	367.6***

## 8. Annex

## Annex A Sample Bank

Bank Name	Country	Bank Name	Country
Banco Macro SA	ARGENTINA	Daito Bank	JAPAN
Banco de Galicia y Buenos Aires SA	ARGENTINA	Ehime Bank, Ltd. (The)	JAPAN
Australia and New Zealand Banking Group	AUSTRALIA	Eighteenth Bank (The)	JAPAN
Bank of Queensland Limited	AUSTRALIA	Fukui Bank Ltd. (The)	JAPAN
Bendigo and Adelaide Bank Limited	AUSTRALIA	Fukuoka Chuo Bank, Ltd.	JAPAN
Commonwealth Bank of Australia	AUSTRALIA	Fukushima Bank	JAPAN
National Australia Bank Limited	AUSTRALIA	Gunma Bank Ltd. (The)	JAPAN
Westpac Banking Corporation	AUSTRALIA	Hachijuni Bank	JAPAN
BKS Bank AG	AUSTRIA	Higashi-Nippon Bank	JAPAN
Oesterreichische Volksbanken AG	AUSTRIA	Higo Bank (The)	JAPAN
Raiffeisen Bank International AG	AUSTRIA	Hiroshima Bank Ltd	JAPAN
Ahli United Bank BSC	BAHRAIN	Hokkoku Bank Ltd. (The)	JAPAN
Arab Banking Corporation BSC	BAHRAIN	Hokuetsu Bank Ltd. (The)	JAPAN
BBK B.S.C.	BAHRAIN	Howa Bank, Ltd	JAPAN
National Bank of Bahrain	BAHRAIN	Hyakugo Bank Ltd.	JAPAN
Banco ABC - Brasil SA	BRAZIL	Hyakujushi Bank Ltd.	JAPAN
Banco Bradesco SA	BRAZIL	Iyo Bank Ltd	JAPAN
Banco Daycoval SA	BRAZIL	Joyo Bank Ltd.	JAPAN
Banco Industrial e Comercial S.A. - BICBANCO	BRAZIL	Juroku Bank Ltd. (The)	JAPAN
Banco PanAmericano S.A.	BRAZIL	Kagoshima Bank Ltd. (The)	JAPAN
Banco Pine SA	BRAZIL	Kansai Urban Banking Corporation	JAPAN
Banco do Brasil S.A.	BRAZIL	Keiyo Bank, Ltd. (The)	JAPAN
First Investment Bank AD	BULGARIA	Kita-Nippon Bank	JAPAN
Bank of Montreal-Banque de Montreal	CANADA	MIE Bank Ltd (The)	JAPAN
Bank of Nova Scotia (The) - SCOTIABANK	CANADA	Michinoku Bank, Ltd. (The)	JAPAN
Canadian Imperial Bank of Commerce CIBC	CANADA	Minami-Nippon Bank, Ltd.	JAPAN
Canadian Western Bank	CANADA	Minato Bank Ltd	JAPAN
HSBC Bank Canada	CANADA	Miyazaki Bank	JAPAN
Laurentian Bank of Canada	CANADA	Miyazaki Taiyo Bank, Ltd. (The)	JAPAN
National Bank of Canada-Banque Nationale du Canada	CANADA	Musashino Bank	JAPAN
Royal Bank of Canada RBC	CANADA	Nagano Bank Ltd.	JAPAN
Toronto Dominion Bank	CANADA	Nanto Bank Ltd. (The)	JAPAN
Banco Santander Chile	CHILE	Nishi-Nippon City Bank Ltd (The)	JAPAN
Banco de Chile	CHILE	Ogaki Kyoritsu Bank	JAPAN
Banco de Credito e Inversiones - BCI CorpBanca	CHILE	Oita Bank Ltd (The)	JAPAN
Agricultural Bank of China Limited	CHINA	San-In Godo Bank, Ltd	JAPAN
Bank of Beijing Co Ltd	CHINA	Seven Bank Ltd	JAPAN
Bank of China Limited	CHINA	Shiga Bank, Ltd (The)	JAPAN
Bank of Communications Co. Ltd	CHINA	Shikoku Bank Ltd. (The)	JAPAN
Bank of Nanjing	CHINA	Shimizu Bank Ltd (The)	JAPAN
Bank of Ningbo	CHINA	Shinsei Bank Limited	JAPAN
China CITIC Bank Corporation Limited	CHINA	Shizuoka Bank	JAPAN
China Construction Bank Corporation	CHINA	Suruga Bank, Ltd. (The)	JAPAN
China Everbright Bank Co Ltd	CHINA	Taiko Bank Ltd	JAPAN
China Merchants Bank Co Ltd	CHINA	Tochigi Bank, Ltd.	JAPAN
China Minsheng Banking Corporation	CHINA	Toho Bank Ltd. (The)	JAPAN
Chongqing Rural Commercial Bank	CHINA	Tohoku Bank	JAPAN
Hua Xia Bank co., Limited	CHINA	Tokyo Tomin Bank, Ltd. (The)	JAPAN
Industrial & Commercial Bank of China (The) - ICBC	CHINA	Tomato Bank, Ltd	JAPAN
Industrial Bank Co Ltd	CHINA	Tottori Bank	JAPAN
Ping An Bank Co Ltd	CHINA	Towa Bank	JAPAN
Shanghai Pudong Development Bank	CHINA	Toyama Bank, Ltd, (The)	JAPAN
Banco Popular	COLOMBIA	Tsukuba Bank Ltd	JAPAN
Bancolombia	COLOMBIA	Yachiyo Bank	JAPAN
Privredna Banka Zagreb d.d-Privredna Banka Zagreb Group	CROATIA	Yamagata Bank Ltd.	JAPAN
Zagrebacka Banka dd	CROATIA	Yamanashi Chuo Bank Ltd (The)	JAPAN
Cyprus Popular Bank Public Co Ltd	CYPRUS	Arab Bank Plc	JORDAN
		Housing Bank for Trade & Finance (The)	JORDAN

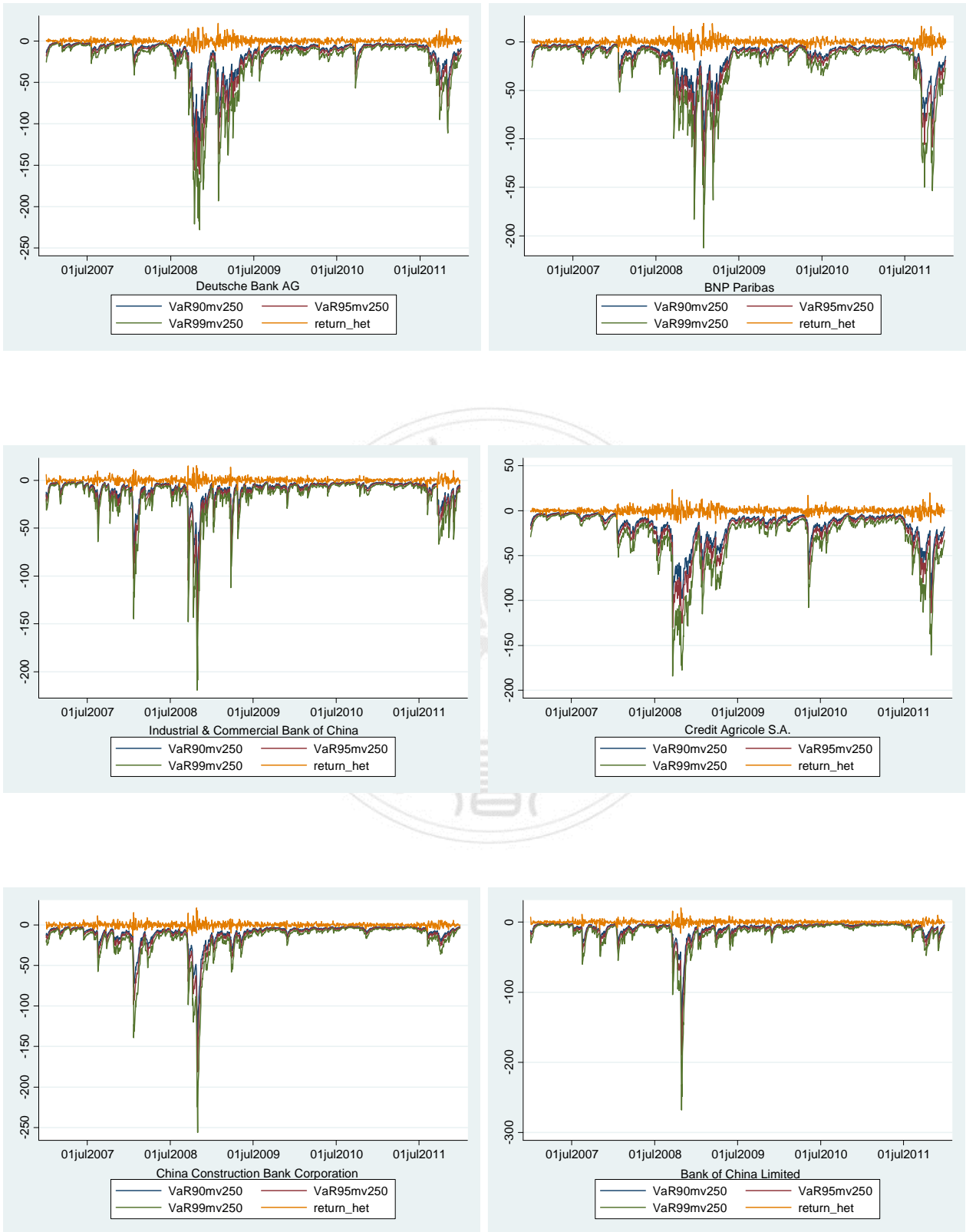
Bank Name	Country	Bank Name	Country
Hellenic Bank Public Company Limited	CYPRUS	Kazkommertsbank	KAZAKHSTAN
Komercni Banka	CZECH REPUBLIC	OJSC Halyk Savings Bank of Kazakhstan	KAZAKHSTAN
Danske Bank A/S	DENMARK	Industrial Bank of Korea	KOREA REPUBLIC OF
Jyske Bank A/S (Group)	DENMARK	Jeonbuk Bank	KOREA REPUBLIC OF
Spar Nord Bank	DENMARK	Korea Exchange Bank	KOREA REPUBLIC OF
Sydbank A/S	DENMARK	Ahli United Bank KSC	KUWAIT
Vestjysk Bank A/S	DENMARK	Al Ahli Bank of Kuwait (KSC)	KUWAIT
Commercial International Bank (Egypt) S.A.E.	EGYPT	Commercial Bank of Kuwait SAK (The)	KUWAIT
Credit Agricole Egypt	EGYPT	National Bank of Kuwait S.A.K.	KUWAIT
Pohjola Bank plc-Pohjola Pankki Oyj	FINLAND	Bank of Beirut S.A.L.	LEBANON
BNP Paribas	FRANCE	Byblos Bank S.A.L.	LEBANON
Boursorama	FRANCE	Hong Leong Bank Berhad	MALAYSIA
Caisse Regionale de Credit Agricole Mutuel Brie Picardie-Credit Agricole Brie Picardie	FRANCE	Malayan Banking Berhad - Maybank	MALAYSIA
Caisse Regionale de Credit Agricole Mutuel Toulouse 31-Credit Agricole Mutuel Toulouse 31 CCI	FRANCE	Public Bank Berhad	MALAYSIA
Caisse Regionale de credit agricole mutuel Atlantique Vendee-Credit Agricole Atlantique Vendee	FRANCE	HSBC Bank Malta Plc	MALTA
Caisse regionale de credit agricole mutuel Loire Haute-Loire-Credit Agricole Loire Haute-Loire	FRANCE	Attijariwafa Bank	MOROCCO
Caisse regionale de credit agricole mutuel Nord de France-Credit Agricole Nord de France	FRANCE	Banque Marocaine du Commerce Exterieur-BMCE Bank	MOROCCO
Caisse regionale de credit agricole mutuel Sud Rhone -Alpes-Credit Agricole Sud Rhone Alpes	FRANCE	BinckBank NV	NETHERLANDS
Caisse regionale de credit agricole mutuel d'Alpes-Provence-Credit Agricole Alpes Provence	FRANCE	Access Bank Plc	NIGERIA
Caisse regionale de credit agricole mutuel de Paris et d'Ile-de-France-Credit Agricole d'Ile-de-France	FRANCE	Diamond Bank Plc	NIGERIA
Caisse regionale de credit agricole mutuel de l'Ille-et-Vilaine-Credit Agricole de l'Ille-et-Vilaine	FRANCE	Union Bank of Nigeria Plc	NIGERIA
Caisse regionale de credit agricole mutuel de la Touraine et du Poitou-Credit Agricole de la Touraine et du Poitou	FRANCE	United Bank for Africa Plc	NIGERIA
Credit Agricole S.A.	FRANCE	Zenith Bank Plc	NIGERIA
Credit Industriel et Commercial - CIC	FRANCE	SpareBank 1 SMN	NORWAY
Natixis	FRANCE	SpareBank 1 SR-Bank	NORWAY
Societe Generale	FRANCE	Sparebank 1 Nord-Norge	NORWAY
Aareal Bank AG	GERMANY	National Bank of Oman (SAOG)	OMAN
Commerzbank AG	GERMANY	Bank Al Habib	PAKISTAN
DAB Bank AG	GERMANY	Bank Alfalah Limited	PAKISTAN
Deutsche Bank AG	GERMANY	MCB Bank Limited	PAKISTAN
Deutsche Postbank AG	GERMANY	National Bank of Pakistan	PAKISTAN
Agricultural Bank of Greece	GREECE	Standard Chartered Bank (Pakistan)	PAKISTAN
Alpha Bank AE	GREECE	United Bank Ltd.	PAKISTAN
Attica Bank SA-Bank of Attica SA	GREECE	Banco Internacional del Peru - Interbank	PERU
Eurobank Ergasias SA	GREECE	BDO Unibank Inc	PHILIPPINES
National Bank of Greece SA	GREECE	Bank of The Philippine Islands	PHILIPPINES
Piraeus Bank SA	GREECE	China Banking Corporation - Chinabank	PHILIPPINES
TT Hellenic Postbank S.A	GREECE	Metropolitan Bank & Trust Company	PHILIPPINES
Bank of East Asia Ltd	HONG KONG	Philippine National Bank	PHILIPPINES

Bank Name	Country	Bank Name	Country
Chong Hing Bank Limited	HONG KONG	Rizal Commercial Banking Corp.	PHILIPPINES
Hang Seng Bank Ltd.	HONG KONG	Security Bank Corporation	PHILIPPINES
Wing Hang Bank Ltd	HONG KONG	BRE Bank SA	POLAND
OTP Bank Plc	HUNGARY	Bank Handlowy w Warszawie S.A.	POLAND
AXIS Bank Limited	INDIA	Bank Zachodni WBK S.A.	POLAND
Allahabad Bank	INDIA	ING Bank Slaski S.A. - Capital Group	POLAND
Andhra Bank	INDIA	Kredyt Bank SA	POLAND
Bank of Baroda	INDIA	Powszechna Kasa Oszczednosci Bank Polski SA - PKO BP SA	POLAND
Bank of India	INDIA	Banco Comercial Portugues, SA-Millennium bcp	PORTUGAL
Bank of Maharashtra	INDIA	Banco Espirito Santo SA	PORTUGAL
Canara Bank	INDIA	Ahli Bank QSC	QATAR
Central Bank of India	INDIA	Al Khalij Commercial Bank	QATAR
Corporation Bank Ltd.	INDIA	Commercial Bank of Qatar (The) QSC	QATAR
Dena Bank	INDIA	Doha Bank	QATAR
Federal Bank Ltd. (The)	INDIA	Qatar National Bank	QATAR
HDFC Bank Ltd	INDIA	BRD-Groupe Societe Generale SA	ROMANIA
ICICI Bank Limited	INDIA	Transilvania Bank-Banca Transilvania SA	ROMANIA
ING Vysya Bank Ltd	INDIA	Bank Saint-Petersburg	RUSSIAN FEDERATION
Indian Bank	INDIA	Bank UralSib	RUSSIAN FEDERATION
Indian Overseas Bank	INDIA	Sberbank of Russia	RUSSIAN FEDERATION
Indusind Bank Limited	INDIA	Vozrozhdeniye Bank	RUSSIAN FEDERATION
Jammu and Kashmir Bank Ltd	INDIA	Arab National Bank	SAUDI ARABIA
Karnataka Bank Limited (The)	INDIA	Bank Al-Jazira	SAUDI ARABIA
Karur Vysya Bank Limited (The)	INDIA	Banque Saudi Fransi	SAUDI ARABIA
Kotak Mahindra Bank Limited	INDIA	Riyad Bank	SAUDI ARABIA
Oriental Bank of Commerce Ltd.	INDIA	Samba Financial Group	SAUDI ARABIA
Punjab & Sind Bank	INDIA	Saudi British Bank (The)	SAUDI ARABIA
Punjab National Bank	INDIA	Saudi Hollandi Bank	SAUDI ARABIA
SREI Infrastructure Finance Limited	INDIA	Hong Leong Finance Limited	SINGAPORE
South Indian Bank Limited	INDIA	Oversea-Chinese Banking Corporation Limited OCBC	SINGAPORE
State Bank of Bikaner and Jaipur	INDIA	United Overseas Bank Limited UOB	SINGAPORE
State Bank of India	INDIA	Vseobecna Uverova Banka a.s.	SLOVAKIA
State Bank of Mysore	INDIA	Banco Bilbao Vizcaya Argentina SA	SPAIN
State Bank of Travancore	INDIA	Banco Popular Espanol SA	SPAIN
Syndicate Bank	INDIA	Banco Santander SA	SPAIN
UCO Bank	INDIA	Banco de Sabadell SA	SPAIN
Union Bank of India	INDIA	Banco de Valencia SA	SPAIN
United Bank of India	INDIA	Bankinter SA	SPAIN
Vijaya Bank	INDIA	Caja de Ahorros del Mediterraneo CAM	SPAIN
YES BANK Limited	INDIA	Skandinaviska Enskilda Banken AB	SWEDEN
Bank Central Asia	INDONESIA	Svenska Handelsbanken	SWEDEN
Bank Danamon Indonesia Tbk	INDONESIA	Swedbank AB	SWEDEN
Bank Internasional Indonesia Tbk	INDONESIA	Bank Coop AG	SWITZERLAND
Bank Mandiri (Persero) Tbk	INDONESIA	EFG International	SWITZERLAND
Bank Negara Indonesia (Persero) - Bank BNI	INDONESIA	UBS AG	SWITZERLAND
Bank Pan Indonesia Tbk PT-Panin Bank	INDONESIA	Bank of Kaohsiung	TAIWAN
Bank Permata Tbk	INDONESIA	Chang Hwa Commercial Bank Ltd.	TAIWAN
Bank Rakyat Indonesia (Persero) Tbk	INDONESIA	Cosmos Bank	TAIWAN
PT BPD Jawa Barat dan Banten Tbk	INDONESIA	EnTie Commercial Bank	TAIWAN
PT Bank Bukopin	INDONESIA	Far Eastern International Bank	TAIWAN
PT Bank CIMB Niaga Tbk	INDONESIA	King's Town Bank	TAIWAN
Allied Irish Banks plc	IRELAND	Ta Chong Bank Ltd.	TAIWAN
Bank of Ireland-Governor and Company of the Bank of Ireland	IRELAND	Taichung Commercial Bank	TAIWAN
Bank Hapoalim BM	ISRAEL	Taiwan Business Bank	TAIWAN
Bank Leumi Le Israel BM	ISRAEL	Union Bank of Taiwan	TAIWAN

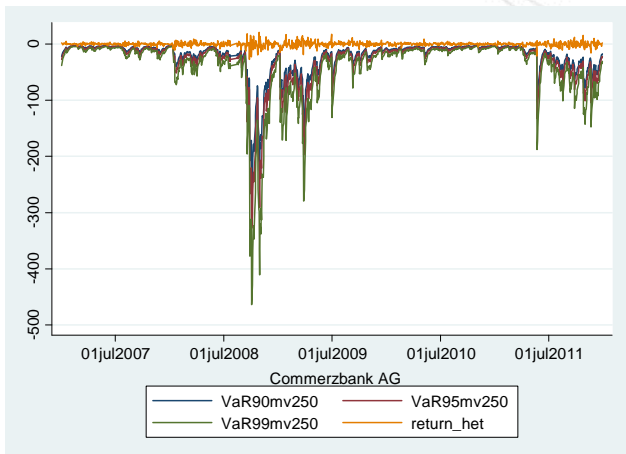
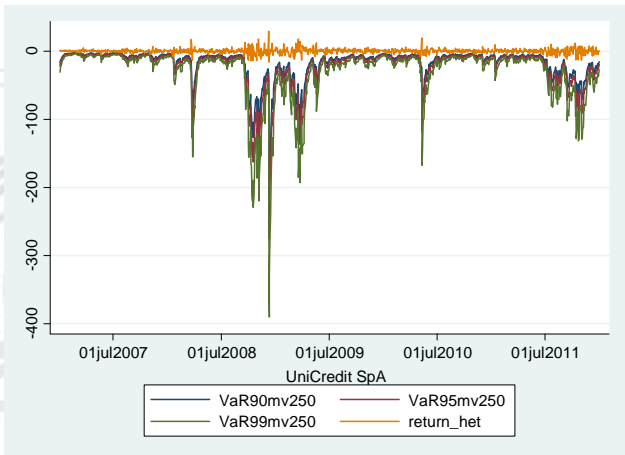
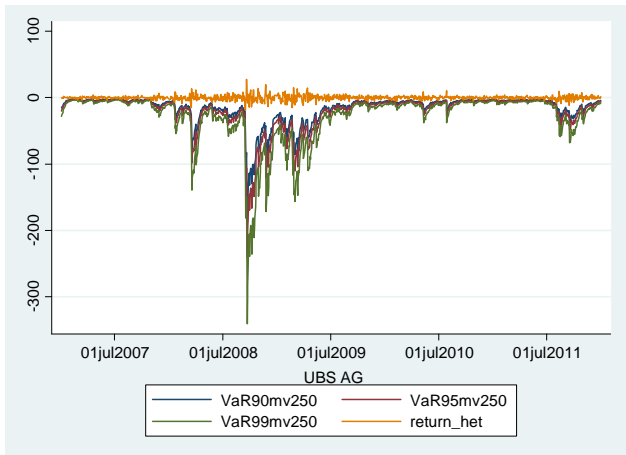
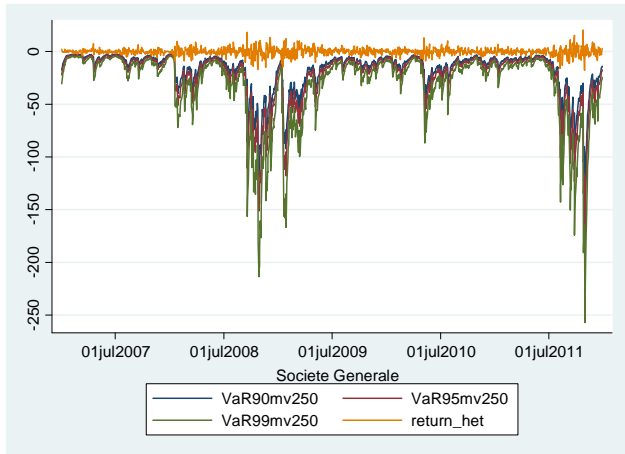
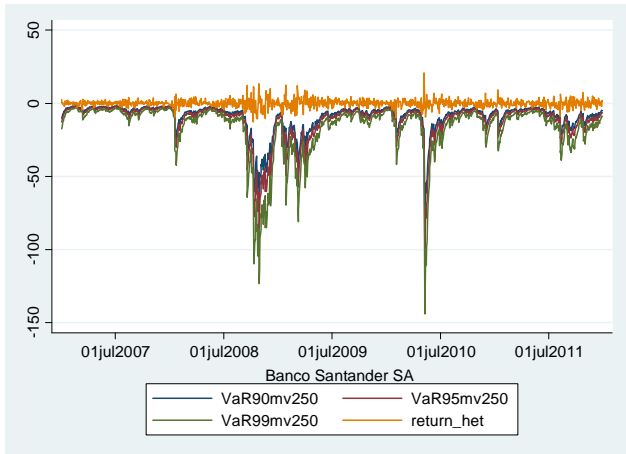
Bank Name	Country	Bank Name	Country
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Israel Discount Bank LTD	ISRAEL	Bank of Ayudhya Public Company Ltd.	THAILAND
Mizrahi Tefahot Bank Ltd.	ISRAEL	Kasikornbank Public Company Limited	THAILAND
Union Bank of Israel Ltd	ISRAEL	Kiatnakin Bank Public Company Limited	THAILAND
Banca Carige SpA	ITALY	Krung Thai Bank Public Company Limited	THAILAND
Banca Generali SpA-Generbanca	ITALY	Siam Commercial Bank Public Company Limited	THAILAND
Banca Ifis SpA	ITALY	TMB Bank Public Company Limited	THAILAND
Banca Monte dei Paschi di Siena SpA-Gruppo	ITALY	Thanachart Capital Public Company Limited	THAILAND
Monte dei Paschi di Siena	ITALY	Banque Nationale Agricole	TUNISIA
Banca Popolare di Milano SCaRL	ITALY	Akbank T.A.S.	TURKEY
Banca Popolare di Sondrio Societa	ITALY	Denizbank A.S.	TURKEY
Cooperativa per Azioni	ITALY	Finansbank A.S.	TURKEY
Banca popolare dell'Emilia Romagna	ITALY	Sekerbank T.A.S.	TURKEY
Banca popolare dell'Etruria e del Lazio Soc. coop.	ITALY	Turk Ekonomi Bankasi A.S.	TURKEY
Banco Desio - Banco di Desio e della Brianza SpA	ITALY	Turkiye Garanti Bankasi A.S.	TURKEY
Banco Popolare	ITALY	Turkiye Halk Bankasi A.S.	TURKEY
Credito Bergamasco	ITALY	Turkiye Vakiflar Bankasi TAO	TURKEY
Credito Emiliano SpA-CREDEM	ITALY	Turkiye is Bankasi A.S. - ISBANK	TURKEY
Credito Valtellinese Soc Coop	ITALY	Yapi Ve Kredi Bankasi A.S.	TURKEY
Intesa Sanpaolo	ITALY	Raiffeisen Bank Aval	UKRAINE
UniCredit SpA	ITALY	Abu Dhabi Commercial Bank	UNITED ARAB EMIRATES
Unione di Banche Italiane Scpa-UBI Banca	ITALY	Commercial Bank of Dubai P.S.C.	UNITED ARAB EMIRATES
77 Bank (The)	JAPAN	Emirates NBD PJSC	UNITED ARAB EMIRATES
Aichi Bank	JAPAN	First Gulf Bank	UNITED ARAB EMIRATES
Akita Bank Ltd	JAPAN	Mashreqbank	UNITED ARAB EMIRATES
Aomori Bank Ltd. (The)	JAPAN	National Bank of Abu Dhabi	UNITED ARAB EMIRATES
Awa Bank (The)	JAPAN	National Bank of Fujairah	UNITED ARAB EMIRATES
Bank of Iwate, Ltd	JAPAN	National Bank of Ras Al-Khaimah (P.S.C.)	UNITED ARAB EMIRATES
Bank of Kochi, Ltd	JAPAN	(The)-RAKBANK	UNITED ARAB EMIRATES
Bank of Kyoto	JAPAN	Union National Bank	UNITED ARAB EMIRATES
Bank of Nagoya	JAPAN	BankUnited, Inc	UNITED STATES OF AMERICA
Bank of Okinawa	JAPAN	MB Financial Inc	UNITED STATES OF AMERICA
Bank of Saga, Ltd. (The)	JAPAN	SLM Corporation-Sallie Mae	UNITED STATES OF AMERICA
Bank of Yokohama, Ltd (The)	JAPAN	Signature Bank	UNITED STATES OF AMERICA
Bank of the Ryukyus Ltd.	JAPAN	Towne Bank	UNITED STATES OF AMERICA
Chiba Bank Ltd.	JAPAN	Asia Commercial Joint-stock Bank-Ngan Hang a Chau	VIETNAM
Chiba Kogyo Bank	JAPAN	Joint Stock Commercial Bank for Foreign Trade of Vietnam- VIETCOMBANK	VIETNAM
Chikuho Bank	JAPAN	Military Commercial Joint Stock Bank	VIETNAM
Chugoku Bank, Ltd. (The)	JAPAN	Saigon Thuong Tin Commercial	VIETNAM
Chukyo Bank Ltd	JAPAN	Joint-Stock Bank- SACOMBANK-Ngan Hang Saigon Thuong Tin	VIETNAM
Daisan Bank, Ltd.	JAPAN	Vietnam Export Import Commercial Joint Stock Bank	VIETNAM
Daishi Bank Ltd (The)	JAPAN	Vietnam Joint-Stock Commercial Bank for Industry and Trade	VIETNAM

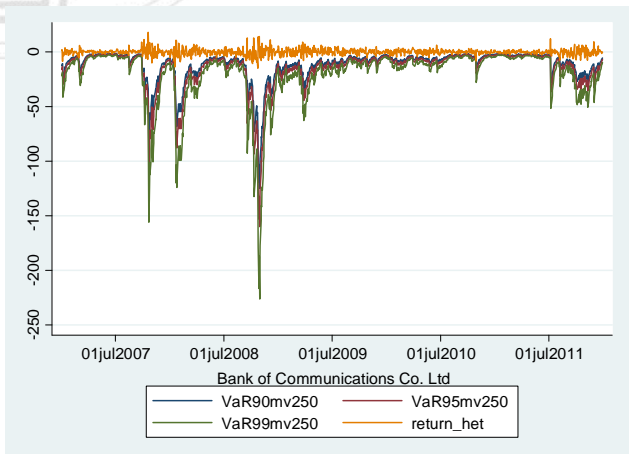
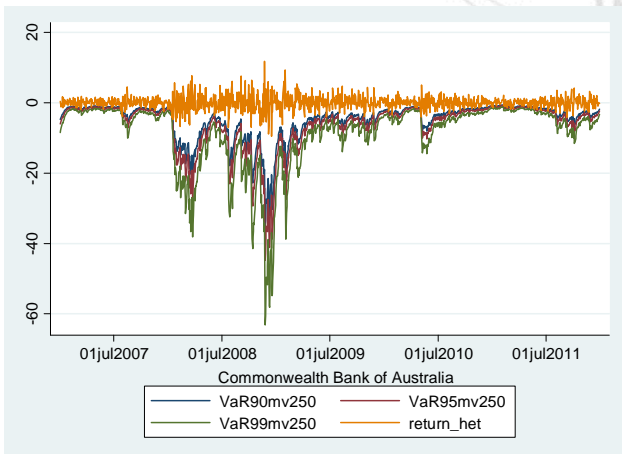
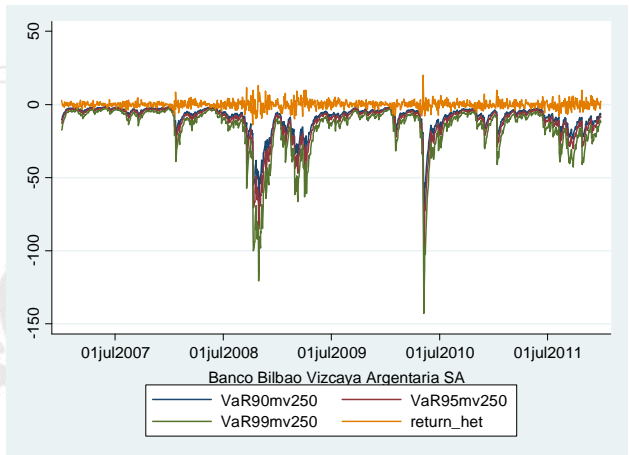
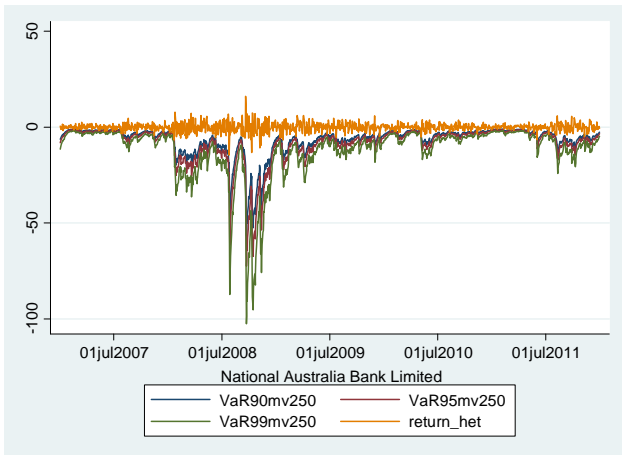
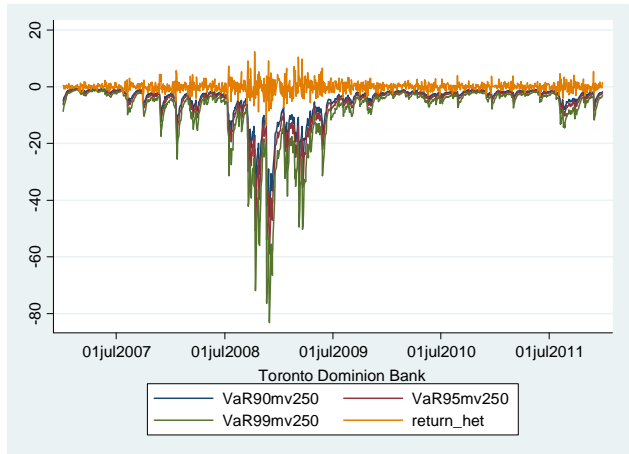
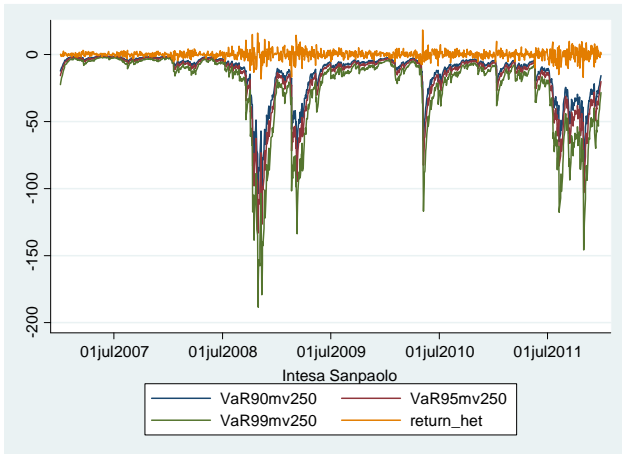
## Annex B

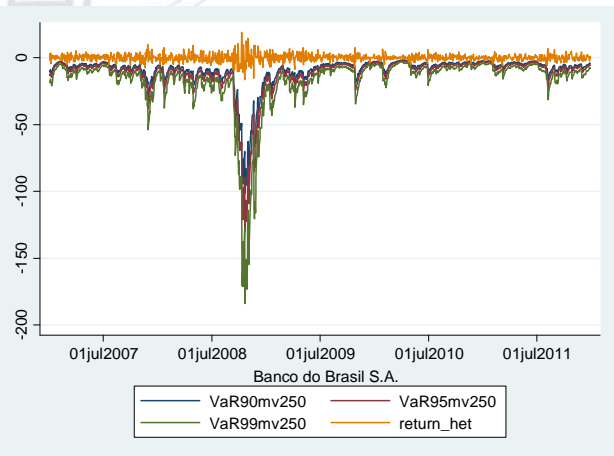
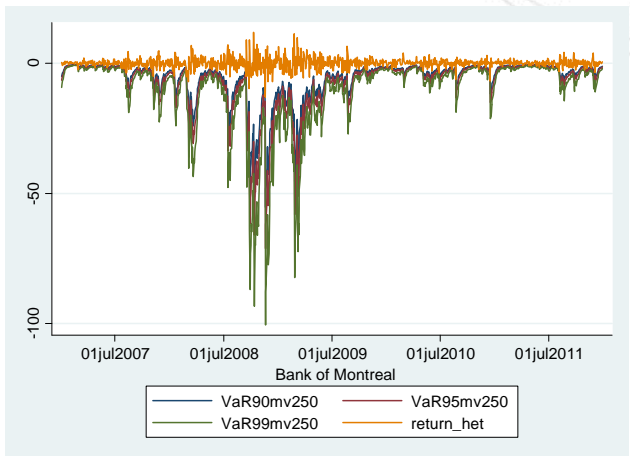
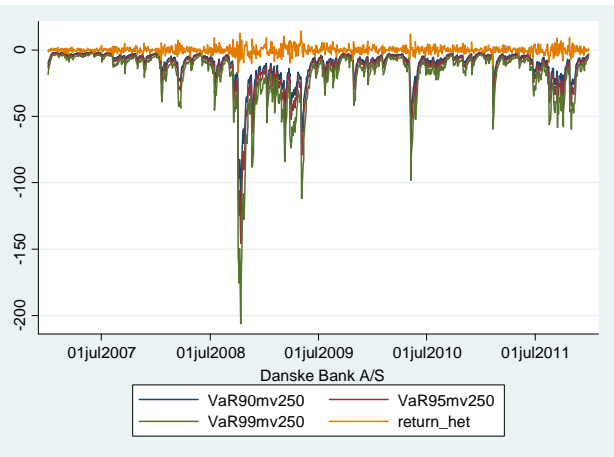
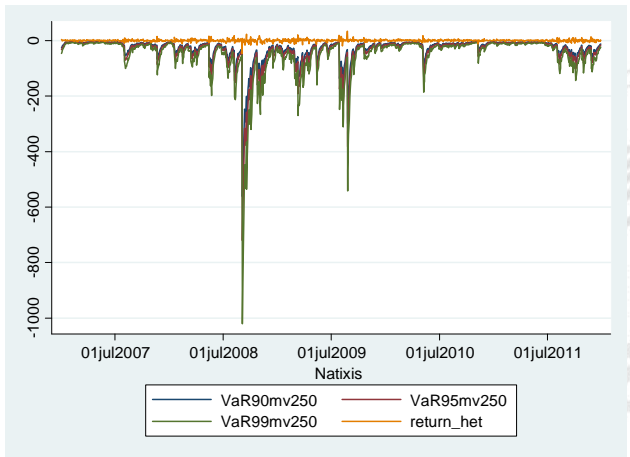
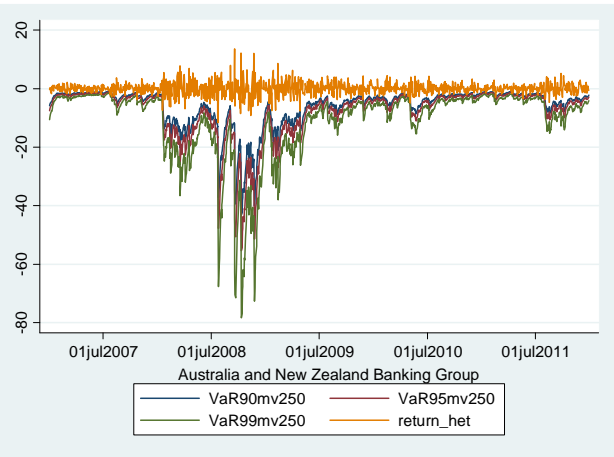
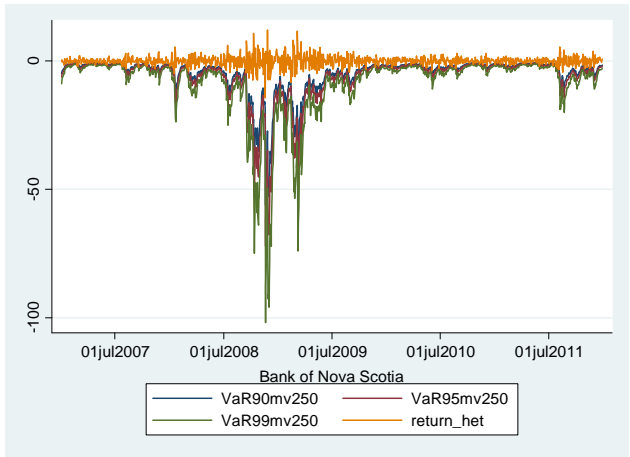
Figure 1 VaRs of 90%, 95%, and 99% and profit & lost by sample bank

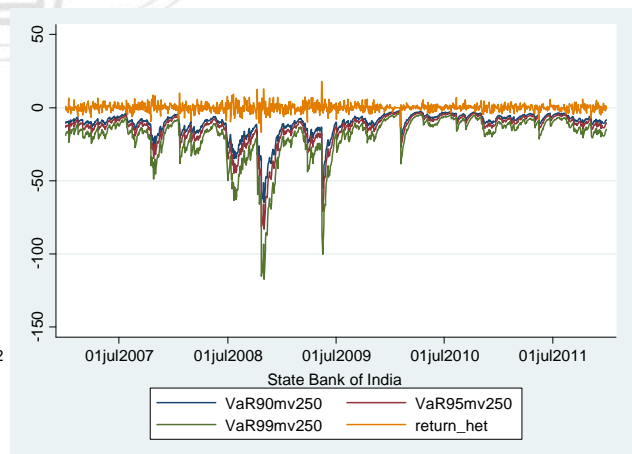
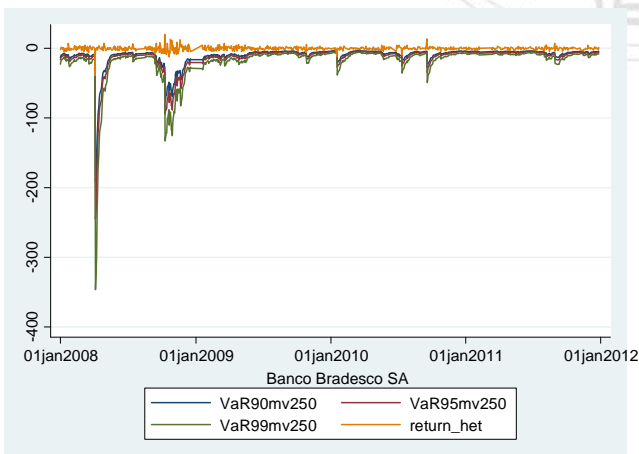
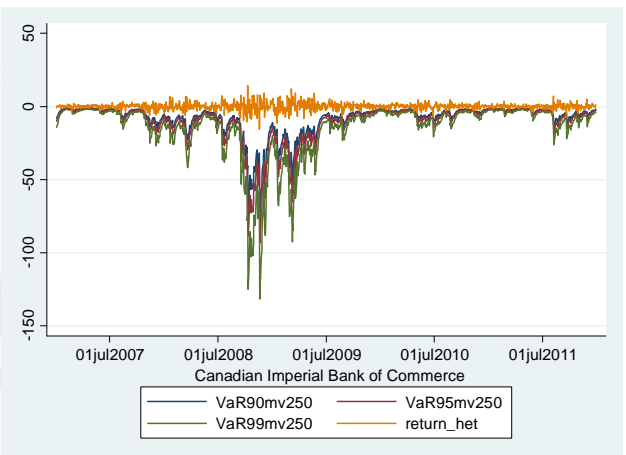
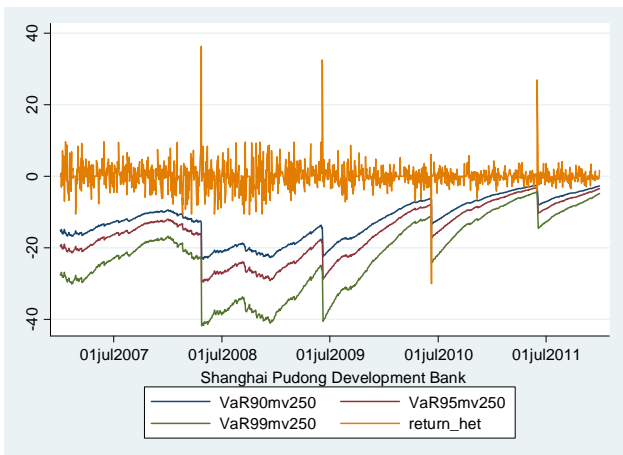
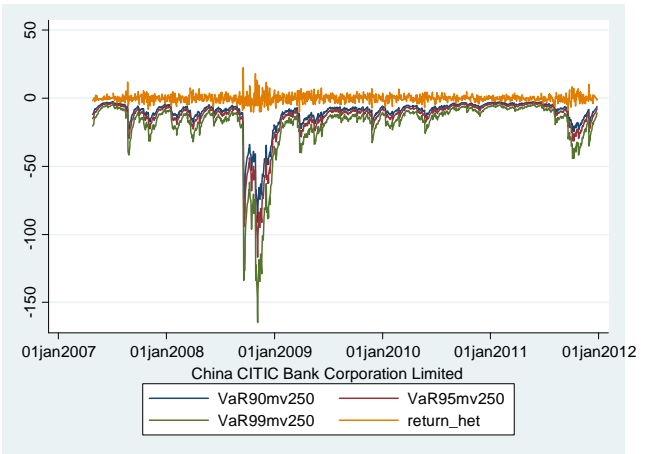
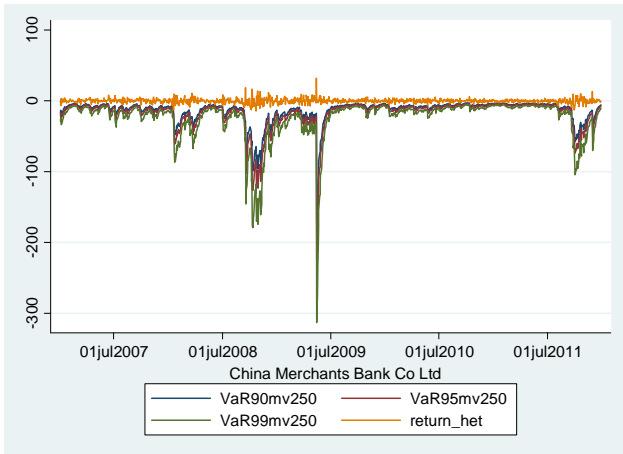


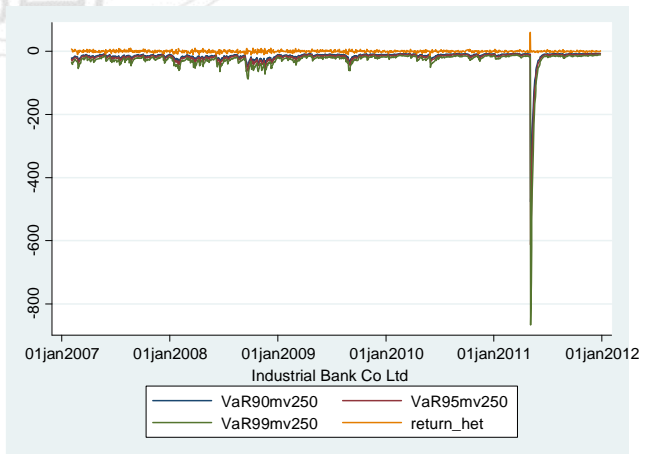
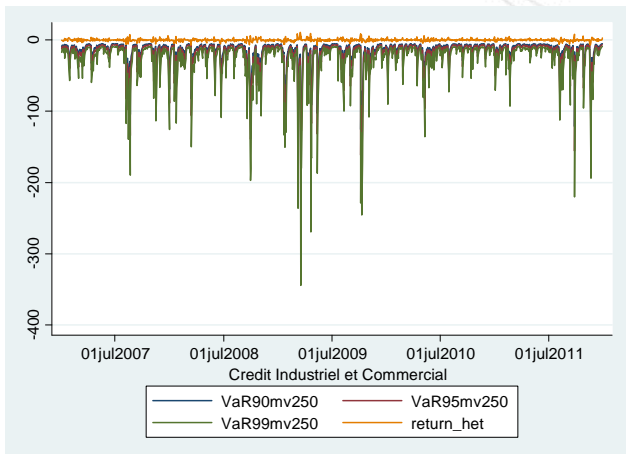
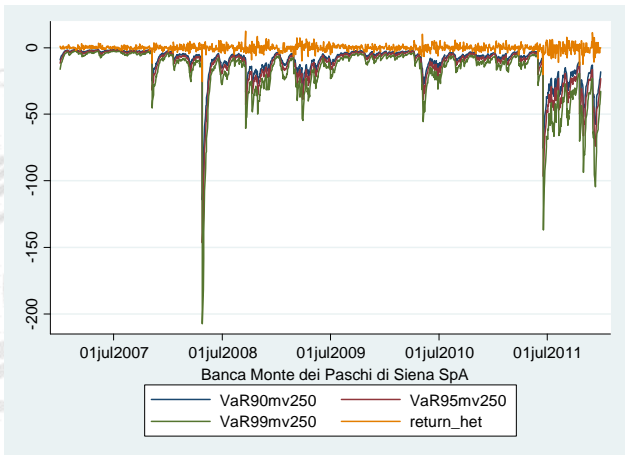
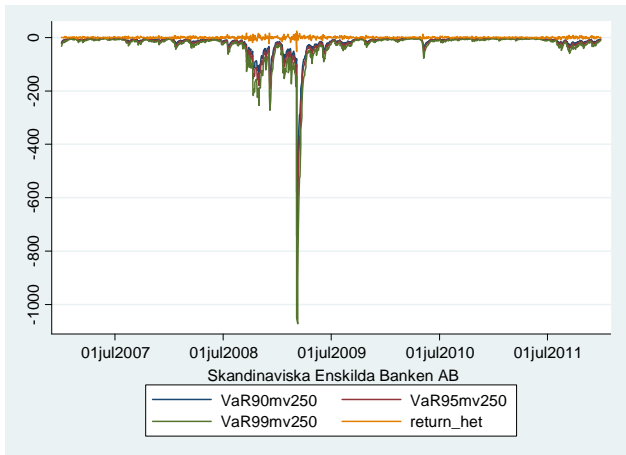
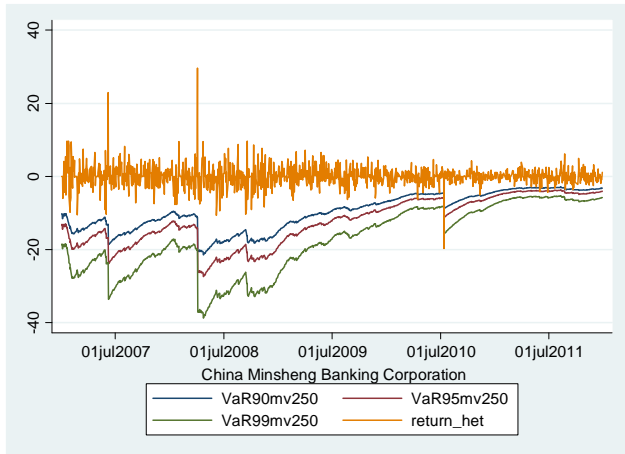
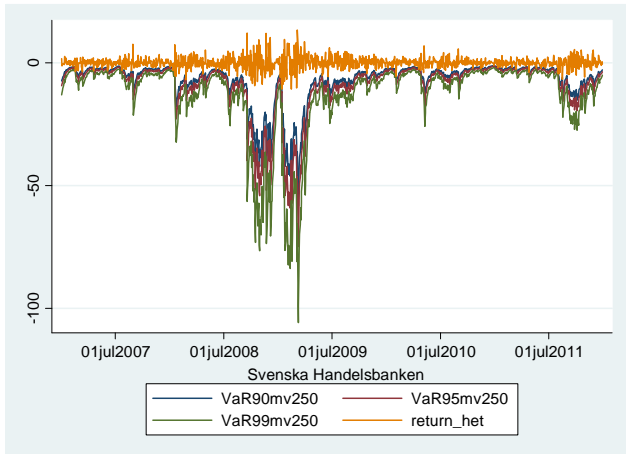


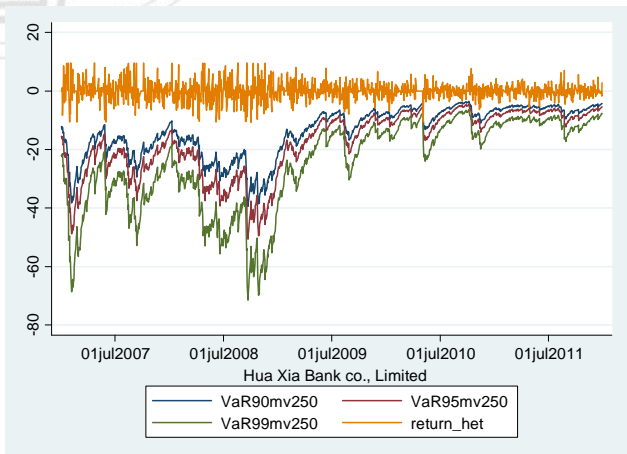
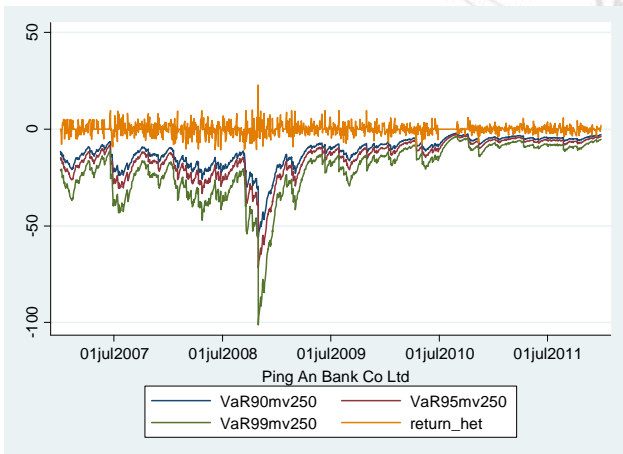
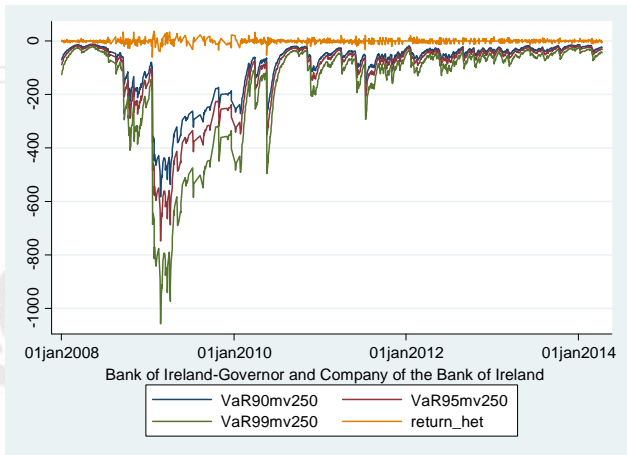
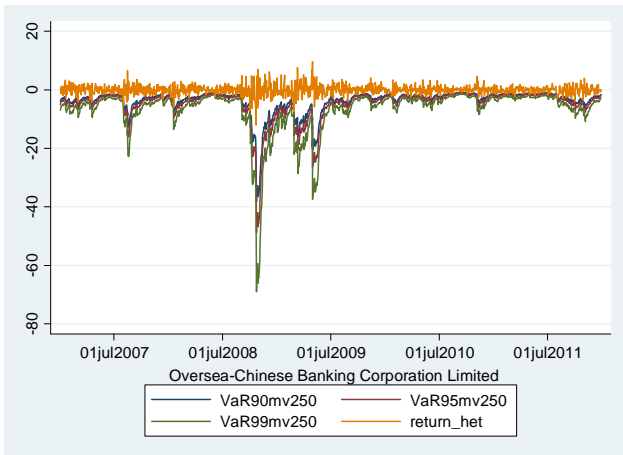
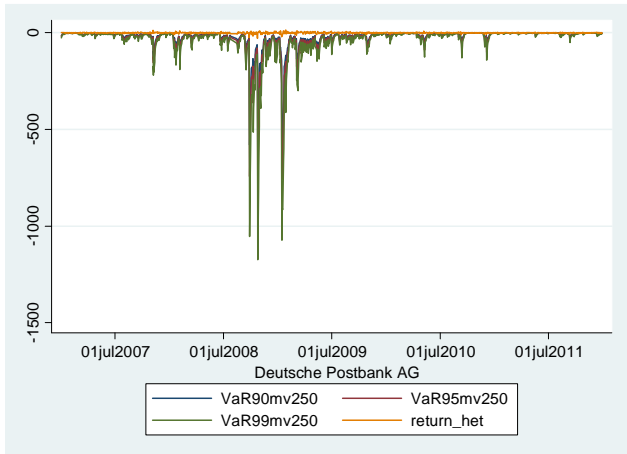
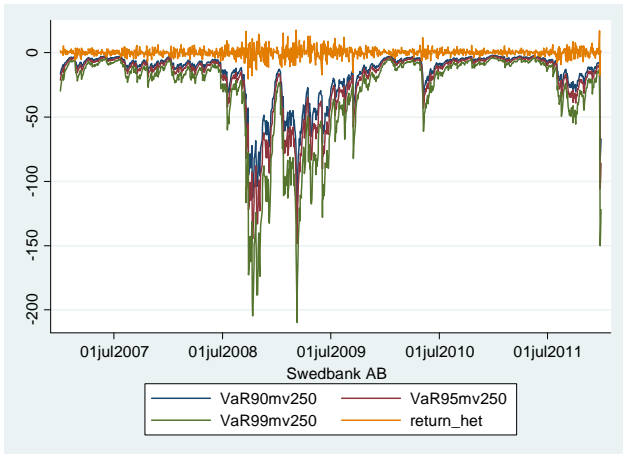


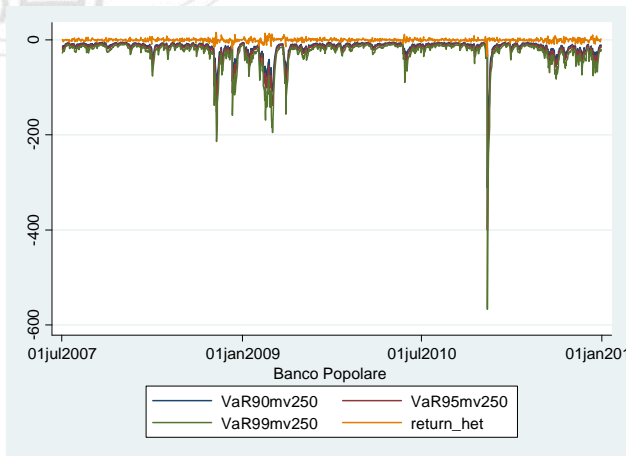
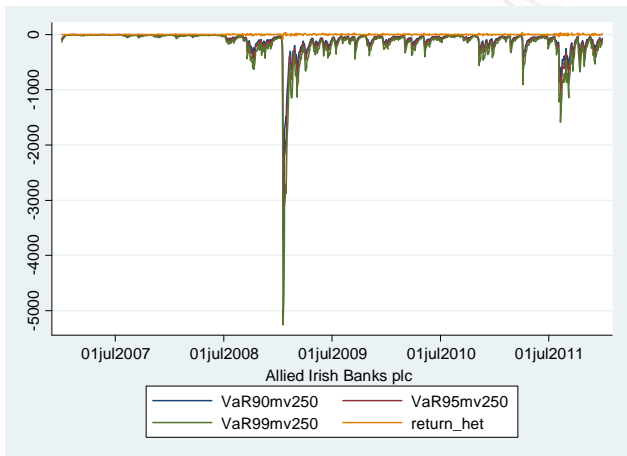
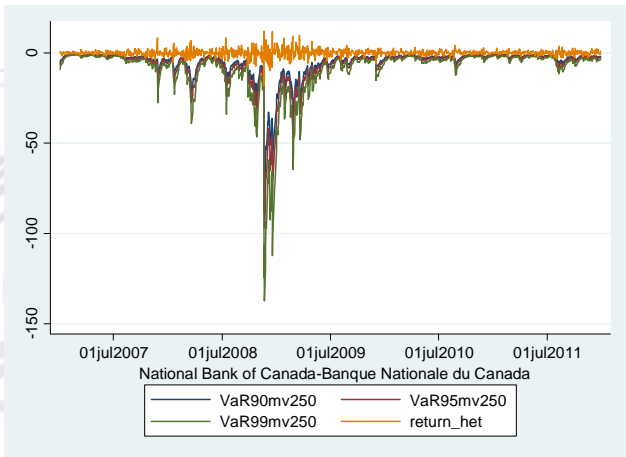
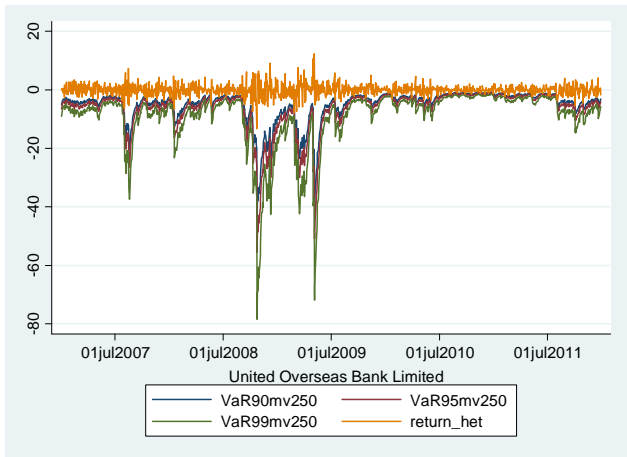
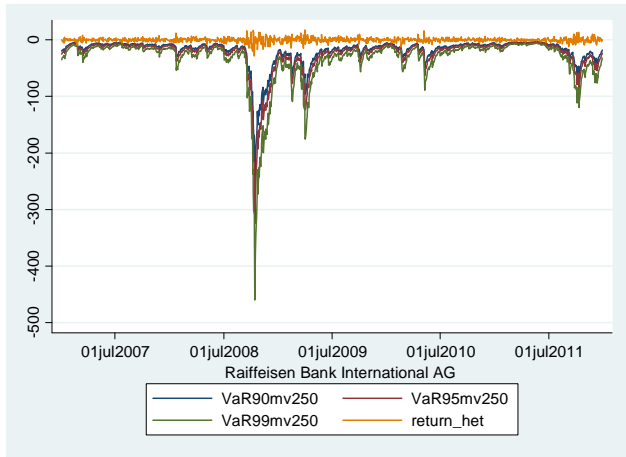
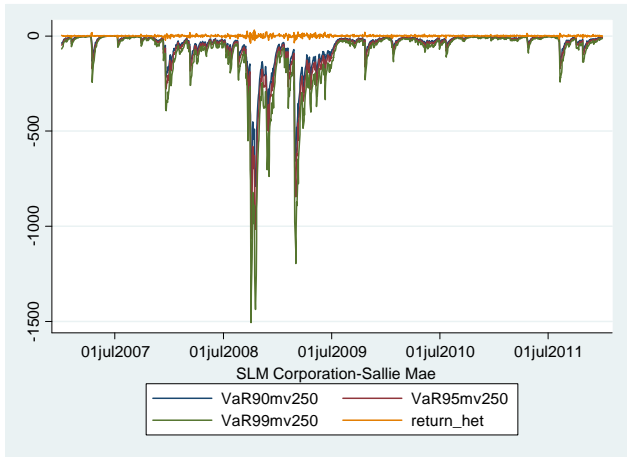


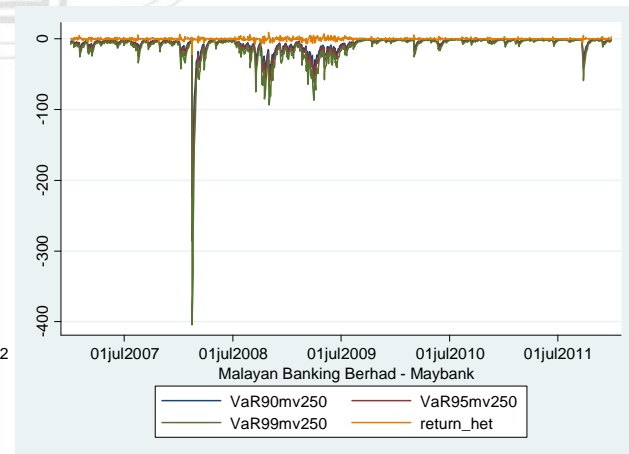
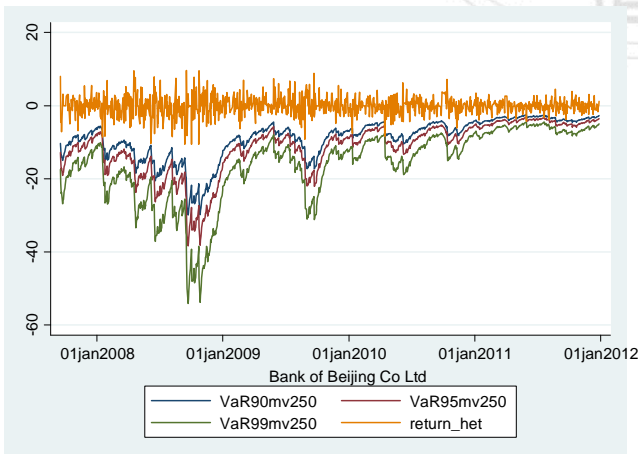
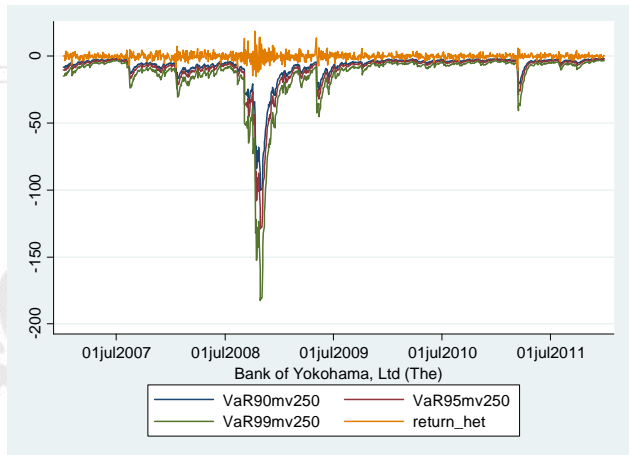
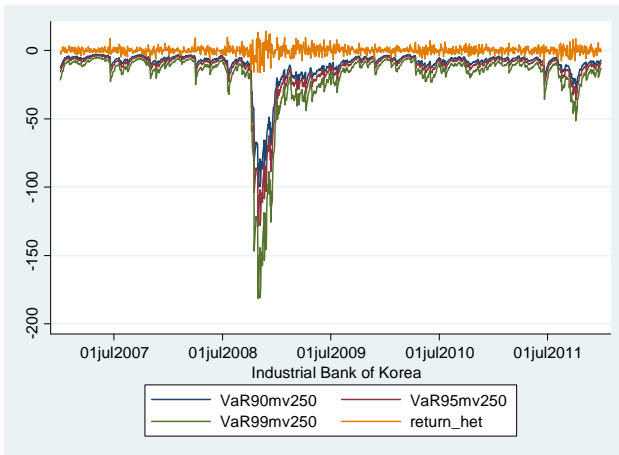
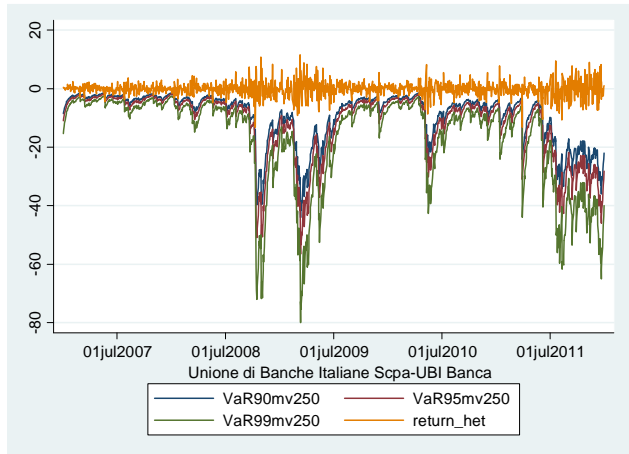
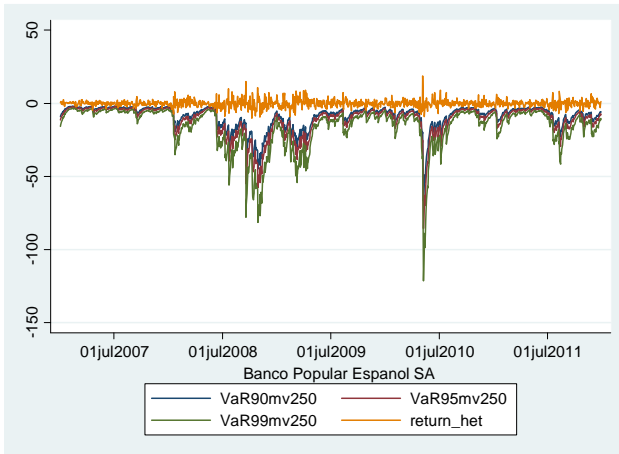




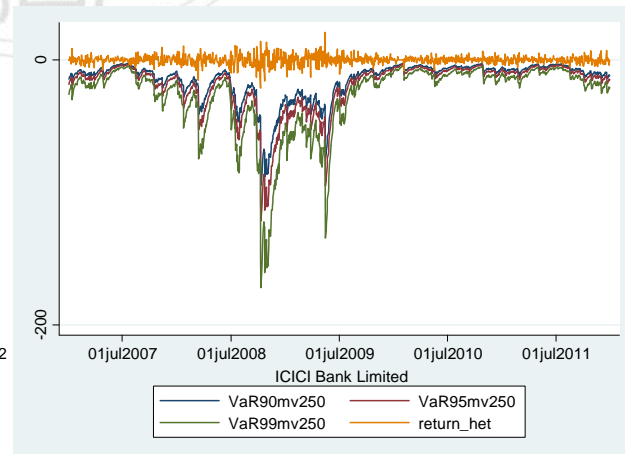
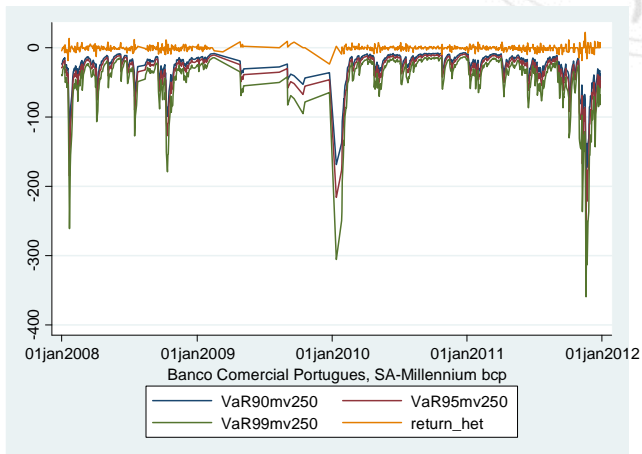
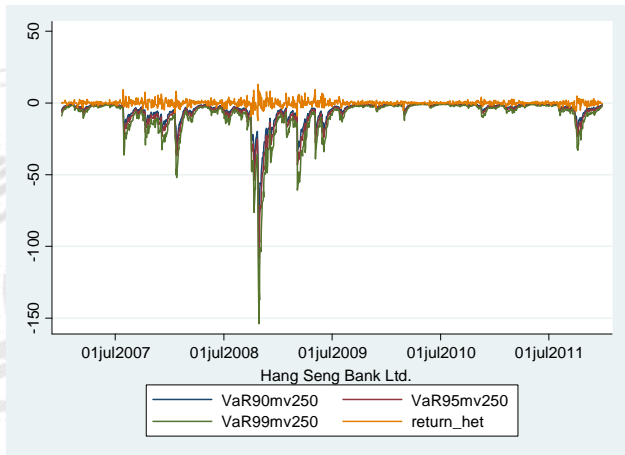
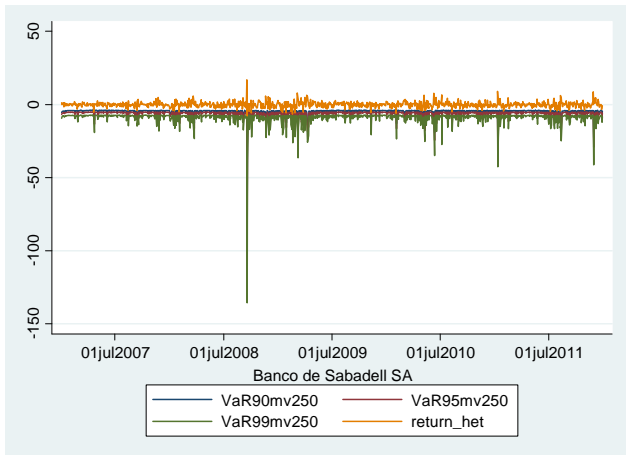
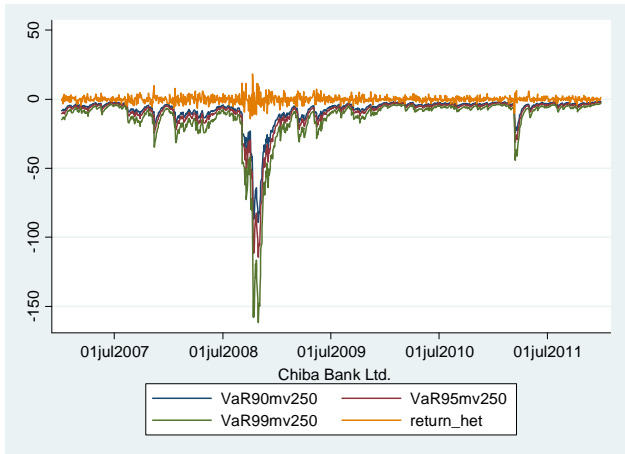
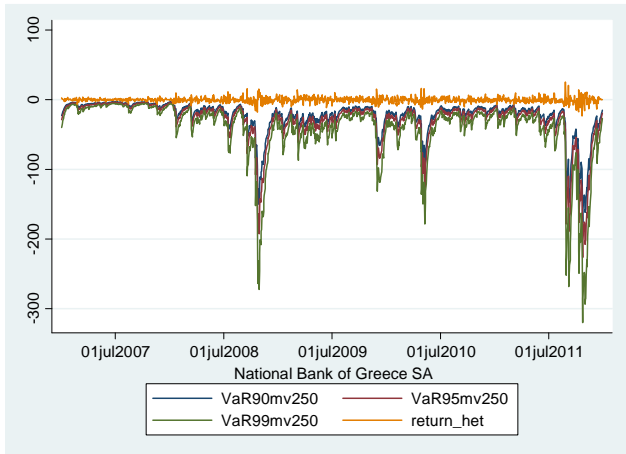


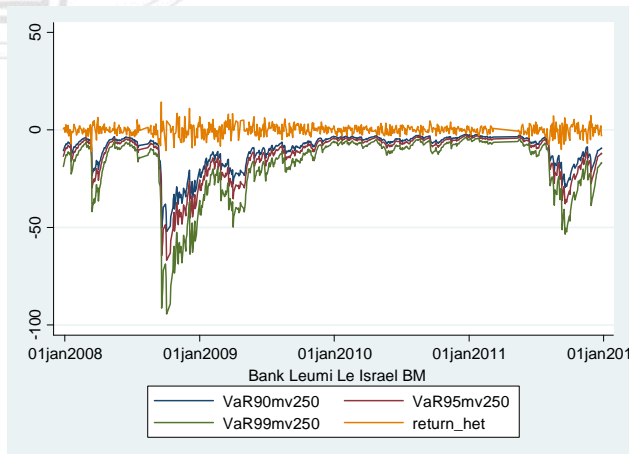
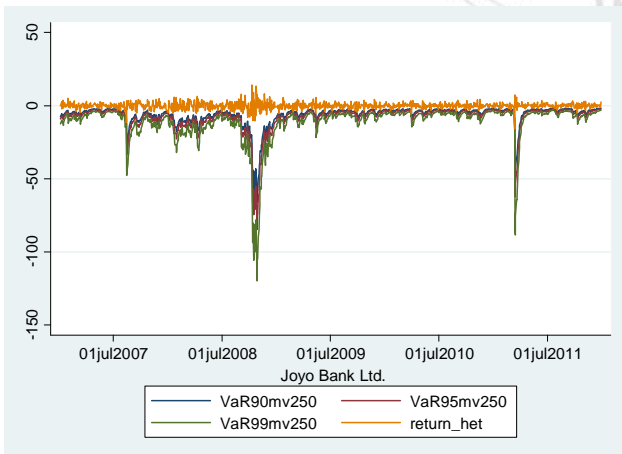
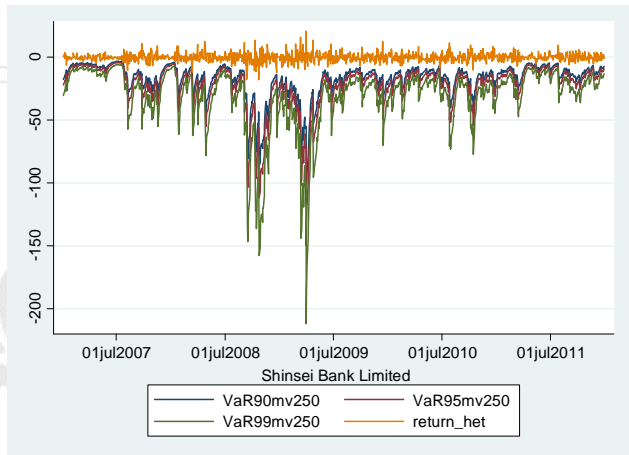
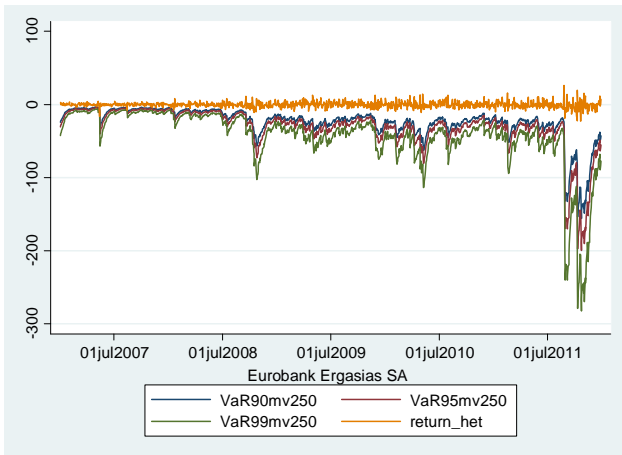
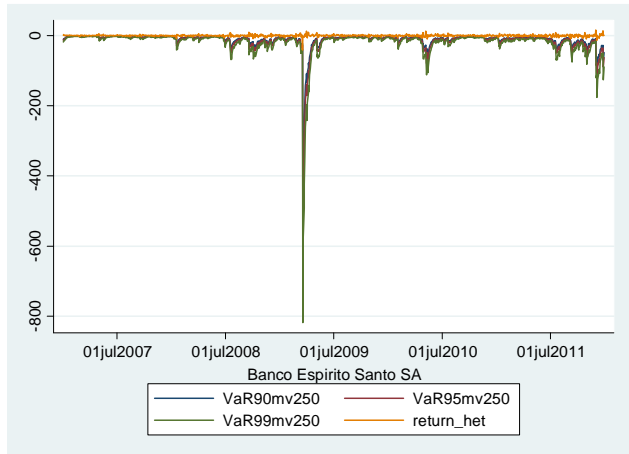
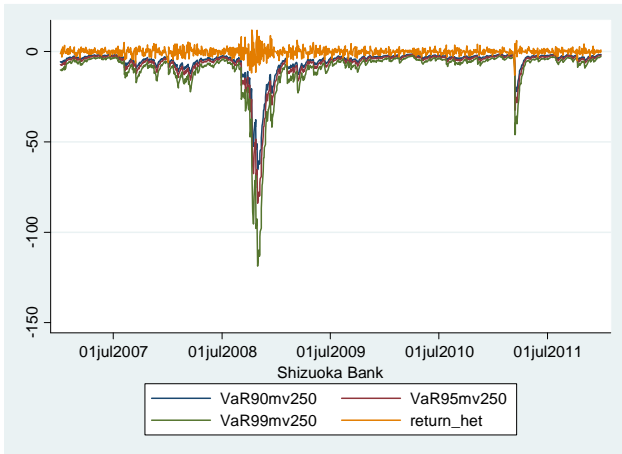


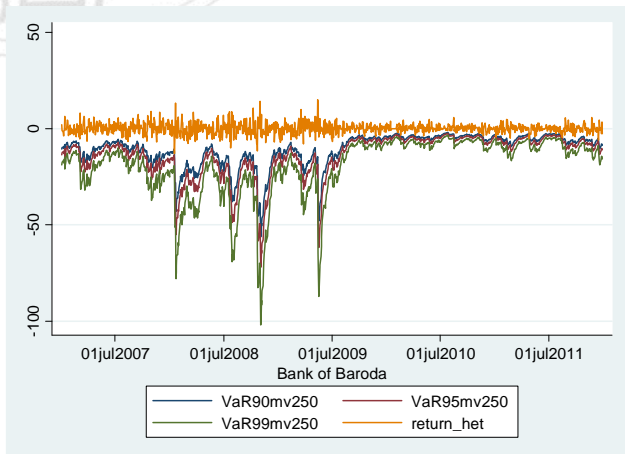
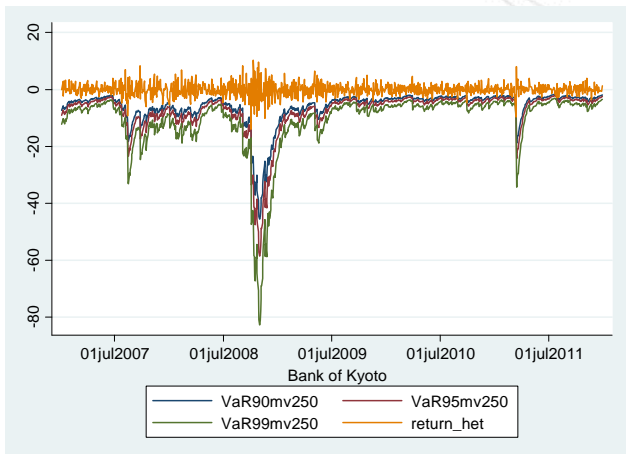
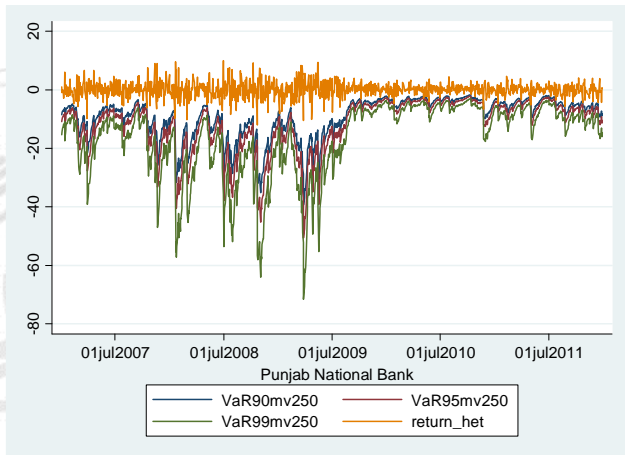
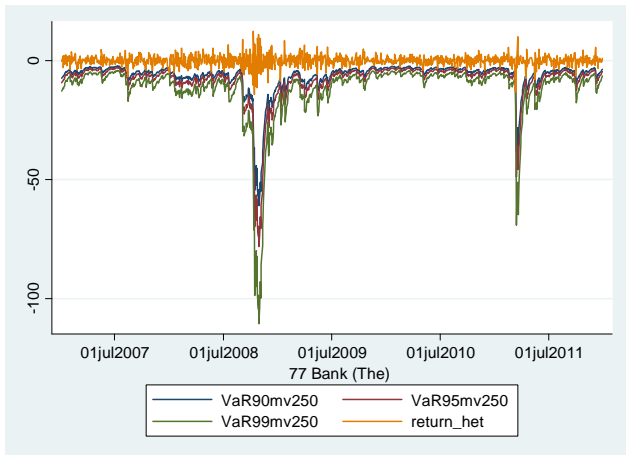
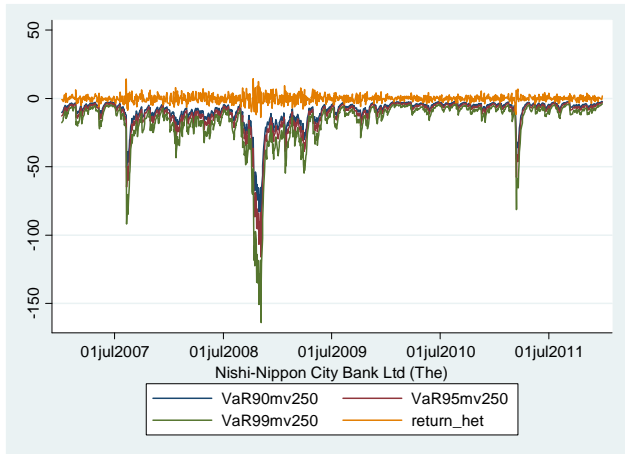
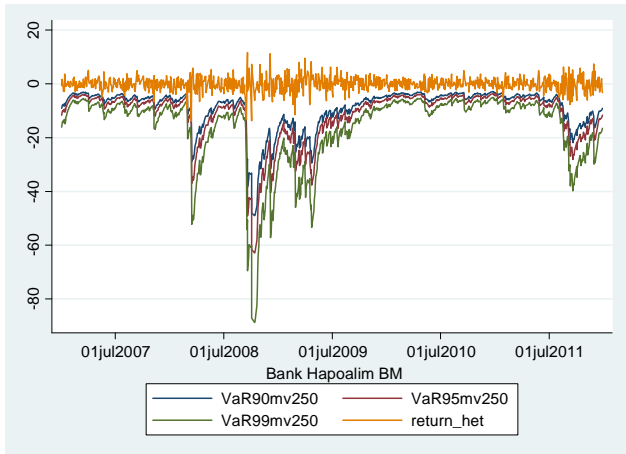


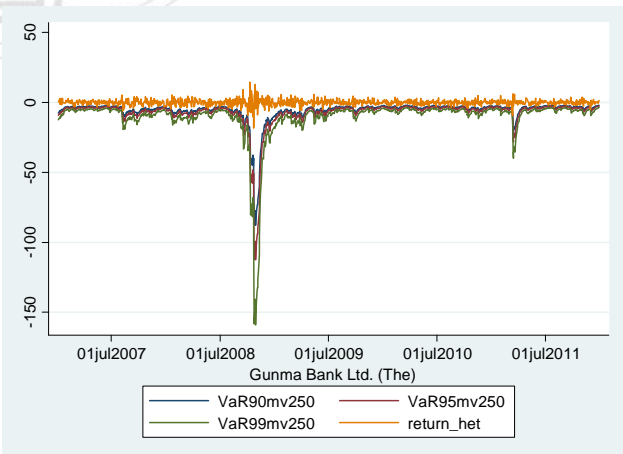
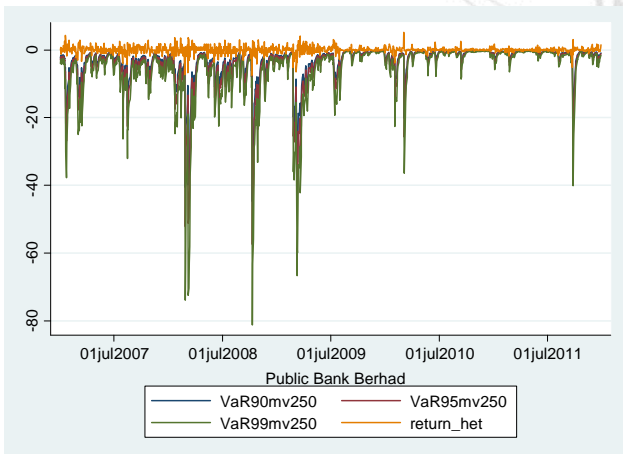
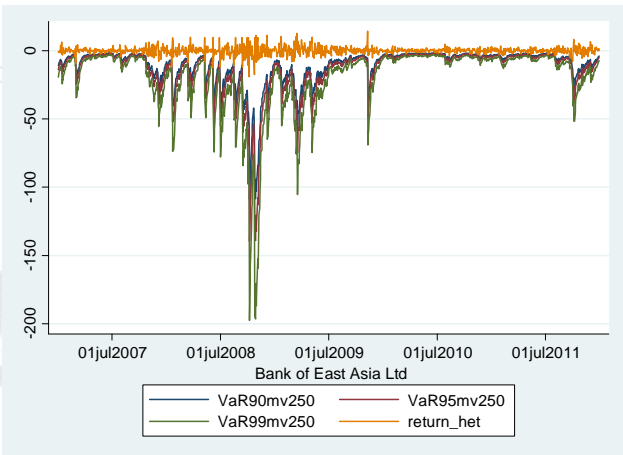
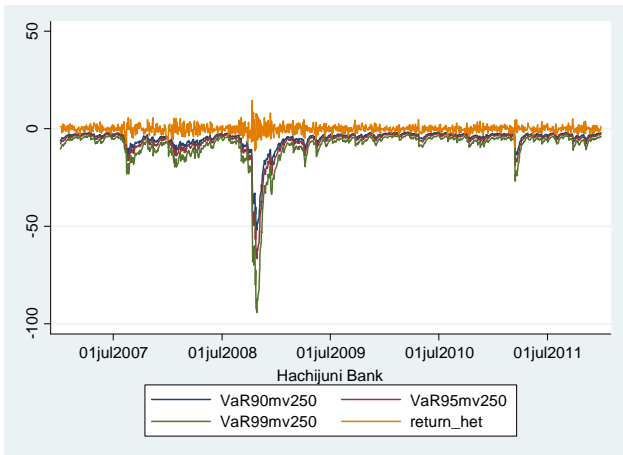
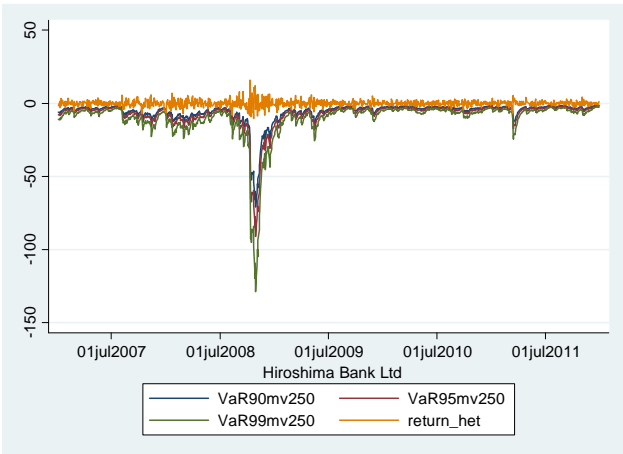
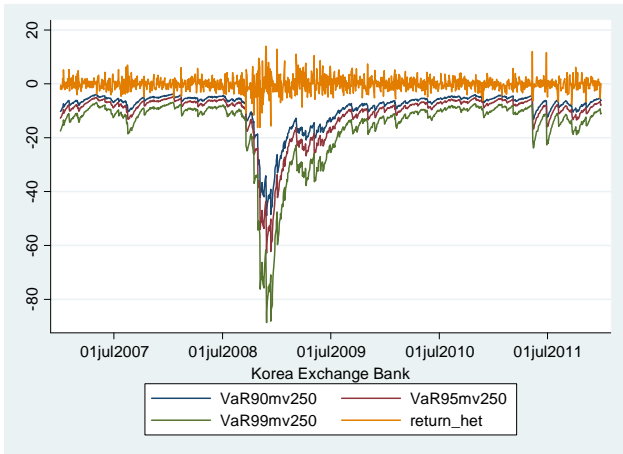


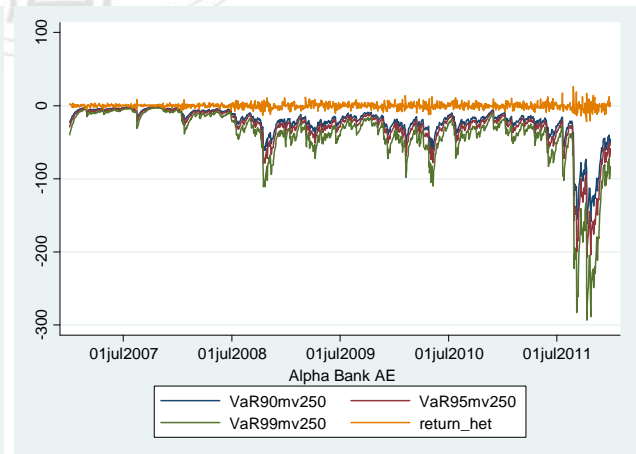
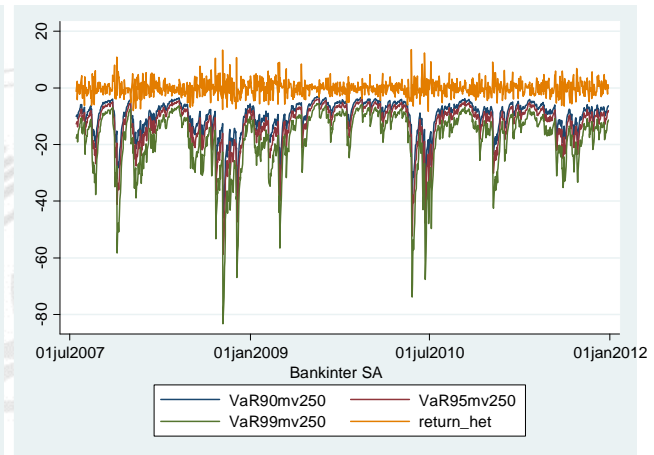
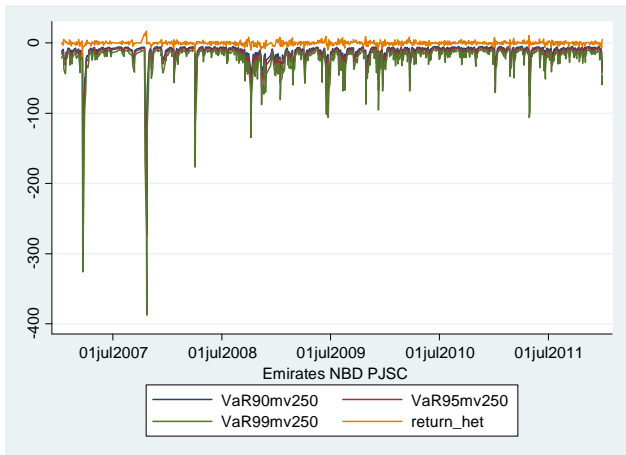
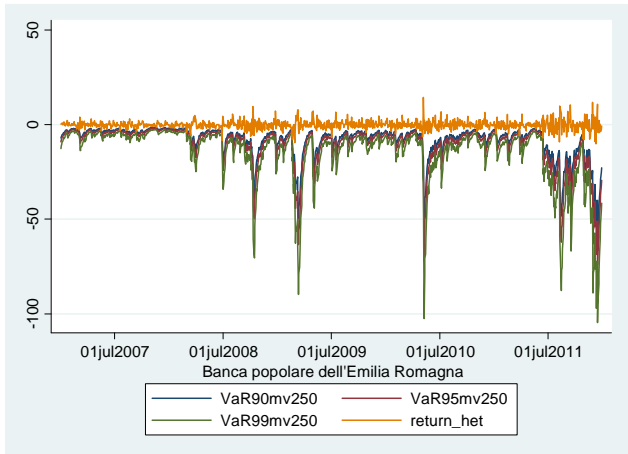
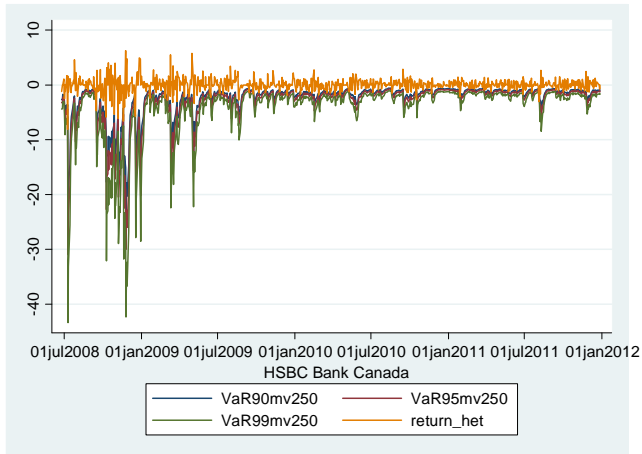


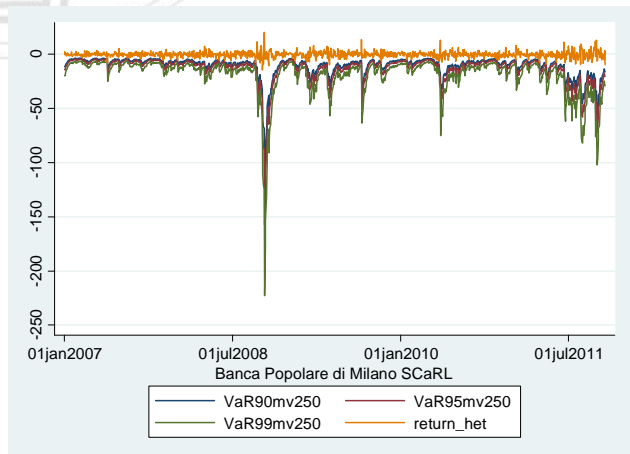
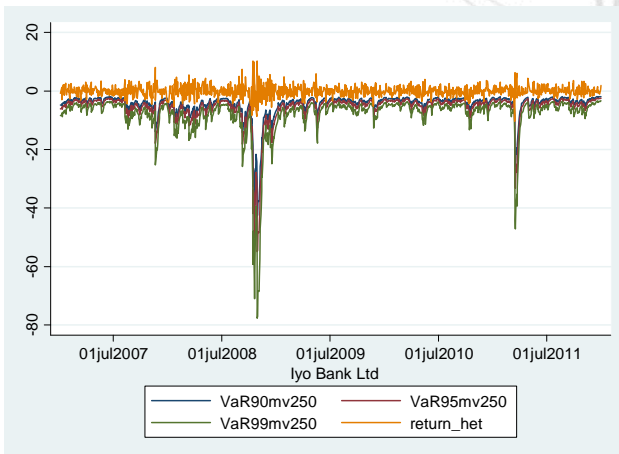
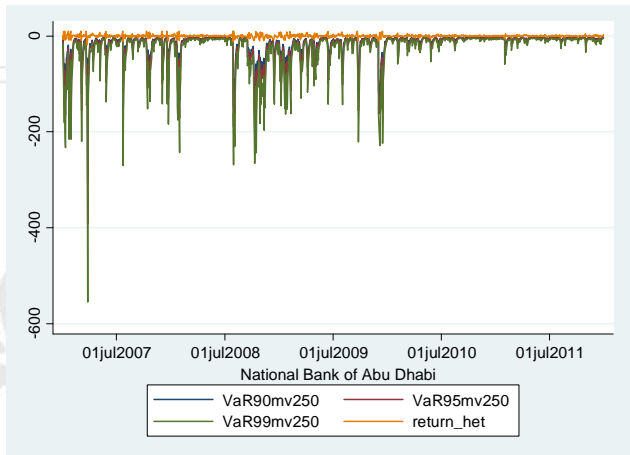
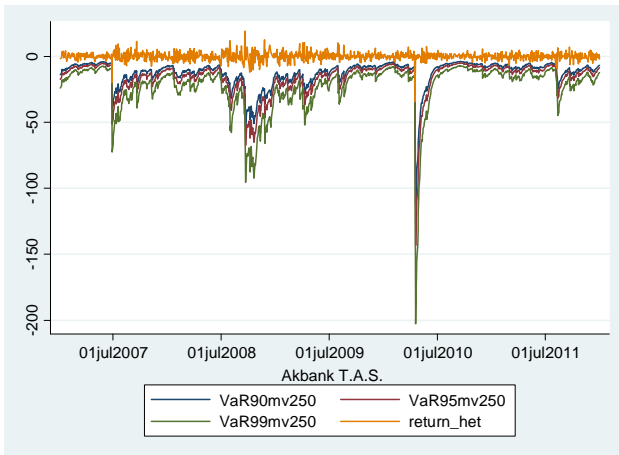
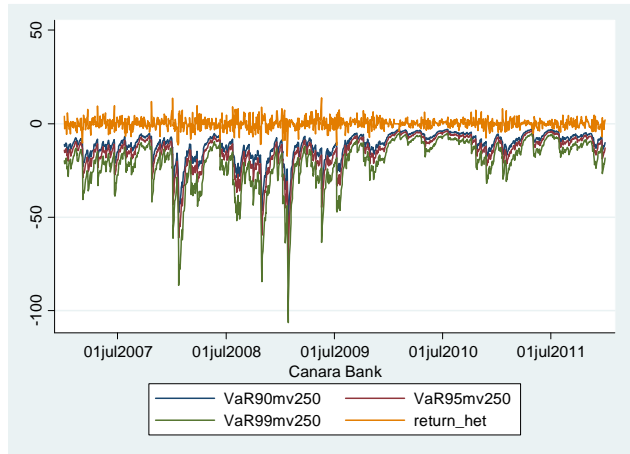
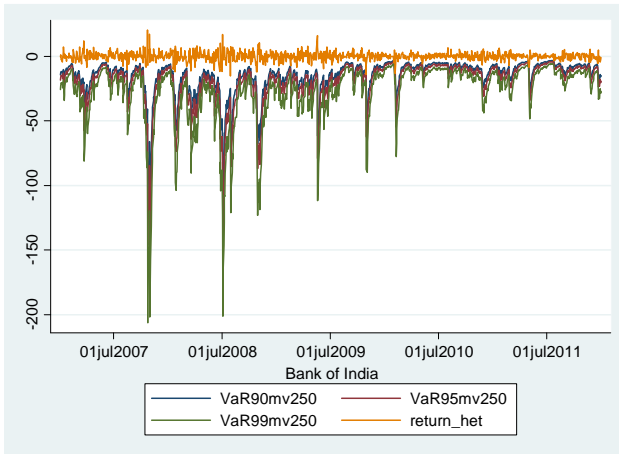


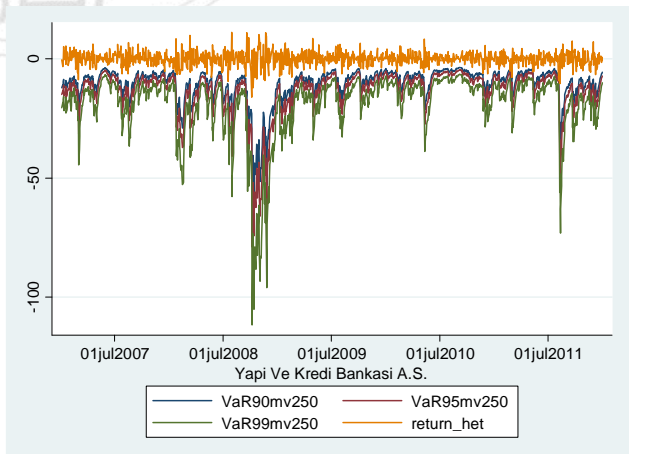
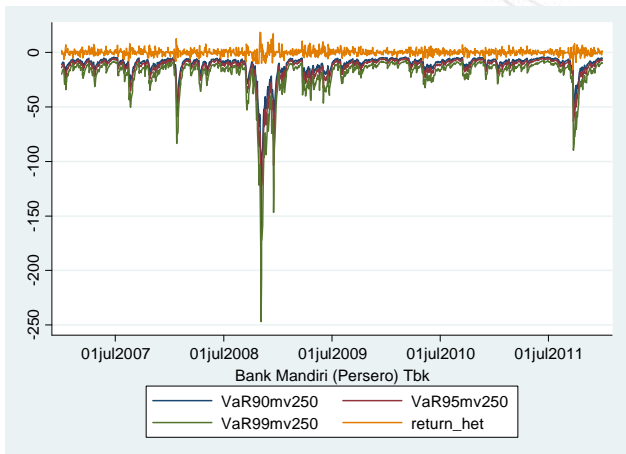
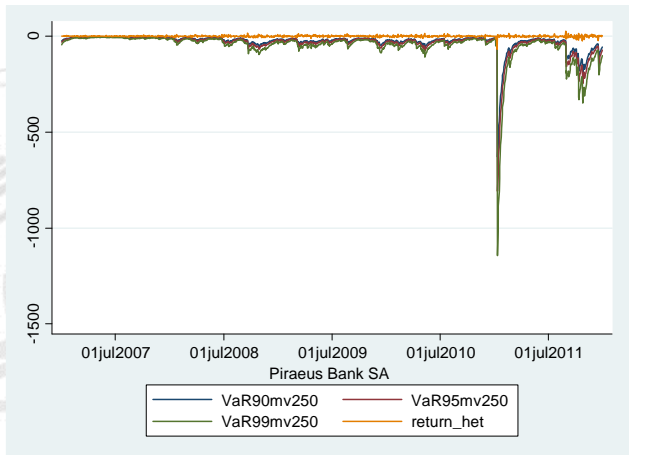
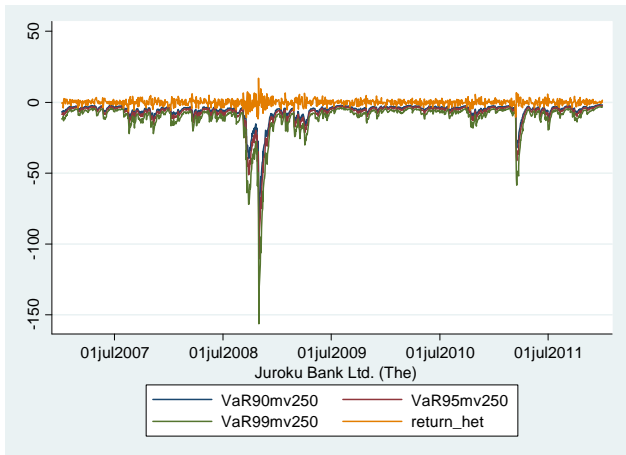
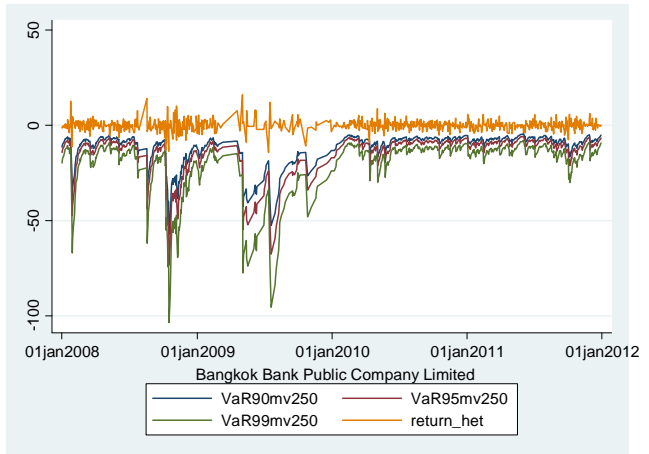


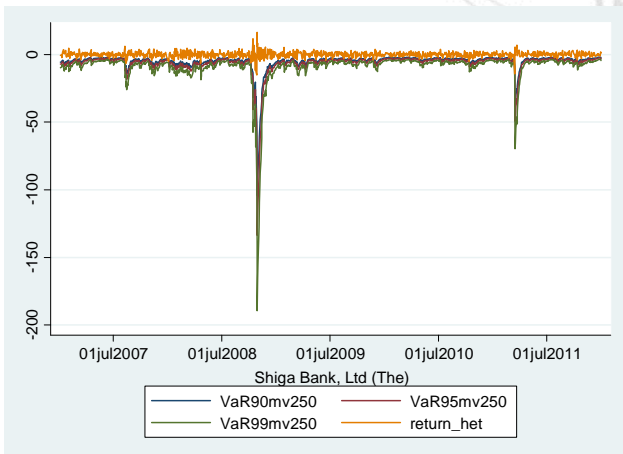
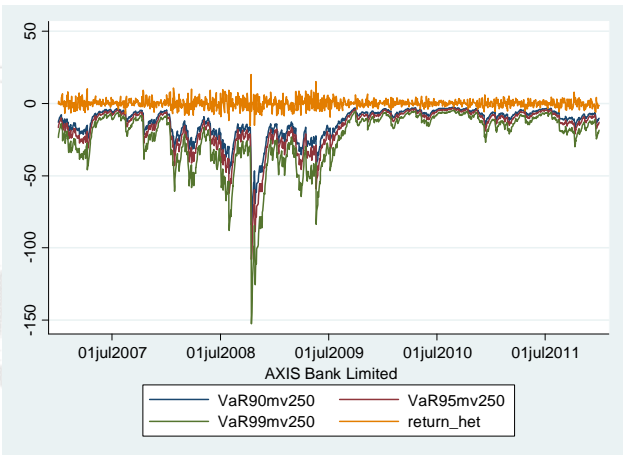
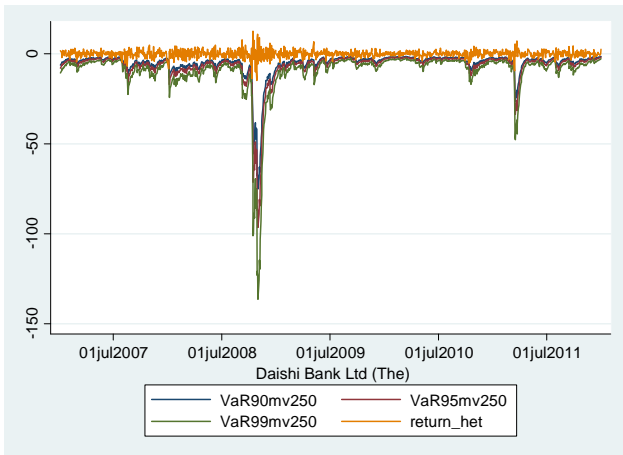
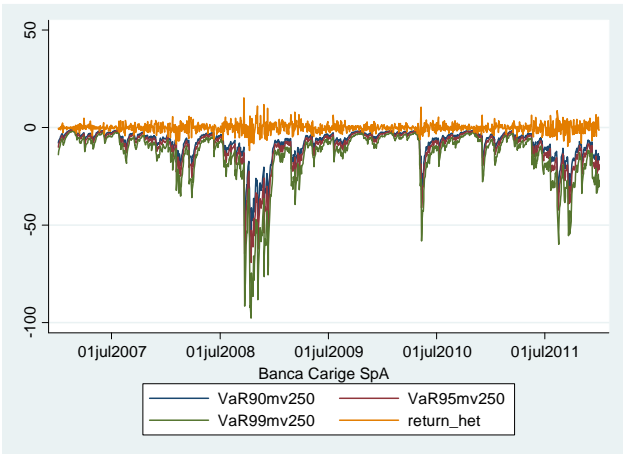
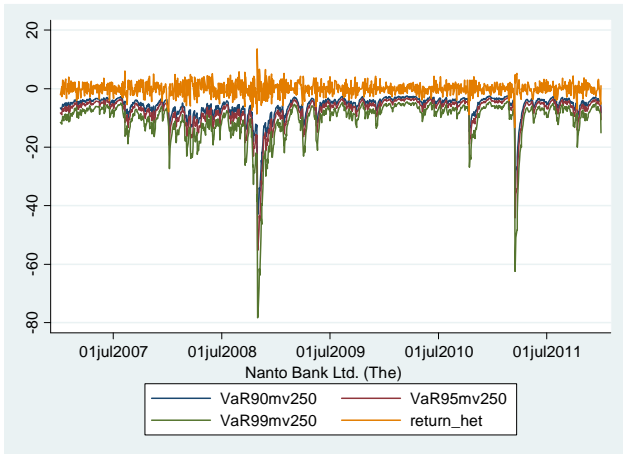




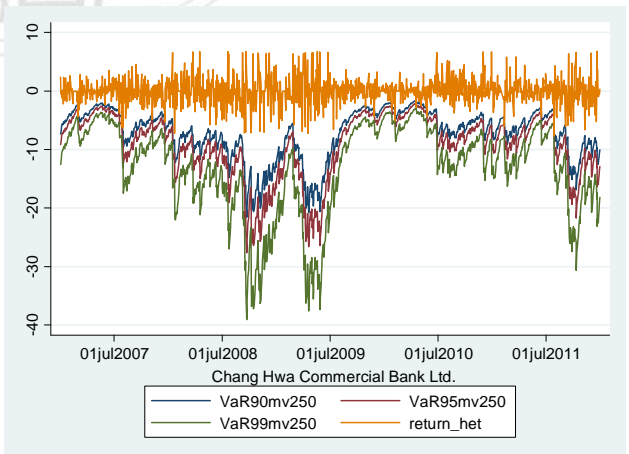
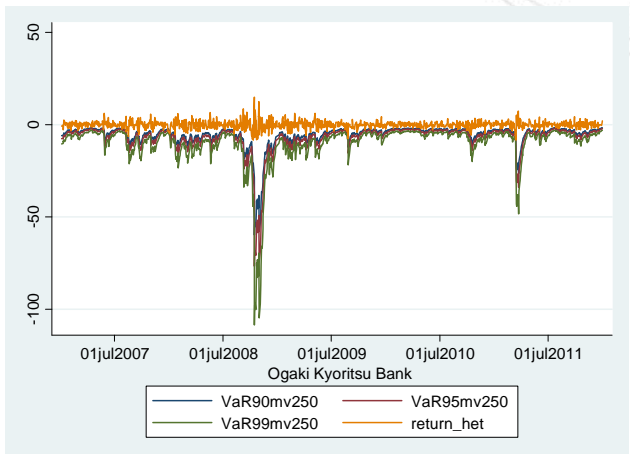
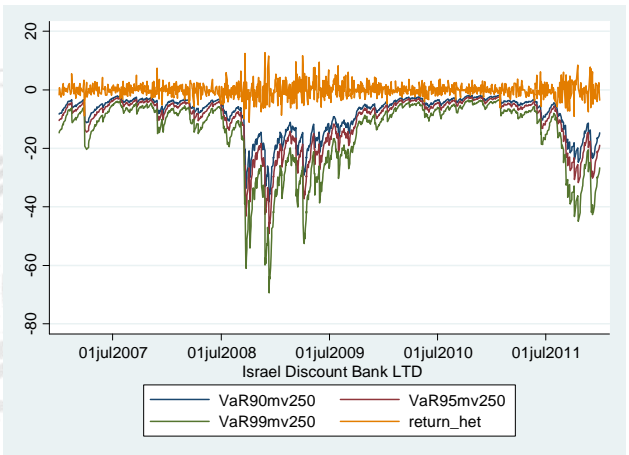
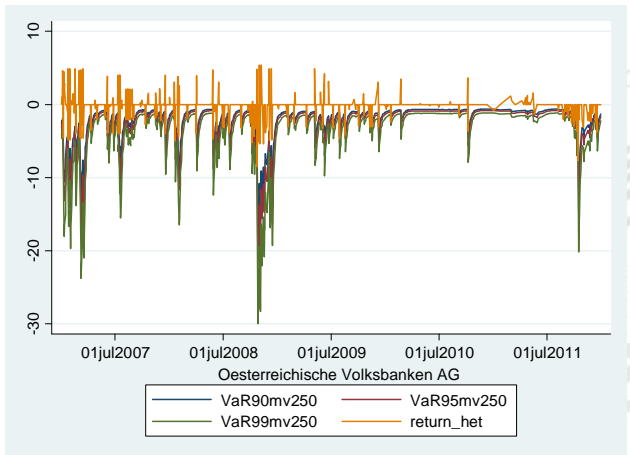
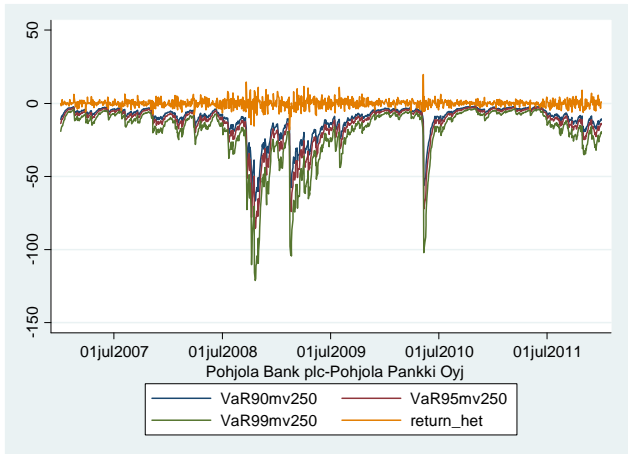
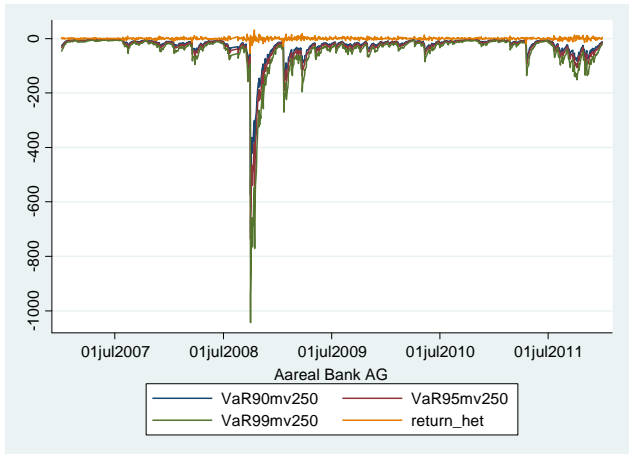


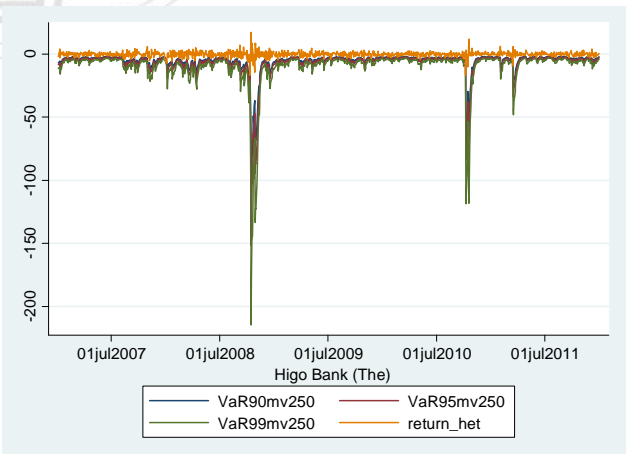
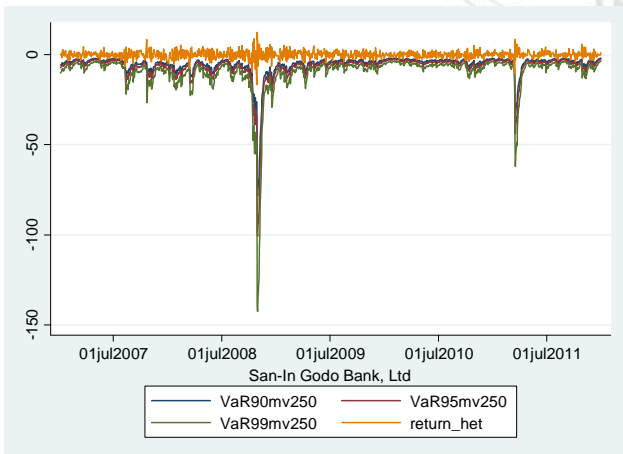
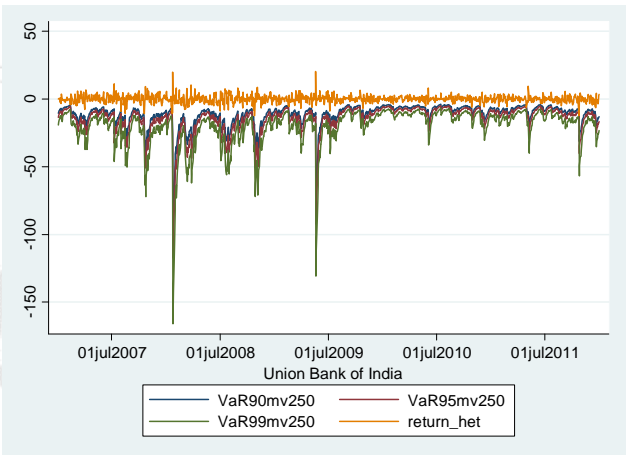
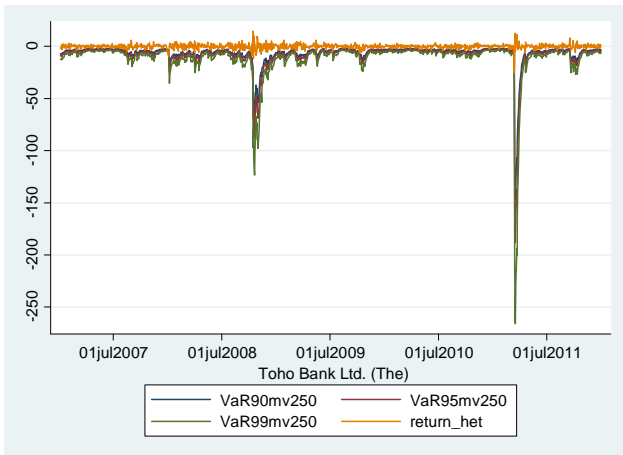
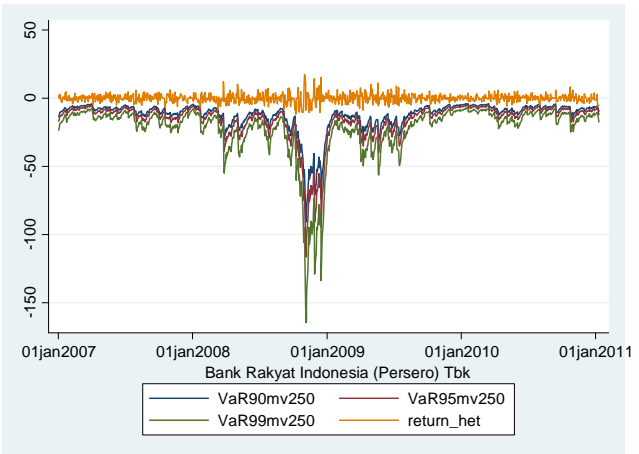
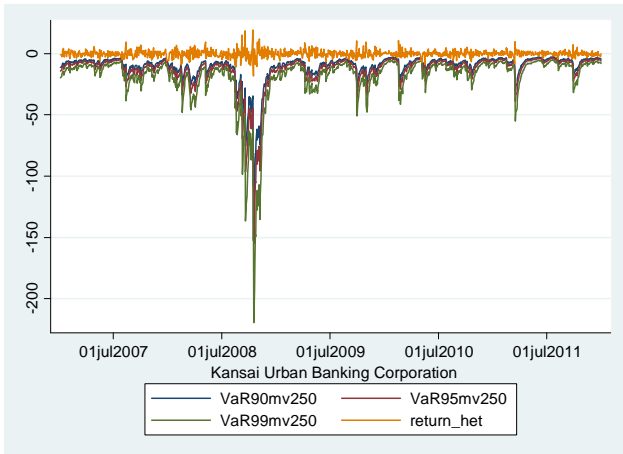


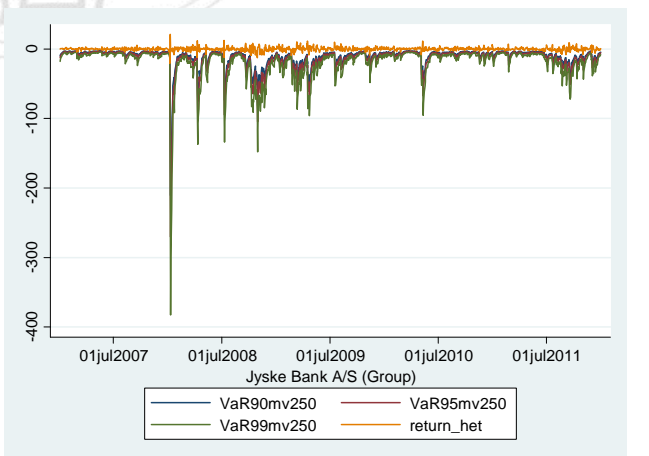
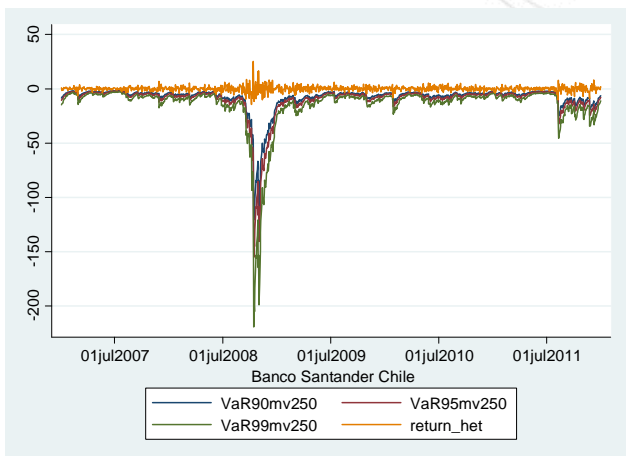
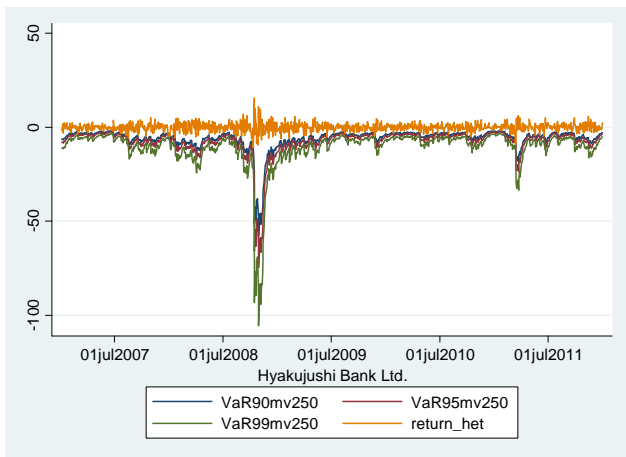
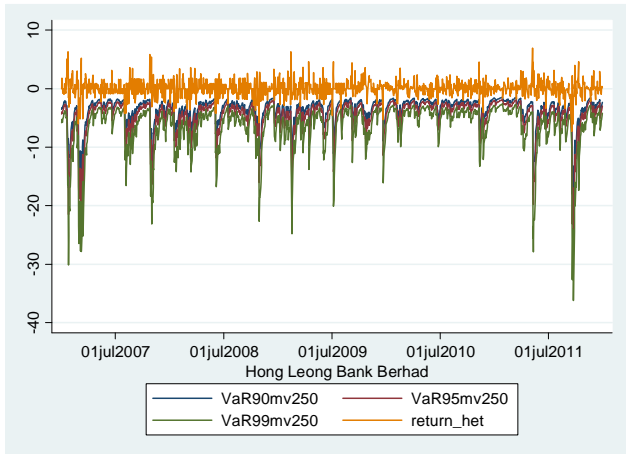


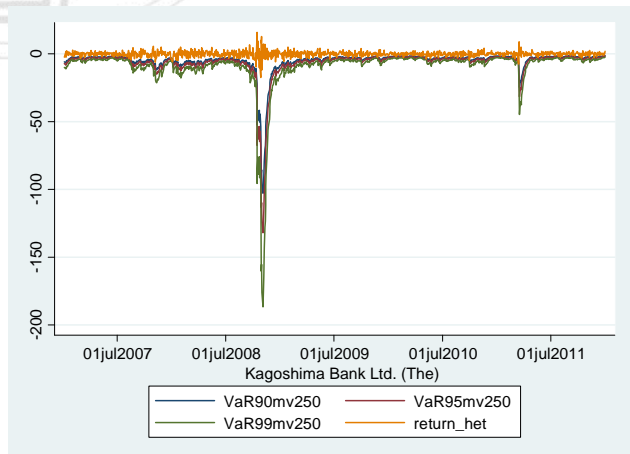
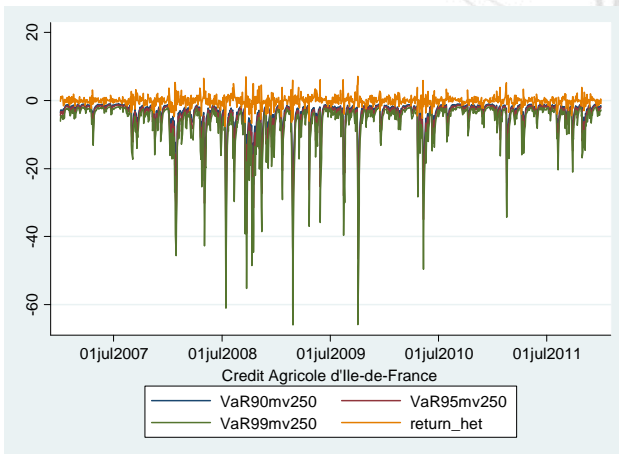
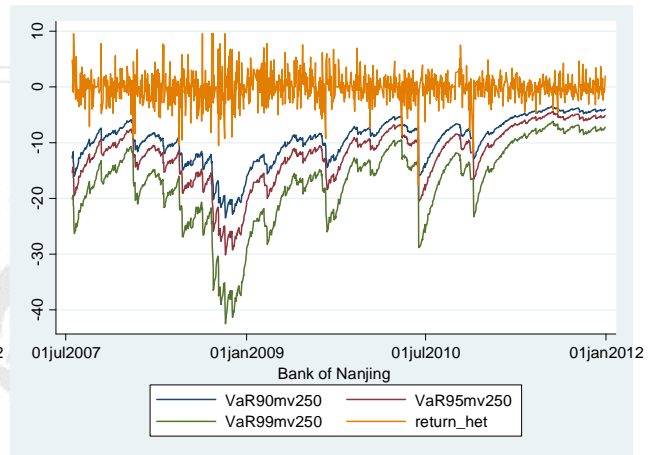
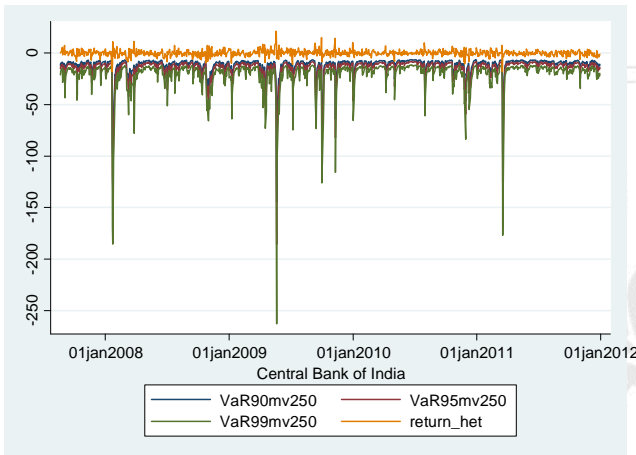
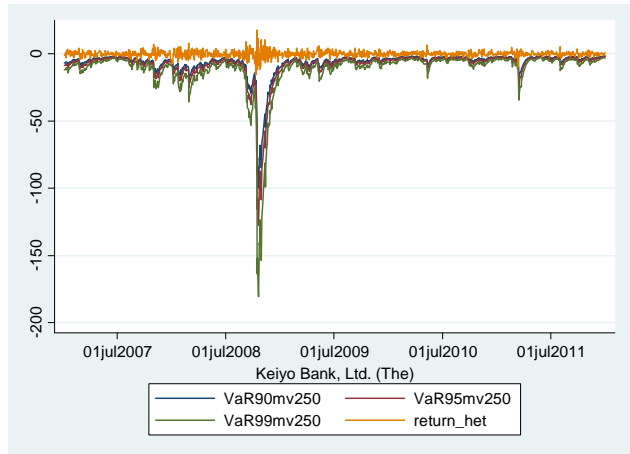


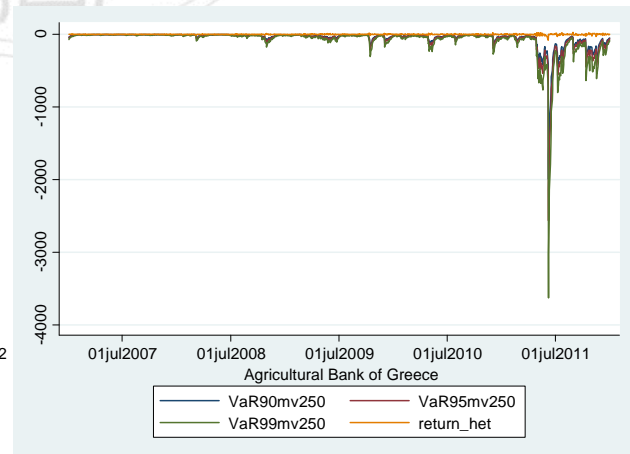
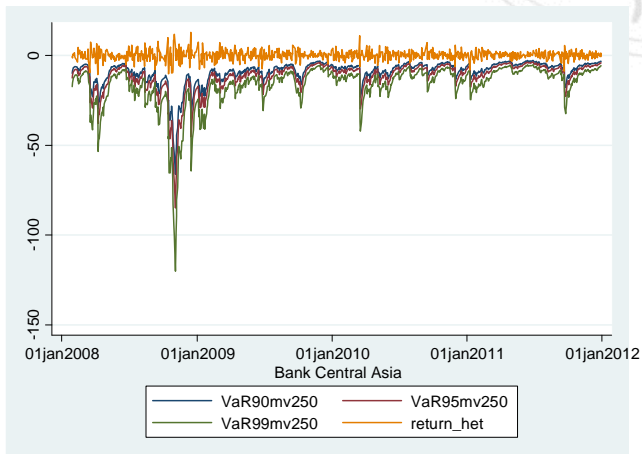
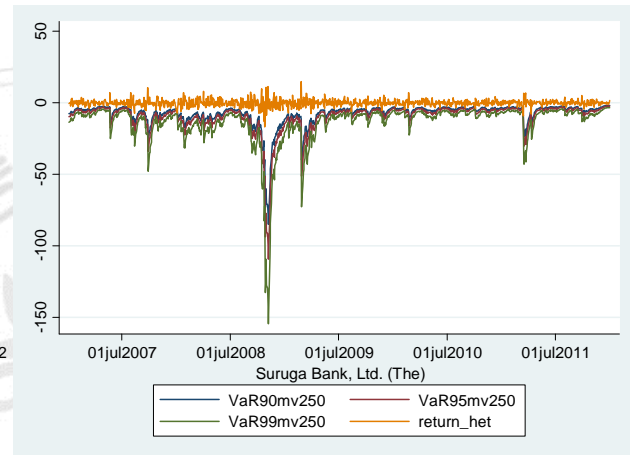
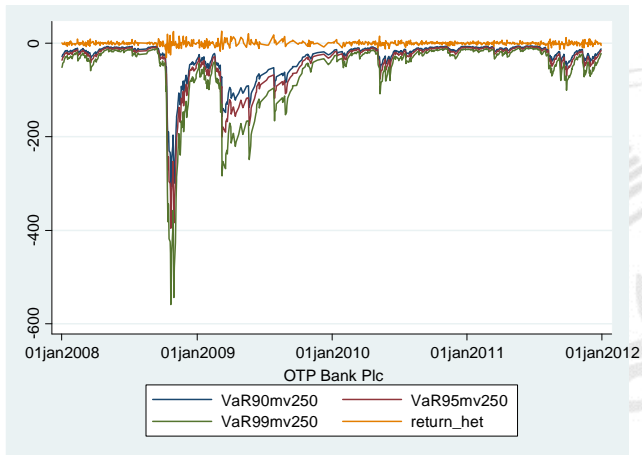
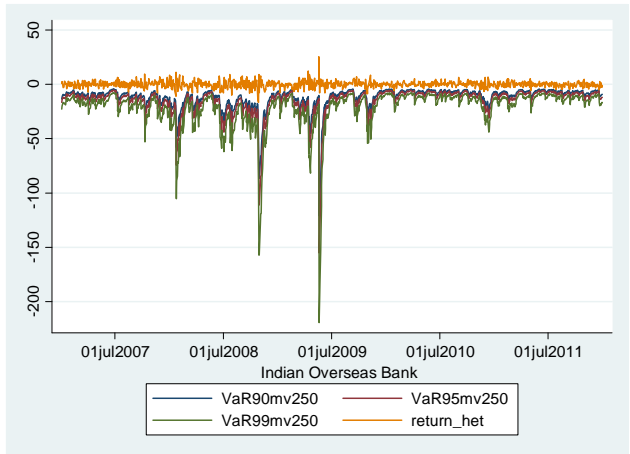
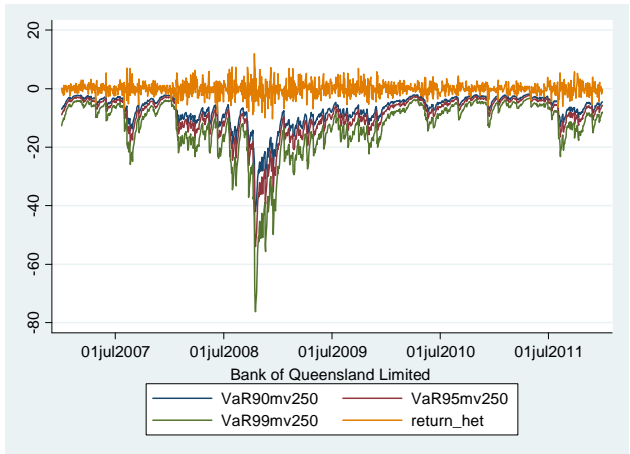


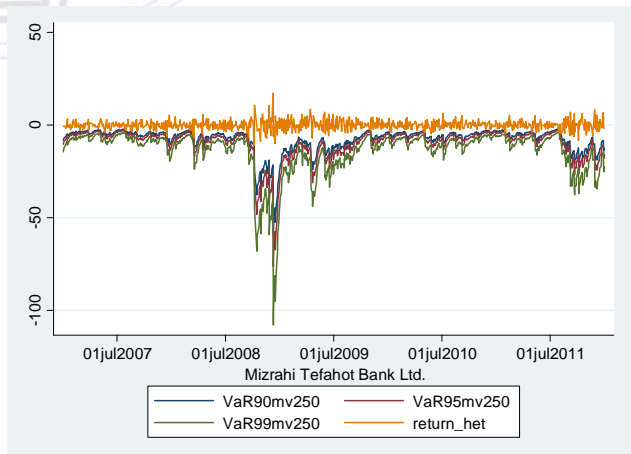
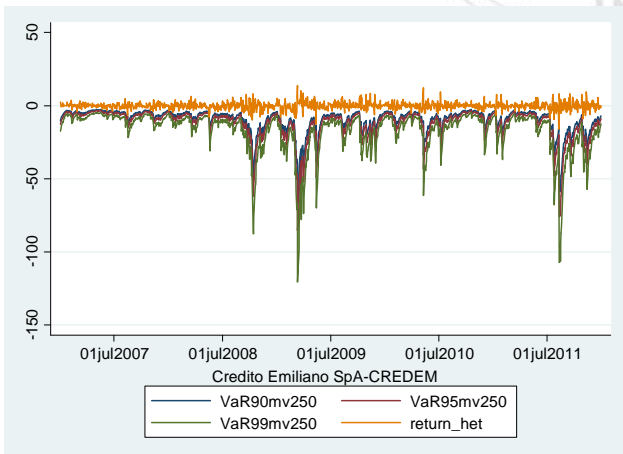
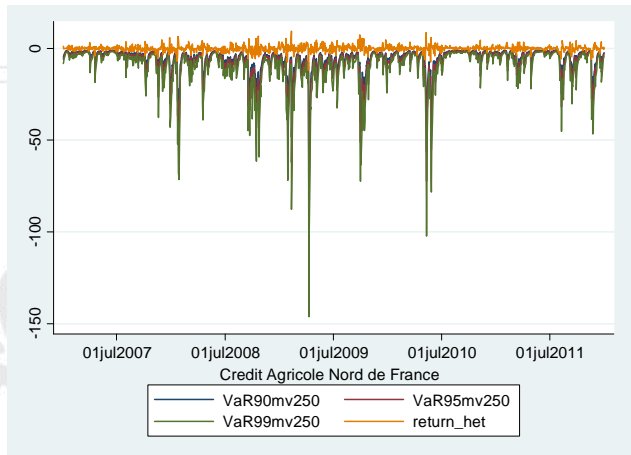
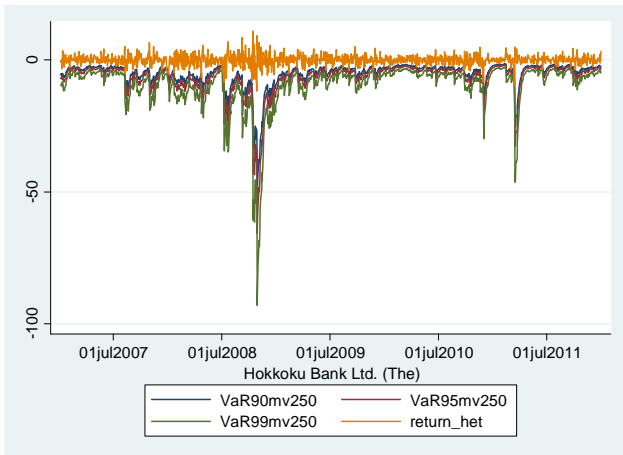
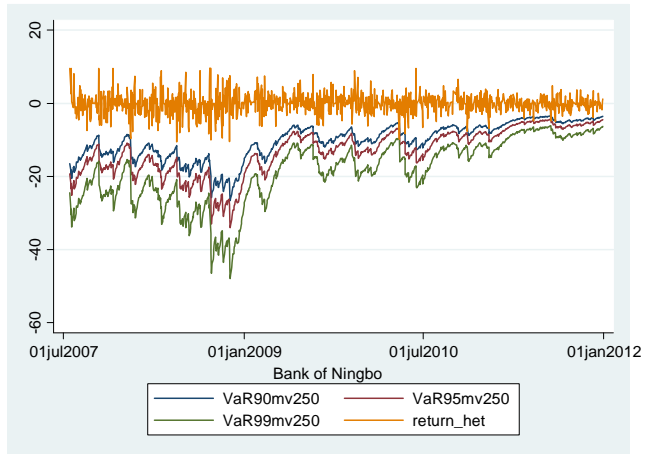
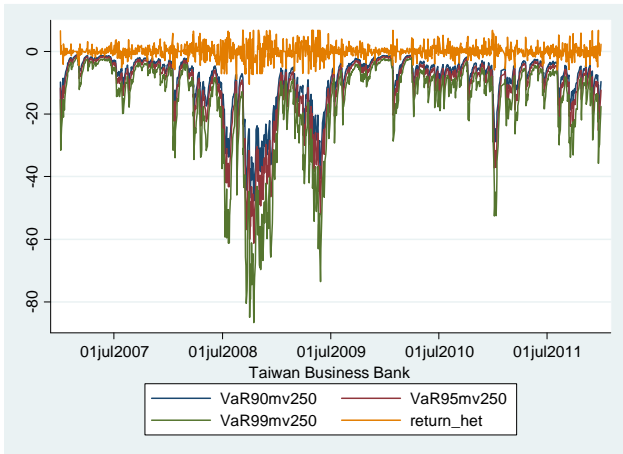


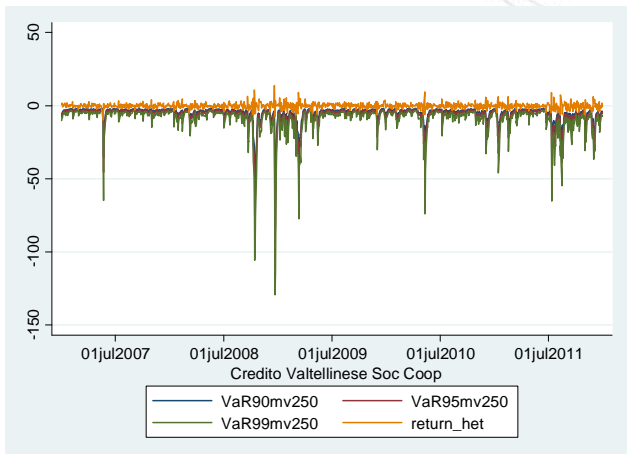
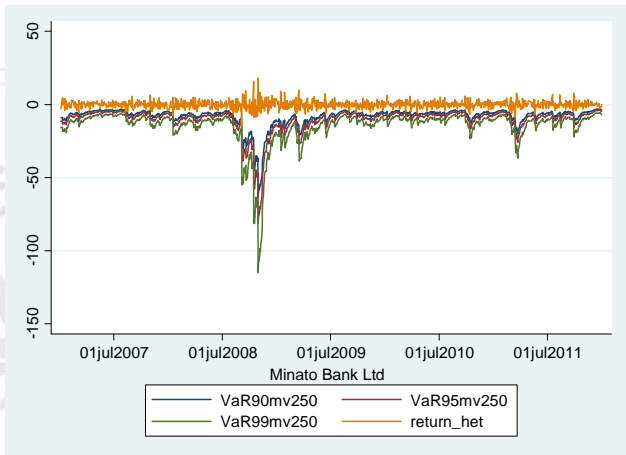
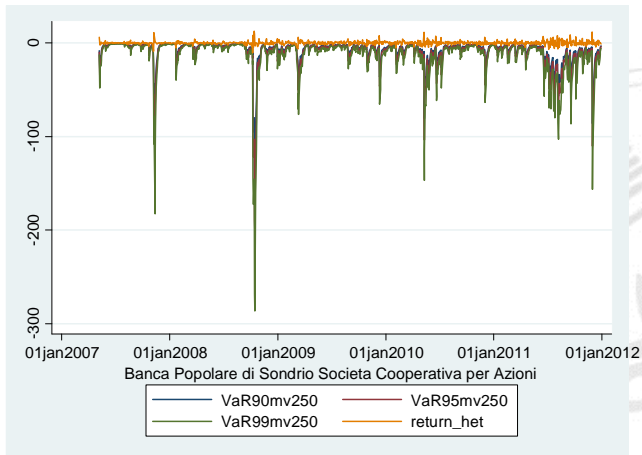
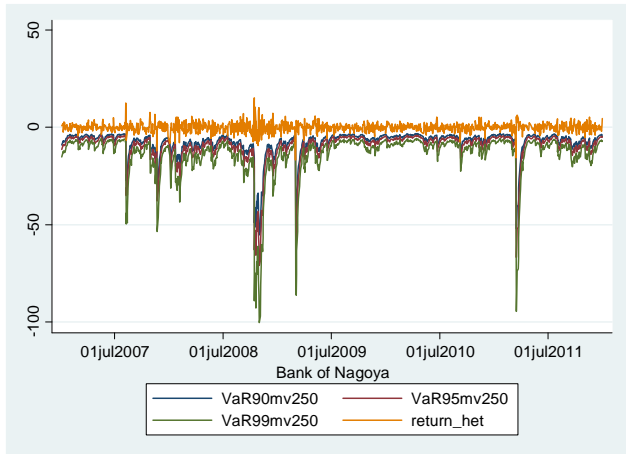
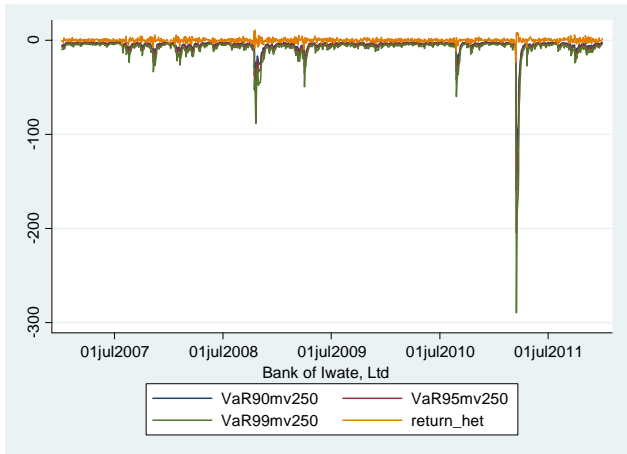


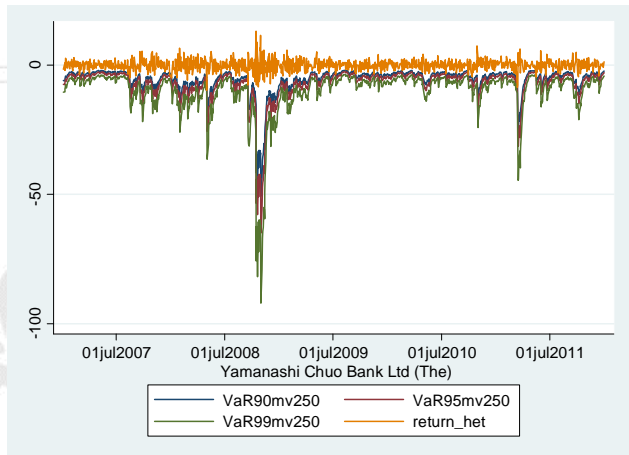
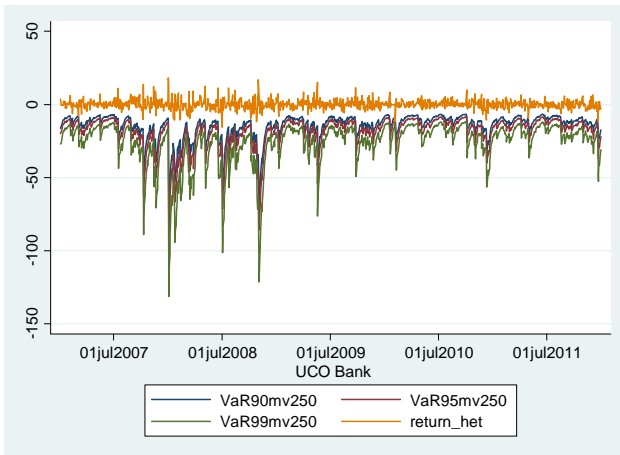
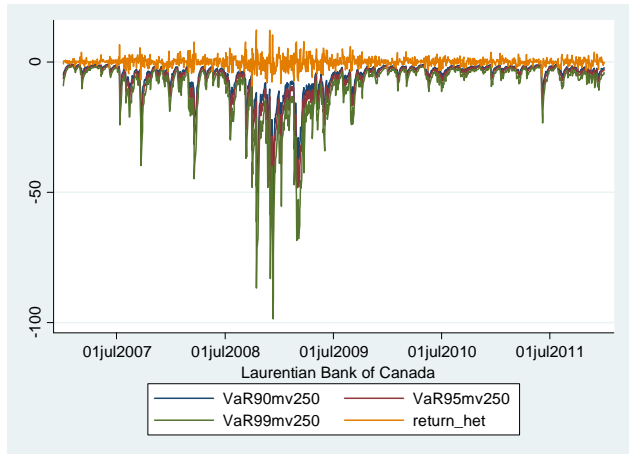
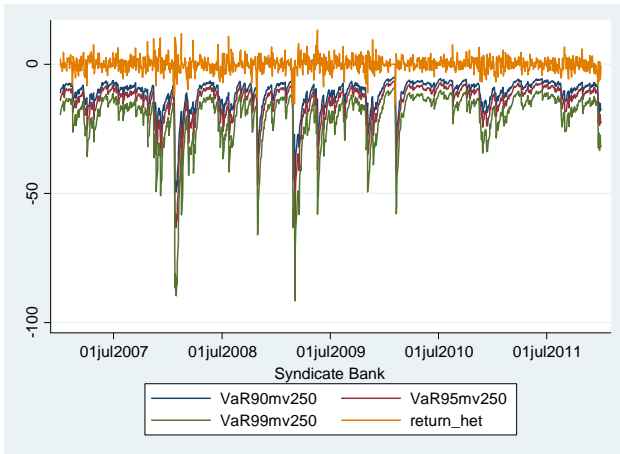




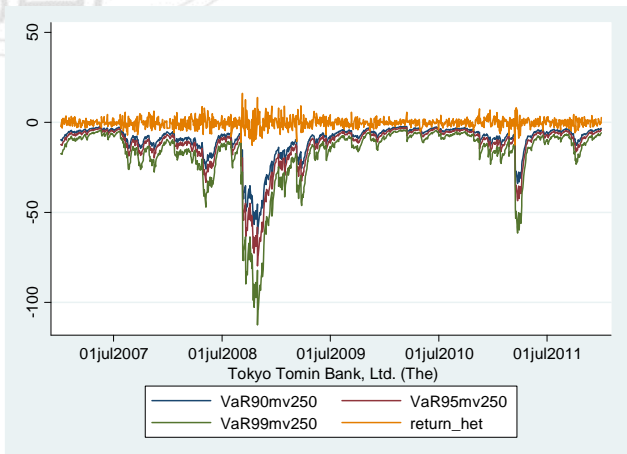
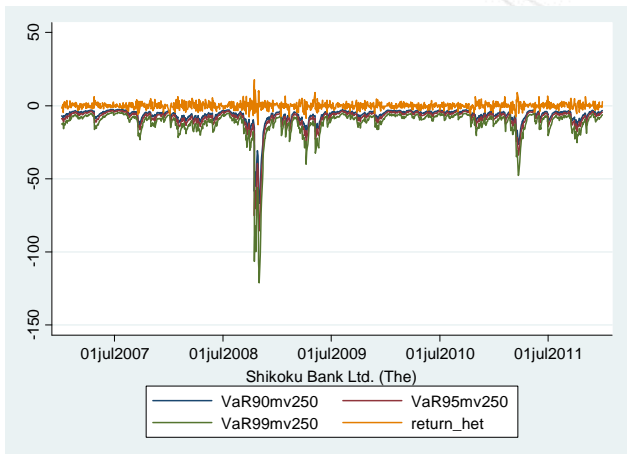
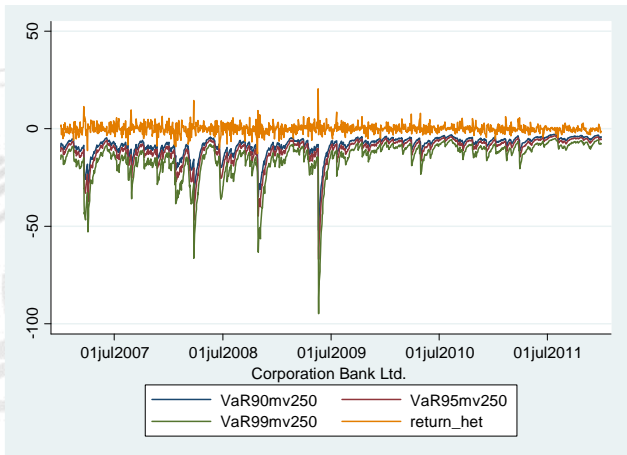
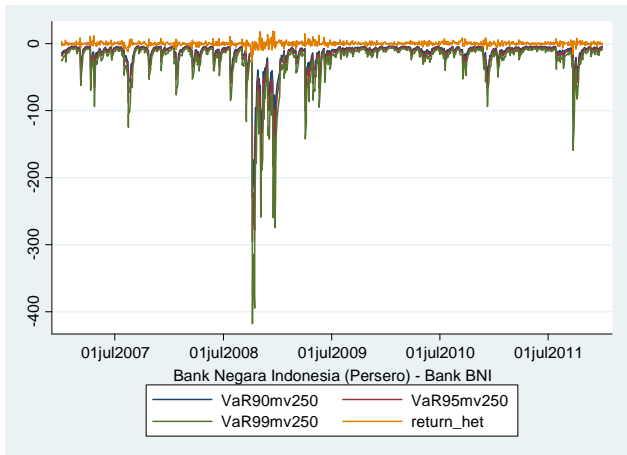
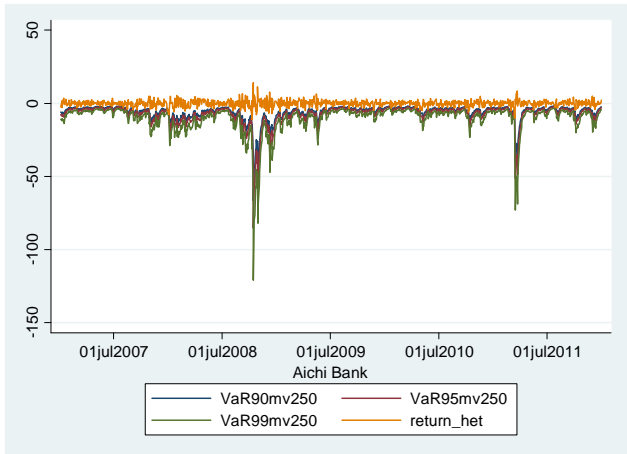
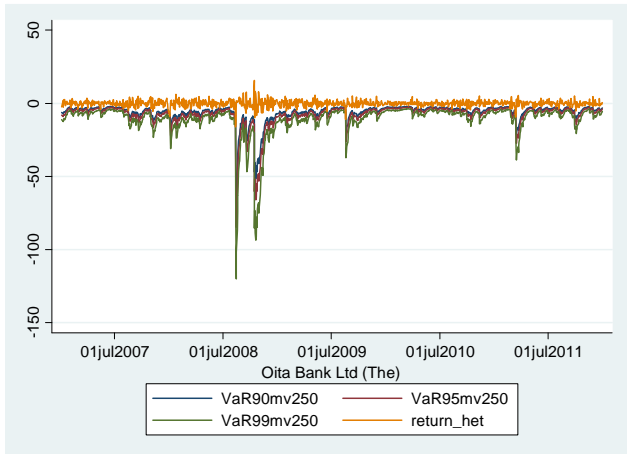


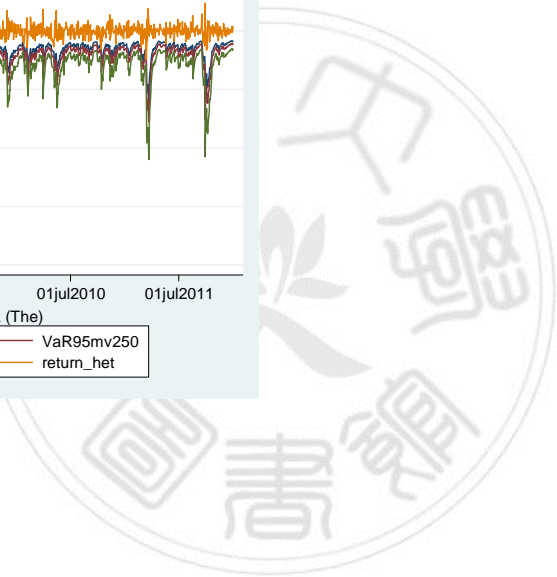
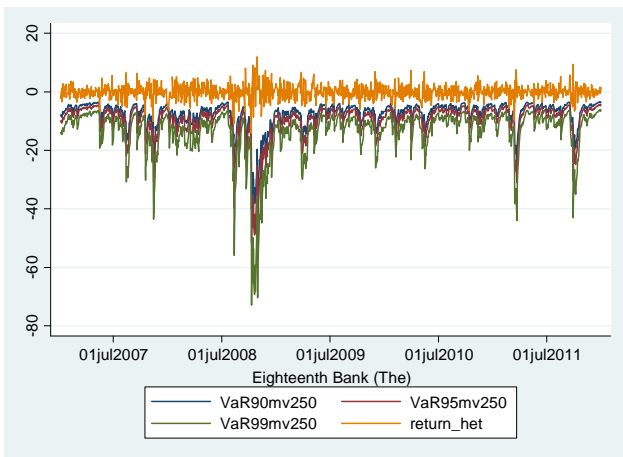
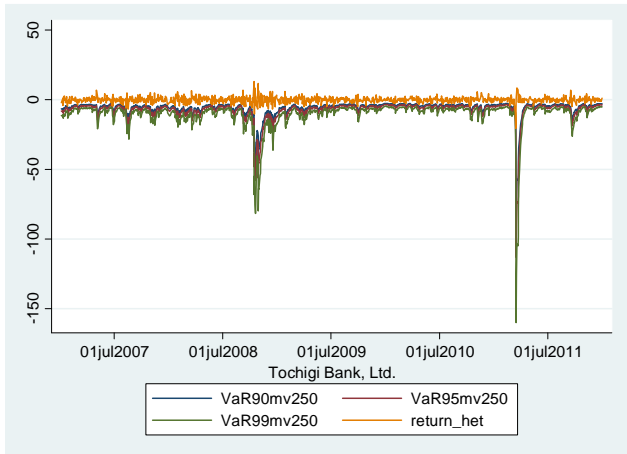
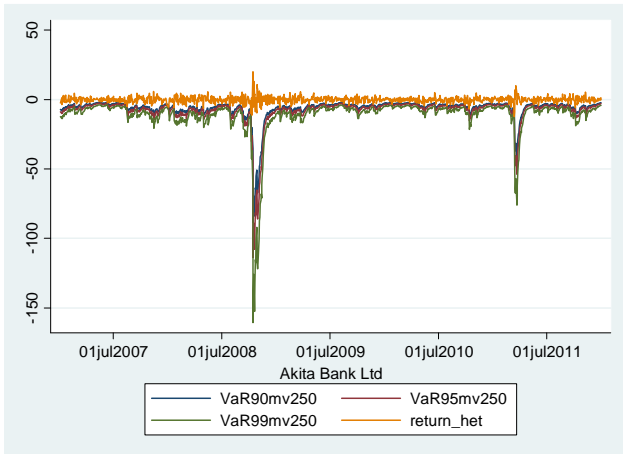












## 9. Appendix

### Sample of public-listed bank in the world (1996-2012)

World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr	World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr
1.	Deutsche Bank AG	GERMANY	2,799,978	66.	Banco de Sabadell SA	SPAIN	129,949
2.	BNP Paribas	FRANCE	2,542,739	67.	Hang Seng Bank Ltd.	HONG KONG	125,641
3.	Industrial & Commercial Bank of China (The) - ICBC	CHINA	2,456,295	68.	Banco Comercial Português, SA-Millennium bcp	PORTUGAL	120,950
4.	Crédit Agricole S.A.	FRANCE	2,230,053	69.	ICICI Bank Limited	INDIA	118,106
5.	China Construction Bank Corporation	CHINA	1,949,219	70.	Shizuoka Bank	JAPAN	117,063
6.	Bank of China Limited	CHINA	1,877,520	71.	Banco Espírito Santo SA	PORTUGAL	103,813
7.	Agricultural Bank of China Limited	CHINA	1,853,319	72.	Caja de Ahorros del Mediterraneo CAM	SPAIN	99,517
8.	Banco Santander SA	SPAIN	1,619,260	73.	Eurobank Ergasias SA	GREECE	99,394
9.	Société Générale	FRANCE	1,528,493	74.	Shinsei Bank Limited	JAPAN	97,955
10.	UBS AG	SWITZERLAND	1,508,303	75.	Joyo Bank Ltd.	JAPAN	97,224
11.	UniCredit SpA	ITALY	1,199,080	76.	Türkiye is Bankasi A.S. - ISBANK	TURKEY	96,246
12.	Commerzbank AG	GERMANY	856,208	77.	Bank Leumi Le Israel BM	ISRAEL	95,748
13.	Royal Bank of Canada RBC	CANADA	837,665	78.	Bank Hapoalim BM	ISRAEL	93,349
14.	Intesa Sanpaolo	ITALY	827,042	79.	North Pacific Bank-Hokuyo Bank	JAPAN	92,822
15.	Toronto Dominion Bank	CANADA	823,458	80.	Nishi-Nippon City Bank Ltd (The)	JAPAN	92,728
16.	National Australia Bank Limited	AUSTRALIA	798,570	81.	77 Bank (The)	JAPAN	92,413
17.	Banco Bilbao Vizcaya Argentaria SA	SPAIN	773,306	82.	Punjab National Bank	INDIA	91,962
18.	Commonwealth Bank of Australia	AUSTRALIA	731,916	83.	Absa Bank Ltd	SOUTH AFRICA	91,176
19.	Bank of Communications Co. Ltd	CHINA	731,828	84.	Bank of Kyoto	JAPAN	89,418
20.	Westpac Banking Corporation	AUSTRALIA	706,348	85.	Bank of Baroda	INDIA	89,414
21.	Bank of Nova Scotia (The) - SCOTIABANK	CANADA	678,217	86.	Korea Exchange Bank	KOREA REPUBLIC OF	87,252
22.	Australia and New Zealand Banking Group	AUSTRALIA	671,983	87.	Türkiye Garanti Bankasi A.S.	TURKEY	85,540
23.	Natixis	FRANCE	656,892	88.	Qatar National Bank	QATAR	82,955
24.	Danske Bank A/S	DENMARK	596,004	89.	Hiroshima Bank Ltd	JAPAN	80,493
25.	Bank of Montreal-Banque de Montreal	CANADA	533,451	90.	Hachijuni Bank	JAPAN	79,802
26.	Banco do Brasil S.A.	BRAZIL	527,884	91.	Bank of East Asia Ltd	HONG KONG	78,733
27.	China Merchants Bank Co Ltd	CHINA	443,583	92.	Public Bank Berhad	MALAYSIA	78,505
28.	China CITIC Bank Corporation Limited	CHINA	438,966	93.	Gunma Bank Ltd. (The)	JAPAN	78,467
29.	Shanghai Pudong Development Bank	CHINA	426,081	94.	HSBC Bank Canada	CANADA	78,350
30.	Canadian Imperial Bank of Commerce CIBC	CANADA	399,376	95.	Banca popolare dell'Emilia Romagna	ITALY	78,261
31.	Bankia, SA	SPAIN	391,831	96.	Emirates NBD PJSC	UNITED ARAB EMIRATES	77,499
32.	Banco Bradesco SA	BRAZIL	388,469	97.	Bankinter SA	SPAIN	76,972
33.	Shinkin Central Bank	JAPAN	366,960	98.	Gazprombank	RUSSIAN FEDERATION	76,956
34.	State Bank of India	INDIA	357,717	99.	Chugoku Bank, Ltd. (The)	JAPAN	76,855
35.	Svenska Handelsbanken	SWEDEN	356,340	100.	Alpha Bank AE	GREECE	76,527
36.	China Minsheng Banking Corporation	CHINA	353,769	101.	Bank of India	INDIA	75,765
37.	Skandinaviska Enskilda Banken AB	SWEDEN	343,025	102.	Canara Bank	INDIA	74,103
38.	Sberbank of Russia	RUSSIAN FEDERATION	336,535	103.	Akbank T.A.S.	TURKEY	73,208
39.	Banca Monte dei Paschi di Siena SpA-Gruppo Monte dei Paschi di Siena	ITALY	311,427	104.	National Bank of Abu Dhabi	UNITED ARAB EMIRATES	69,617
40.	Crédit Industriel et Commercial - CIC	FRANCE	301,828	105.	Iyo Bank Ltd	JAPAN	68,698
41.	Industrial Bank Co Ltd	CHINA	279,284	106.	Banca Popolare di Milano SCArL	ITALY	67,190
42.	China Everbright Bank Co Ltd	CHINA	275,095	107.	HDFC Bank Ltd	INDIA	66,669
43.	Swedbank AB	SWEDEN	269,620	108.	Bangkok Bank Public Company Limited	THAILAND	66,483
44.	Deutsche Postbank AG	GERMANY	248,392	109.	Juroku Bank Ltd. (The)	JAPAN	66,471
45.	Banco Santander (Brasil) S.A.	BRAZIL	215,139	110.	Piraeus Bank SA	GREECE	63,853
46.	Oversea-Chinese Banking Corporation Limited OCBC	SINGAPORE	213,545	111.	Krung Thai Bank Public Company Limited	THAILAND	62,005
47.	VTB Bank, an Open Joint-Stock Company (JSC)	RUSSIAN FEDERATION	210,883	112.	Bank Mandiri (Persero) Tbk	INDONESIA	60,861
48.	Bank of Ireland-Governor and Company of the Bank of Ireland	IRELAND	200,388	113.	Yapi Ve Kredi Bankasi A.S.	TURKEY	60,728
49.	Ping An Bank Co Ltd	CHINA	199,682	114.	Siam Commercial Bank Public Company Limited	THAILAND	59,254
50.	Hua Xia Bank co., Limited	CHINA	197,461	115.	Nanto Bank Ltd. (The)	JAPAN	58,385
51.	SLM Corporation-Sallie Mae	UNITED STATES OF AMERICA	193,345	116.	Bendigo and Adelaide Bank Limited	AUSTRALIA	58,329
52.	Raiffeisen Bank International AG	AUSTRIA	190,173	117.	Banca Carige SpA	ITALY	58,041
53.	United Overseas Bank Limited UOB	SINGAPORE	182,177	118.	Daishi Bank Ltd (The)	JAPAN	56,836
54.	National Bank of Canada-Banque Nationale du Canada	CANADA	180,612	119.	Powszechna Kasa Oszczednosci Bank Polski SA - PKO BP SA	POLAND	55,817
55.	Allied Irish Banks plc	IRELAND	176,803	120.	AXIS Bank Limited	INDIA	55,793
56.	Banco Popolare	ITALY	173,537	121.	Shiga Bank, Ltd (The)	JAPAN	54,764
57.	Banco Popular Espanol SA	SPAIN	169,395	122.	Chongqing Rural Commercial Bank	CHINA	54,726
58.	Unione di Banche Italiane Sepa-UBI Banca	ITALY	167,944	123.	Hyakugo Bank Ltd.	JAPAN	54,518
59.	Industrial Bank of Korea	KOREA REPUBLIC OF	161,466	124.	Kasikornbank Public Company Limited	THAILAND	54,367
60.	Bank of Yokohama, Ltd (The)	JAPAN	152,266	125.	Aareal Bank AG	GERMANY	54,100
61.	Bank of Beijing Co Ltd	CHINA	151,804	126.	Pohjola Bank plc-Pohjola Pankki Oyj	FINLAND	53,231
62.	Malayan Banking Berhad - Maybank	MALAYSIA	142,532	127.	Oesterreichische Volksbanken AG	AUSTRIA	53,221
63.	Banco Espanol de Crédito SA, BANESTO	SPAIN	140,831	128.	Israel Discount Bank LTD	ISRAEL	52,994
64.	National Bank of Greece SA	GREECE	138,271	129.	Ogaki Kyoritsu Bank	JAPAN	52,495
65.	Chiba Bank Ltd.	JAPAN	131,653	130.	Chang Hwa Commercial Bank Ltd.	TAIWAN	52,274

World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr	World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr
131.	Kansai Urban Banking Corporation	JAPAN	51,971	194.	Shikoku Bank Ltd. (The)	JAPAN	31,731
132.	Bank Rakyat Indonesia (Persero) Tbk	INDONESIA	51,820	195.	Tokyo Tomin Bank, Ltd. (The)	JAPAN	31,551
133.	Toho Bank Ltd. (The)	JAPAN	51,581	196.	Akita Bank Ltd	JAPAN	31,531
134.	Union Bank of India	INDIA	51,416	197.	Arab National Bank	SAUDI ARABIA	31,353
135.	Samba Financial Group	SAUDI ARABIA	51,406	198.	Banco de Credito e Inversiones - BCI	CHILE	31,024
136.	Abu Dhabi Commercial Bank	UNITED ARAB EMIRATES	50,027	199.	Tochigi Bank, Ltd.	JAPAN	30,579
137.	San-In Godo Bank, Ltd	JAPAN	49,995	200.	Eighteenth Bank (The)	JAPAN	29,992
138.	Higo Bank (The)	JAPAN	49,814	201.	Bank of Ayudhya Public Company Ltd.	THAILAND	29,907
139.	Raiffeisenlandesbank Oberösterreich AG	AUSTRIA	49,587	202.	Banco de Bogota	COLOMBIA	29,824
140.	Hong Leong Bank Berhad	MALAYSIA	49,471	203.	Aomori Bank Ltd. (The)	JAPAN	29,661
141.	National Bank of Kuwait S.A.K.	KUWAIT	48,912	204.	Banco de Valencia SA	SPAIN	29,069
142.	Türkiye Vakıflar Bankası TAO	TURKEY	48,909	205.	BRE Bank SA	POLAND	28,933
143.	Hyakujushi Bank Ltd.	JAPAN	48,702	206.	Bank Audi SAL - Audi Saradar Group	LEBANON	28,737
144.	Riyad Bank	SAUDI ARABIA	48,237	207.	Ahli United Bank BSC	BAHRAIN	28,330
145.	Türkiye Halk Bankası A.S.	TURKEY	48,224	208.	Thanachart Capital Public Company Limited	THAILAND	28,246
146.	Banco Santander Chile	CHILE	47,275	209.	Hokuetsu Bank Ltd. (The)	JAPAN	28,117
147.	Jyske Bank A/S (Group)	DENMARK	47,031	210.	Chiba Kogyo Bank	JAPAN	27,813
148.	Musashino Bank	JAPAN	46,216	211.	Ehime Bank, Ltd. (The)	JAPAN	27,743
149.	Keiyo Bank, Ltd. (The)	JAPAN	45,859	212.	Banque Centrale Populaire	MOROCCO	27,673
150.	Central Bank of India	INDIA	44,995	213.	Indian Bank	INDIA	27,658
151.	Bank of Nanjing	CHINA	44,722	214.	Caisse Régionale de Crédit Agricole Mutuel du Languedoc	FRANCE	27,639
152.	Banco BTG Pactual SA	BRAZIL	44,121	215.	Fukui Bank Ltd. (The)	JAPAN	27,070
153.	Bancolombia	COLOMBIA	43,992	216.	Banco de Credito del Peru	PERU	26,739
154.	Cyprus Popular Bank Public Co Ltd	CYPRUS	43,682	217.	Sydbank A/S	DENMARK	26,706
155.	Caisse régionale de crédit agricole mutuel de Paris et d'Ile-de-France-Crédit Agricole d'Ile-de-France	FRANCE	43,302	218.	Tsukuba Bank Ltd	JAPAN	26,643
156.	Kagoshima Bank Ltd. (The)	JAPAN	43,027	219.	Yachiyo Bank	JAPAN	26,571
157.	Bank of Queensland Limited	AUSTRALIA	43,014	220.	Yamagata Bank Ltd.	JAPAN	26,493
158.	Indian Overseas Bank	INDIA	42,937	221.	First International Bank of Israel	ISRAEL	26,466
159.	Bank Polska Kasa Opieki SA-Bank Pekao SA	POLAND	42,895	222.	Caisse Régionale de Crédit Agricole Mutuel Brie Picardie-Crédit Agricole Brie Picardie	FRANCE	25,947
160.	First Gulf Bank	UNITED ARAB EMIRATES	42,881	223.	Miyazaki Bank	JAPAN	25,809
161.	OTP Bank Plc	HUNGARY	42,382	224.	Arab Banking Corporation BSC	BAHRAIN	25,015
162.	Suruga Bank, Ltd. (The)	JAPAN	42,367	225.	BDO Unibank Inc	PHILIPPINES	24,981
163.	Bank Central Asia	INDONESIA	42,116	226.	Bank of Saga, Ltd. (The)	JAPAN	24,925
164.	Agricultural Bank of Greece	GREECE	41,716	227.	Finansbank A.S.	TURKEY	24,714
165.	Banco de Chile	CHILE	41,692	228.	Andhra Bank	INDIA	24,568
166.	Taiwan Business Bank	TAIWAN	41,678	229.	Michinoku Bank, Ltd. (The)	JAPAN	24,561
167.	Bank of Ningbo	CHINA	41,343	230.	Banque Marocaine du Commerce Extérieur-BMCE Bank	MOROCCO	24,249
168.	Hokkoku Bank Ltd. (The)	JAPAN	41,216	231.	Wing Hang Bank Ltd	HONG KONG	24,113
169.	Caisse régionale de crédit agricole mutuel Nord de France-Crédit Agricole Nord de France	FRANCE	40,855	232.	Denizbank A.S.	TURKEY	23,419
170.	Credito Emiliano SpA-CREDEM	ITALY	40,235	233.	BLOM Bank s.a.l.	LEBANON	23,165
171.	Attijariwafa Bank	MOROCCO	40,042	234.	JSC Rosbank	RUSSIAN FEDERATION	23,155
172.	Mizrahi Tefahot Bank Ltd.	ISRAEL	39,321	235.	Bank of the Ryukyus Ltd.	JAPAN	22,812
173.	Bank of Iwate, Ltd	JAPAN	38,605	236.	TMB Bank Public Company Limited	THAILAND	22,676
174.	Bank of Nagoya	JAPAN	38,458	237.	Oberbank AG	AUSTRIA	22,621
175.	Banca Popolare di Sondrio Societa Cooperativa per Azioni	ITALY	37,887	238.	Higashi-Nippon Bank	JAPAN	22,578
176.	Komerční Banka	CZECH REPUBLIC	37,854	239.	Bank of Okinawa	JAPAN	22,563
177.	Banque Saudi Fransi	SAUDI ARABIA	37,461	240.	Daisan Bank, Ltd.	JAPAN	22,469
178.	Minato Bank Ltd	JAPAN	37,429	241.	Union National Bank	UNITED ARAB EMIRATES	22,456
179.	Saudi British Bank (The)	SAUDI ARABIA	36,975	242.	EFG International	SWITZERLAND	22,363
180.	Credito Valtellinese Soc Coop	ITALY	36,760	243.	Towa Bank	JAPAN	22,160
181.	Allahabad Bank	INDIA	35,833	244.	TT Hellenic Postbank S.A	GREECE	22,136
182.	Syndicate Bank	INDIA	35,669	245.	Vietnam Joint-Stock Commercial Bank for Industry and Trade	VIETNAM	22,115
183.	Laurentian Bank of Canada	CANADA	35,469	246.	SpareBank 1 SR-Bank	NORWAY	21,893
184.	UCO Bank	INDIA	35,284	247.	Caisse Régionale de crédit agricole mutuel Atlantique Vendée-Crédit Agricole Atlantique Vendée	FRANCE	21,876
185.	Yamanashi Chuo Bank Ltd (The)	JAPAN	35,107	248.	Metropolitan Bank & Trust Company	PHILIPPINES	21,817
186.	Oriental Bank of Commerce Ltd.	INDIA	34,821	249.	Mashreqbank	UNITED ARAB EMIRATES	21,577
187.	Awa Bank (The)	JAPAN	34,129	250.	Chukyo Bank Ltd	JAPAN	21,492
188.	Arab Bank Plc	JORDAN	33,692	251.	Türk Ekonomi Bankası A.S.	TURKEY	21,027
189.	Oita Bank Ltd (The)	JAPAN	33,619	252.	Banco de Venezuela, S.A.C.A.	VENEZUELA	20,629
190.	Aichi Bank	JAPAN	33,379	253.	Banco do Estado do Rio Grande do Sul S.A. BANRISUL	BRAZIL	20,614
191.	Bank Negara Indonesia (Persero) - Bank BNI	INDONESIA	32,980	254.	Joint-Stock Investment Commercial Bank Novaya Moskva-NOMOS-Bank	RUSSIAN FEDERATION	20,566
192.	Joint Stock Commercial Bank - Bank of Moscow	RUSSIAN FEDERATION	32,924	255.	Zagrebacka Banka dd	CROATIA	20,566
193.	Corporation Bank Ltd.	INDIA	31,985	256.	MIE Bank Ltd (The)	JAPAN	20,558

World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr	World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr
257.	ING Bank Slaski S.A. - Capital Group	POLAND	20,402	316.	Union Bank of Taiwan	TAIWAN	13,203
258.	Credito Bergamasco	ITALY	20,397	317.	BTA Bank JSC	KAZAKHSTAN	12,852
259.	Caisse régionale de crédit agricole mutuel d'Alpes-Provence-Crédit Agricole Alpes Provence	FRANCE	20,251	318.	National Bank of Pakistan	PAKISTAN	12,821
260.	United Bank of India	INDIA	19,941	319.	Caisse régionale de crédit agricole mutuel Loire Haute-Loire-Crédit Agricole Loire Haute-Loire	FRANCE	12,806
261.	Commercial Bank of Qatar (The) QSC	QATAR	19,654	320.	Privredna Banka Zagreb d.d-Privredna Banka Zagreb	CROATIA	12,741
262.	Sparebanken Vest	NORWAY	19,363	321.	Habib Bank Limited	PAKISTAN	12,666
263.	Bank of The Philippine Islands	PHILIPPINES	19,182	322.	Taichung Commercial Bank	TAIWAN	12,640
264.	Banco Davivienda	COLOMBIA	18,870	323.	Bank Handlowy w Warszawie S.A.	POLAND	12,371
265.	Bank Muscat SAOG	OMAN	18,798	324.	Caisse régionale de crédit agricole mutuel de l'Ille-et-Vilaine-Crédit Agricole de l'Ille-et-Vilaine	FRANCE	12,299
266.	Vijaya Bank	INDIA	18,720	325.	United Bank for Africa Plc	NIGERIA	12,295
267.	PT Bank CIMB Niaga Tbk	INDONESIA	18,394	326.	Kredyt Bank SA	POLAND	12,291
268.	Caisse régionale de crédit agricole mutuel Sud Rhône -Alpes-Crédit Agricole Sud Rhône Alpes	FRANCE	18,266	327.	Spar Nord Bank	DENMARK	12,197
269.	Kotak Mahindra Bank Limited	INDIA	18,052	328.	EnTie Commercial Bank	TAIWAN	12,110
270.	Joint Stock Commercial Bank for Foreign Trade of Vietnam-VIETCOMBANK	VIETNAM	17,607	329.	Nagano Bank Ltd.	JAPAN	12,040
271.	Bank Zachodni WBK S.A.	POLAND	17,520	330.	Bank für Tirol und Vorarlberg AG-BTV (3 Banken Gruppe)	AUSTRIA	11,922
272.	OJSC Promsvyazbank	RUSSIAN FEDERATION	17,473	331.	Scotiabank Peru SAA	PERU	11,918
273.	Banco di Sardegna SpA	ITALY	17,425	332.	Sparebank 1 Nord-Norge	NORWAY	11,860
274.	Kazkommertsbank	KAZAKHSTAN	17,289	333.	Tatra Banka a.s.	SLOVAKIA	11,853
275.	Bank of Maharashtra	INDIA	17,209	334.	Federal Bank Ltd. (The)	INDIA	11,835
276.	Gulf Bank KSC (The)	KUWAIT	17,178	335.	Banco de Galicia y Buenos Aires SA	ARGENTINA	11,825
277.	Canadian Western Bank	CANADA	17,130	336.	State Bank of Mysore	INDIA	11,808
278.	Shimizu Bank Ltd (The)	JAPAN	17,110	337.	Jammu and Kashmir Bank Ltd	INDIA	11,780
279.	Dena Bank	INDIA	17,082	338.	Bank of Kochi, Ltd	JAPAN	11,636
280.	CorpBanca	CHILE	17,044	339.	Tomato Bank, Ltd	JAPAN	11,546
281.	SpareBank 1 SMN	NORWAY	16,937	340.	Banco de Occidente	COLOMBIA	11,417
282.	State Bank of Travancore	INDIA	16,801	341.	BankUnited, Inc	UNITED STATES OF AMERICA	11,322
283.	Banco Provincial	VENEZUELA	16,602	342.	Indusind Bank Limited	INDIA	11,259
284.	Byblos Bank S.A.L.	LEBANON	16,602	343.	Bank Permata Tbk	INDONESIA	11,174
285.	Banco Bilbao Vizcaya Argentaria Chile	CHILE	16,401	344.	Tottori Bank	JAPAN	11,130
286.	Burgan Bank SAK	KUWAIT	16,338	345.	Scotiabank Chile	CHILE	11,084
287.	Kita-Nippon Bank	JAPAN	16,212	346.	Al Ahli Bank of Kuwait (KSC)	KUWAIT	11,055
288.	Taiko Bank Ltd	JAPAN	16,171	347.	Industrial Bank of Taiwan	TAIWAN	10,955
289.	Bank Coop AG	SWITZERLAND	15,754	348.	Bank BPH SA	POLAND	10,853
290.	TransCreditBank Group-TransCreditBank	RUSSIAN FEDERATION	15,711	349.	Caisse régionale de Crédit Agricole mutuel du Morbihan-Crédit Agricole du Morbihan	FRANCE	10,837
291.	Banco Continental-BBVA Banco Continental	PERU	15,669	350.	Banco Desio - Banco di Desio e della Brianza SpA	ITALY	10,816
292.	Bank Danamon Indonesia Tbk	INDONESIA	15,652	351.	Caisse Régionale de Crédit Agricole Mutuel Toulouse 31-Crédit Agricole Mutuel Toulouse 31 CCI	FRANCE	10,779
293.	Ta Chong Bank Ltd.	TAIWAN	15,434	352.	Banco Santander Rio S.A.	ARGENTINA	10,717
294.	Saudi Hollandi Bank	SAUDI ARABIA	15,346	353.	Hellenic Bank Public Company Limited	CYPRUS	10,712
295.	OJSC Halyk Savings Bank of Kazakhstan	KAZAKHSTAN	15,323	354.	MDM Bank	RUSSIAN FEDERATION	10,678
296.	BRD-Groupe Societe Generale SA	ROMANIA	14,937	355.	Bank Internasional Indonesia Tbk	INDONESIA	10,469
297.	Banca popolare dell'Etruria e del Lazio Soc. coop.	ITALY	14,923	356.	Jeonbuk Bank	KOREA REPUBLIC OF	10,424
298.	Caisse régionale de crédit agricole mutuel de Normandie-Seine	FRANCE	14,889	357.	Commercial Bank of Dubai P.S.C.	UNITED ARAB EMIRATES	10,413
299.	Bank Millennium	POLAND	14,876	358.	Bank Al-Jazira	SAUDI ARABIA	10,373
300.	Zenith Bank Plc	NIGERIA	14,701	359.	Nordea Bank Polska SA	POLAND	10,337
301.	Signature Bank	UNITED STATES OF AMERICA	14,666	360.	Access Bank Plc	NIGERIA	10,293
302.	Far Eastern International Bank	TAIWAN	14,423	361.	Bank Saint-Petersburg	RUSSIAN FEDERATION	10,251
303.	Vseobecná Uverova Banka a.s.	SLOVAKIA	14,402	362.	Union Bank of Israel Ltd	ISRAEL	10,185
304.	Doha Bank	QATAR	14,401	363.	Guaranty Trust Bank Plc	NIGERIA	10,164
305.	YES BANK Limited	INDIA	14,399	364.	Banco Pichincha C.A.	ECUADOR	10,159
306.	Punjab & Sind Bank	INDIA	14,251	365.	Chong Hing Bank Limited	HONG KONG	9,973
307.	Commercial International Bank (Egypt) S.A.E.	EGYPT	14,216	366.	MB Financial Inc	UNITED STATES OF AMERICA	9,833
308.	State Bank of Bikaner and Jaipur	INDIA	14,178	367.	Bank Tabungan Negara (Persero)	INDONESIA	9,828
309.	Saudi Investment Bank (The)	SAUDI ARABIA	13,852	368.	Bank Gospodarki Żywnościowej SA-Bank BGZ	POLAND	9,776
310.	Bank Pan Indonesia Tbk PT-Panin Bank	INDONESIA	13,758	369.	Housing Bank for Trade & Finance (The)	JORDAN	9,772
311.	Asia Commercial Joint-stock Bank-Ngan Hang a Chau	VIETNAM	13,492	370.	Bank of Beirut S.A.L.	LEBANON	9,730
312.	BBVA Colombia SA	COLOMBIA	13,440	371.	Banco Macro SA	ARGENTINA	9,674
313.	Caisse régionale de crédit agricole mutuel de la Touraine et du Poitou-Crédit Agricole de la Touraine et du Poitou	FRANCE	13,432	372.	Ahli United Bank KSC	KUWAIT	9,432
314.	Bank UralSib	RUSSIAN FEDERATION	13,426	373.	Banco Industrial e Comercial S.A. - BICBANCO	BRAZIL	9,410
315.	Commercial Bank of Kuwait SAK (The)	KUWAIT	13,332	374.	AK Bars Bank	RUSSIAN	9,404

World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr	World Ranking	Bank Name	Country Name	Total Assets mil USD Last avail. yr
375.	Tohoku Bank	JAPAN	9,335	438.	Skye Bank Plc	NIGERIA	5,934
376.	ING Vysya Bank Ltd	INDIA	9,188	439.	Banca Generali SpA-Generbanca	ITALY	5,885
377.	BBVA Banco Frances SA	ARGENTINA	9,105	440.	National Bank of Oman (SAOG)	OMAN	5,797
378.	United Bank Ltd.	PAKISTAN	8,972	441.	King's Town Bank	TAIWAN	5,797
379.	Standard Chartered Bank (Thai) Public Company Limited	THAILAND	8,962	442.	Allied Bank Limited	PAKISTAN	5,734
380.	Daito Bank	JAPAN	8,889	443.	Vozrozhdeniye Bank	RUSSIAN FEDERATION	5,711
381.	Bank of N.T. Butterfield & Son Ltd. (The)	BERMUDA	8,824	444.	Bank of Sharjah	UNITED ARAB EMIRATES	5,700
382.	Vietnam Export Import Commercial Joint Stock Bank	VIETNAM	8,813	445.	Fukuoka Chuo Bank, Ltd.	JAPAN	5,698
383.	Minami-Nippon Bank, Ltd.	JAPAN	8,424	446.	Proton Bank S.A.	GREECE	5,686
384.	Banque Marocaine pour le Commerce et l'Industrie BMCI	MOROCCO	8,370	447.	Banco Mercantil do Brasil S.A.	BRAZIL	5,661
385.	BKS Bank AG	AUSTRIA	8,353	448.	Banco ABC - Brasil SA	BRAZIL	5,591
386.	Fukushima Bank	JAPAN	8,214	449.	Abanka Vipa dd	SLOVENIA	5,509
387.	Sparebanken More	NORWAY	8,081	450.	Boursorama	FRANCE	5,468
388.	Republic Bank Limited	TRINIDAD AND TOBAGO	8,033	451.	Crédit du Maroc	MOROCCO	5,465
389.	Banco Occidental de Descuento, Banco Universal CA	VENEZUELA	8,023	452.	Bank of South Pacific Ltd.	PAPUA NEW GUINEA	5,449
390.	Seven Bank Ltd	JAPAN	7,948	453.	Banco do Estado do Espirito Santo S.A. - BANESTES	BRAZIL	5,445
391.	South Indian Bank Limited	INDIA	7,891	454.	Banco Exterior, C.A. - Banco Universal	VENEZUELA	5,434
392.	Rizal Commercial Banking Corp.	PHILIPPINES	7,854	455.	Bank Linth LLLB AG	SWITZERLAND	5,420
393.	Transilvania Bank-Banca Transilvania SA	ROMANIA	7,789	456.	Attica Bank SA-Bank of Attica SA	GREECE	5,403
394.	Sekerbank T.A.S.	TURKEY	7,770	457.	Banque Internationale Arabe de Tunisie - BIAT	TUNISIA	5,366
395.	Chikuhō Bank	JAPAN	7,717	458.	Banco da Amazonia SA	BRAZIL	5,311
396.	Bank Zenit	RUSSIAN FEDERATION	7,663	459.	CIMB Thai Bank Public Company Limited	THAILAND	5,302
397.	HSBC Bank Malta Plc	MALTA	7,536	460.	Bank Alfalah Limited	PAKISTAN	5,206
398.	Nova Kreditna Banka Maribor d.d.	SLOVENIA	7,525	461.	Kyungki Bank Ltd.	KOREA REPUBLIC OF	5,200
399.	Al Khalij Commercial Bank	QATAR	7,418	462.	Banque Nationale Agricole	TUNISIA	5,159
400.	Banco Internacional del Peru - Interbank	PERU	7,418	463.	Bank Tabungan Pensiunan Nasional PT	INDONESIA	5,145
401.	Bank of Kaohsiung	TAIWAN	7,363	464.	Banco del Caribe CA	VENEZUELA	5,125
402.	Karur Vysya Bank Limited (The)	INDIA	7,357	465.	Bank Dhofar SAOG	OMAN	5,099
403.	BBK B.S.C.	BAHRAIN	7,354	466.	Vestjysk Bank A/S	DENMARK	5,096
404.	Banco Popular	COLOMBIA	7,311	467.	Diamond Bank Plc	NIGERIA	5,072
405.	Hong Leong Finance Limited	SINGAPORE	7,307	468.	Banca Ifis SpA	ITALY	5,064
406.	MCB Bank Limited	PAKISTAN	7,295	469.	Joint-Stock Commercial Bank for Social Development - Ukrsofsbank	UKRAINE	5,043
407.	Bank CenterCredit	KAZAKHSTAN	7,291	470.	Security Bank Corporation	PHILIPPINES	4,900
408.	Philippine National Bank	PHILIPPINES	7,200	471.	Toyama Bank, Ltd. (The)	JAPAN	4,891
409.	Miyazaki Taiyo Bank, Ltd. (The)	JAPAN	7,180	472.	Ahli Bank QSC	QATAR	4,872
410.	Banco PanAmericano S.A.	BRAZIL	7,140	473.	Société Tunisienne de Banque	TUNISIA	4,776
411.	Banco Cruzeiro do Sul S.A.	BRAZIL	7,135	474.	Sparebanken Ost	NORWAY	4,757
412.	Karnataka Bank Limited (The)	INDIA	7,100	475.	Farmers and Merchants Bank of Long Beach	UNITED STATES OF AMERICA	4,659
413.	Banco Colpatría Red Multibanca	COLOMBIA	6,999	476.	Islami Bank Bangladesh Limited	BANGLADESH	4,651
414.	Ecobank Nigeria	NIGERIA	6,963	477.	Cosmos Bank	TAIWAN	4,605
415.	Bank of Khanty-Mansiysk	RUSSIAN FEDERATION	6,938	478.	Bank Ochrony Srodowiska SA - BOS SA-Bank Ochrony Srodowiska Capital Group	POLAND	4,576
416.	Open Joint-Stock Company "MTS Bank	RUSSIAN FEDERATION	6,890	479.	Allied Banking Corporation	PHILIPPINES	4,555
417.	Bank Mega TBK	INDONESIA	6,827	480.	Moscow Industrial Bank	RUSSIAN FEDERATION	4,528
418.	Saigon Thuong Tin Commercial Joint-Stock Bank-SACOMBANK-Ngan Hang Saigon Thuong Tin	VIETNAM	6,792	481.	Banco Patagonia SA	ARGENTINA	4,517
419.	Raiffeisen Bank Aval	UKRAINE	6,791	482.	Probusiness Bank	RUSSIAN FEDERATION	4,467
420.	Sparebanken Pluss	NORWAY	6,763	483.	Sandnes Sparebank	NORWAY	4,443
421.	Helm Bank S.A.	COLOMBIA	6,694	484.	B.L.C. Bank S.A.L	LEBANON	4,416
422.	National Bank of Ras Al-Khaimah (P.S.C.) (The)-RAKBANK	UNITED ARAB EMIRATES	6,672	485.	Banca Popolare di Spoleto SpA	ITALY	4,408
423.	Military Commercial Joint Stock Bank	VIETNAM	6,666	486.	DAB Bank AG	GERMANY	4,407
424.	Union Bank of Nigeria Plc	NIGERIA	6,616	487.	Alandsbanken Abp-Bank of Aland Plc	FINLAND	4,400
425.	Bank OCBC NISP Tbk	INDONESIA	6,598	488.	Shimane Bank Ltd	JAPAN	4,350
426.	BNP Paribas Bank Polska SA	POLAND	6,578	489.	BinckBank NV	NETHERLANDS	4,336
427.	Banco Daycoval SA	BRAZIL	6,512	490.	Bank Al Habib	PAKISTAN	4,274
428.	National Bank of Bahrain	BAHRAIN	6,353	491.	Credit Agricole Egypt	EGYPT	4,265
429.	PT Bank Bukopin	INDONESIA	6,306	492.	General Bank of Greece SA	GREECE	4,224
430.	Howa Bank, Ltd	JAPAN	6,263	493.	National Commercial Bank Jamaica Limited	JAMAICA	4,160
431.	Bank Petromercom	RUSSIAN FEDERATION	6,202	494.	First Investment Bank AD	BULGARIA	4,085
432.	Mauritius Commercial Bank Ltd (The)	MAURITIUS	6,179	495.	Towne Bank	UNITED STATES OF AMERICA	4,481
433.	Union Bank of the Philippines	PHILIPPINES	6,151	496.	National Bank of Fujairah	UNITED ARAB EMIRATES	4,061
434.	PT BPD Jawa Barat dan Banten Tbk	INDONESIA	6,004	497.	Standard Chartered Bank (Pakistan)	PAKISTAN	4,048
435.	Banco Pine SA	BRAZIL	5,990	498.	Banagricola SA (Panama)	PANAMA	4,010
436.	Kiatnakin Bank Public Company Limited	THAILAND	5,974	499.	SREI Infrastructure Finance Limited	INDIA	3,949
437.	China Banking Corporation - Chinabank	PHILIPPINES	5,969	500.	Banco Comercial AV Villas SA	COLOMBIA	3,912

Appendix  
Variable definitions

Variable	Definition
z_score	(Capital–assets ratio + return on assets) / standard deviation of return on assets in the last five years (percentage). Return on assets is computed using the net operating income after adding back the loan loss provision. It is transformed using its natural logarithm.
return_volatility	Annualized standard deviation of daily stock returns.
gdp_capita	The natural logarithm of gross domestic product (GDP) per capita (in USD). It is measured annually at the country level.
inflation	The percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals. It is measured annually at the country level.
Year dummies	Dummies for the fiscal years 2006 (year_2007) and 2010 (year_2011).
ord_score_total	The total operational risk disclosure quality score determined according to the disclosure index and scoring criteria explained in Appendix A.
ord_score_voluntary	The voluntary operational risk disclosure quality score determined according to the disclosure index and scoring criteria explained in Appendix A. Additionally, we subtract points scored for mandatory disclosures required by the Capital Requirements Directive (European Parliament, 2006).
cost_income	Cost–income ratio = overhead costs / total revenues (percentage) Bankscope
cash_deposits	Cash-deposit ratio = (cash and equivalents + short-term investments) / total deposits (percentage)
total_assets	The natural logarithm of total assets (in USD)