Avoiding a Liquidity Crunch: Do Pre-Bear Phase Bank Ratios Matter? Evidence from a World-Wide Sample

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This paper undertakes an analysis of the performance of major banks, with diverse national ownership, during – and around - financial crises. Data for the recent crisis periods, covering the period 1999 – 2008, comprising of both bull and bear phases, from more than 500 banks is analyzed. The main finding from this cross-section study is that key financial ratios in the pre-financial crisis or bear period have a bearing on how banks perform in the crisis period. Strong capital and profitability ratios in the pre-bear phases seem to facilitate high liquidity creation in the bear phase. High asset quality, represented by low loan loss reserve ratios, is also seen to be linked to better liquidity creation during crisis periods.

1. Introduction

The study of the causes of financial crises and banking failures has been predominantly at the macro-level, and perhaps also focused on institutional factors, such as the role of credit-rating agencies and the Basel recommendations. But it is of interest to note that even as the bastion fell, some banks have managed to hold their own. This statement is not the same as saying, for instance, that banks in Spain have fared relatively well during the global crisis; rather, even within the group of national banks affected sorely by the crisis, some banks have fared better, and contributed to maintaining liquidity, so badly needed in the crisis and its aftermath. In this paper we try to elicit those characteristics, in capital structure or other policy strategies, which have made such relative success possible.

Thus, the focus in this paper is on the importance of pre-crisis financial health of the banking system in minimizing the detrimental effects of the subsequent crisis. Of course, bank failures are nothing new, and there is already a rich literature on the probability of the

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occurrence of bank crises. As already implied, in this paper we focus on the issues of the valuation and management of commercial banks (in a world-wide sample), studying their implications for weathering out the financial crisis in the banking sector. In particular, we look at how liquidity creation in the bear phase – which has important implications for the further development of the crisis in the whole economy – is affected by bank financial management in the periods prior to the crisis.

The paper is structured as follows. The next section is devoted to a brief review of the literature relating to bank management in and around crises. This is followed by a section describing the variables used and the data requirements for the study. Section IV presents the models to be estimated. Empirical results are supplied in section V, followed up by concluding remarks in section VI. There is an appendix where comparative background data relating to banks is available.

2. Macro outcomes and micro behavior: the literature on bank crises

During the global financial crisis of the last decade, individual banks responded differently, and some may have, with their liquidity outcomes, brought their national banking systems as a whole closer to a systemic crisis. In this section we provide a brief description of the literature on systemic crises and on individual bank performance during crisis times.

The literature on bank crises and management during crises may be conveniently grouped into three different types. One strand deals with the determinants of bank crises. The contributions in this vein usually try to isolate the macro-level both real economic and financial) variables which seem to be of use in predicting a break-up of the commercial banking system to some degree (Kamisnky and Reinhart, 1998; Demirguc-Kunt, Detragiache and Gupta, 2006 etc). The general finding in this line of analysis is that increases in bank credit, short-term international debt, a fall in stock prices, and rise in real interest rates signal a forthcoming bank crisis. There is a mixed result on the effect of real exchange rate changes, and this variable may exhibit a different pattern once the crisis sets in.

Some contributions in this strand – on the determinants of bank crises - include studies on the implications of individual bank ratios and the regulatory environment. Much of the earlier literature on the causes of bank crises sought answers among variables that are primarily bank-specific, useful for assessing the financial soundness of individual institutions. This literature emphasizes certain features in the banking system, such as maturity transformation and asymmetric information can make the system vulnerable to a sudden collapse. The work by Jacklin and Bhattacharya (1988), and that by Diamond and Dybvig (1983), represent this strand of literature. Detailed examination of actual cases of banking sector crises, as in Sundararajan, and Balino (1991), can also provide insights about the (negative) impacts of macroeconomic disturbances and institutional structures. However, such an approach is not particularly rewarding in the analysis of widespread, systemic banking crises.

While the results above underline again the importance of the macroeconomic environment in relation to a crisis, the contribution of these authors may be even more in their attempts to capture the consequences of institutional factors in this context. They note that the existence of an explicit deposit insurance scheme increases the probability of a bank crisis. In a way, this may be similar to what has been observed in relation to external debt crises. Financial innovation and lending by a consortium of banks which limited the liability and – seemingly their risk – resulted in an excess supply of debt, which was the counterpart

of the consumption-led borrowing that many developing countries resorted to in the 1980s. The willingness of multilateral financial institutions to bail-out the creditor banks also seems to have played a role this process, to the benefit of creditor banks again, who did not have to pay the penalty for imperfect risk analyses of debtor countries. We know that even in the current crisis, moral hazard has been an underlying cause, the big banks expecting to be bailed out - as they are too big and important to fail.

The importance of a developed bank supervisory system as a country integrates financially with the rest of the world is noted in a number of empirical studies. When the banking system is liberalized, there is always an incentive to invest in projects that are risky, and also in projects that may benefit the managers personally. This occurs in the absence of prudential norms and a properly functioning legal system. Akerlof and Romer (1993) suggest that such looting behavior may underlie the Chilean bank crisis of the 1970s.

While the work on the determinants of bank crises examine the link between changes in real economic (and monetary) variables and financial crises, another strand looks at the reverse link, the impact of the crisis on the real sector. Financial crises reduce credit and push up real interest rates, adversely affecting corporate investment – thus placing the economy firmly on the path to recession (Dell, Detragiache and Rajan, 2008; Bernanke and Gertler, 1989)

A third strand of this related literature considers the behaviour of bank liquidity in and around financial crises (Berger and Bowman, 2008; Brander and Lewis, 1986). An interesting finding in this literature is that financial crises can affect the competitive positioning of banks. Liquidity creation and adequate capital ratios can make the difference between survival and bust when regulatory agencies take firm action to save the banking system. Examining the pre-crisis capital and profitability ratios can give an indication of the competitive position of banks, and liquidity creation can play a major role in the post-crisis outcomes. Berger and Bowman (2008) study liquidity creation by U.S banks during, before and after five major bank crises. They obtain either a sharp increase or a sharp drop-off of liquidity before each crisis. Major Banks are found to improve their liquidity market shares and profitability during the crises, improving their post-crisis competitive positions – something that did not happen during normal times. Even small banks with high capital ratios were seen to achieve this improvement.

But there are strategic considerations that drive banks to maintain liquidity during crisis, not just survival (i.e., the precautionary motive) out of the crisis. One such strategic motive is the interest in acquiring dirt-cheap assets, on even banking rivals. Articles by Allen and Gale (2004), Gorton and Huang (2004) etc., model such behaviour by banks, based on the profit-hunting motive of a cheap purchase of other banks' assets. But it should be noted that such behaviour can reduce economy-wide credit as banks hold on to liquidity without lending.

Our paper lies more in this area focusing on individual bank performance ratios and liquidity creation in and around crises, with the sample chosen covering literally all major banks in the globe. Specifically, we look at the implications of pre-bear phase bank positions for the possibility of their success in riding out the crisis. Earlier literature has, as mentioned above, noted that (some) individual banks in the U.S., with strong positions before a financial crisis sets in, were able to create liquidity, extending loans, despite the onset of the crisis. Thus, their pre-crisis strength enabled them to become more competitive in a crisis situation.

In the current study, the determinants of bank liquidity creation during a crisis are studied for a truly global sample.

3. Data and Methodology

We have collected data for a number of performance variables (average figures) for around 500 banks from industrial as well as emerging market nations for the period 1999 – 2008, dividing the period into pre-bear, bear and bull phases – as dictated by stock market performances. The data source is "BANKSCOPE". The data collected pertains to the following variables (for the different phases: bull, bear, pre-bear), presented in Table 1.

Table 1 Definitions

Notation	Variable Definition
LIQUID	Liquid Assets to Customer and Short Term Funding
CAR	Total capital adequacy ratio equity capital to risk-weighted assets)
OE	Return on average equity
ROA	Return on average assets
NIM	Net interest margin
LLR	Loan loss reserves to gross loans

Note: These variables require some more clarification.

3.1.   Liquidity

The first entry in the table above relates to liquidity. The usual indicators of liquidity are the 'narrow liquidity ratio' and the 'broad liquidity ratio'. The narrow liquidity ratio is calculated as cash and reserves at the central bank to total liabilities. The broad liquidity ratio is reckoned as the sum of cash, reserves at the central bank and securities holdings as a share of total liabilities. For the purpose of this study, we chose a liquidity ratio that reflects a bank's ability to meet short-term demands. Thus, we use the variable available in the databank "Bankscope", which is the ratio of liquid (short-term) assets to short-term liabilities. The variable is called "short-term assets to customer and short-term funding".

Table A.2 in the appendix gives data on liquidity for a few selected banks from the sample of 500. The table represents banks in developed nations as well as in emerging market economies. Liquidity was increased by various government initiatives in most countries, and may have touched 2006 levels even by early 2009, in some countries. But these broad patterns may hide differences between individual banks in the system, and the present study is concerned with the causes of such differences in liquidity between banks.

3.2.   Capital Adequacy

The Capital Adequacy Ratio (CAR) has taken the central stage in bank regulation with the advent of the Basel specifications, and has a key role in maintaining the overall stability of the banking system. This ratio measures the amount of capital the bank has to hold in relation to its total risk-weighted assets – which should include off-balance sheet exposure.

Table A.1 in the appendix provides the capital adequacy ratios for a few selected banks. It can be noted that the banks in emerging markets nations tend to keep higher ratios by international standards, perhaps reflecting conservative, traditional banking practices.

3.3.   Profitability

ROE, ROA and NIM are indicators of profitability. The return on equity (ROE) is the ratio of net income to total equity, where total equity is defined as total funds belonging to the equity share holders. Total equity will include common equity, non-controlling interest, securities revaluation reserves, foreign exchange revaluation reserves and other revaluation reserves. Preference shares, premiums and hybrid capital also count as equity.

The return on assets (ROA) relates net income to total assets, where total assets includes total earning assets, cash and due from banks, foreclosed real estate, other fixed assets, goodwill, other intangibles, and assets. Net interest margin (NIM) is not the same as the interest rate spread, since the earning assets and borrowed funds may be different instruments and differ in volume. NIM is expressed as the percentage of what the banks earn on loans minus the interest paid on borrowed funds divided by the amount of the earning assets. So, it is basically the difference between the interest income and the interest paid out, relative to the amount of the interest earning assets.

Tables A.3 and A.4 in the appendix provide data on ROE and NIM for the selected banks from the sample

3.4.   *Loan loss reserves to gross loans*

This variable captures the bank's performance in fostering asset quality, and in the management of credit. So it is part of the group of asset quality indicators, just like the non-performing asset ratio. The loan loss reserves to gross loans ratio use the average of the gross loans of the prior year and the present year in the denominator. The higher the ratio results with the more problematic the loans. Unused loan reserves indicate an overestimation of bad loans on the books, and would be taken into income ultimately.

Table A.5 in the appendix provides comparative data on LLR

3.5.   *A clarification note on the data*

A further clarification note on the samples for 2001 and 2008 is in order: while 500 banks are represented in the data set, complete data for all the variables was available only for 477 banks. Thus, the data set for the later period ending in 2008 pertains to 477 banks. Of these banks, quite a few were not operational in 2001, so that the sample size for the earlier period ending in 2001 is 254 banks.

The richness of the sample is obvious; there are banks from countries as diverse as Abu Dhabi, Brazil, India, Taiwan, UK, USA, South Africa − and many more. Some interesting facts, drawn from the raw data, are presented below;

- In 2008, 99 out 477 banks reported losses as compared to 24 out of 477 in 2007.

- In 1999 and 2000, only 20 out of 257 banks in the sample reported losses, while in 2001 the number doubled.

Clearly, 2008 is definitely a more serious crisis for the banks and the financial system. In fact, based on a simple regression of ROE8 on ROE7, it is estimated that the return on equity (profitability) is 9% lower in 2008 compared to 2007 for a typical bank in the sample.

Models to be estimated

The following equations for the cross-section sample of 500 banks are estimated (notations and definitions are given in Table 1). Only the results for the more significant ones are presented later. Three stars, two stars and one star respectively on the coefficient of an independent variable represents significance at 1, 5 and 10% respectively.

Note that in the equations specified below, the bear phase is represented by the year 2009, and the pre-bear phase by 2006. Similar equations are run for the bear phase of 2003 and the pre-bear phase of 2000.

The presence of "L" at the end of a variable name indicates a lag. Note also that, later, in Tables 2 and 3, supplying the regression results, then ´"" L1 " represents a lag of one period (one year in this case), " L2 " a lag of two periods etc. Thus, ROEL1 is ROE lagged one period, and ROE2 is ROE lagged two periods.

[1] $LIQUID = \alpha_0 + \alpha_1 LIQUIDL + \alpha_2 CARL + \alpha_3 ROEL + \varepsilon_0$
[2] $LIQUID = \alpha_0 + \alpha_1 LIQUIDL + \alpha_2 CARL + \alpha_3 ROEL + \alpha_4 LLRL + \varepsilon_1$
[3] $LIQUID = \alpha_0 + \alpha_1 CARL + \alpha_2 NIML + \varepsilon_2$
[4] $CAR = \alpha_0 + \alpha_1 CARL + \alpha_2 NIML + \varepsilon_3$
[5] $LIQUID = \alpha_0 + \alpha_1 NIM + \alpha_2 CARL + \alpha_3 LLRL + \varepsilon_4$

Equation 1 relates liquidity in the bear phase to capital adequacy and return on equity rations in the pre-bear phase. The asset quality variable, loan loss reserves to gross loans is introduced in the second equation, again in lagged form to represent the pre-bear phase. The other profitability variable, the net interest margin, is added in equations 3 and 5.
Equations 1, 2, 3 and 5 tests for the effect on bear phase liquidity of pre-bear phase performance variables. Equation 5 does the same for the capital position of the bank: how does pre-bear phase profitability affect the capital adequacy ratio in the crisis phase?
The results of the estimations are provided in the next section.

4. Estimation results

Tables 2 and 3 below present the results of the analysis. Estimated regressions, all cross-sectional in nature, are of two types:

- those relating liquidity in the bear phases to current and lagged (for the pre-bear phases) profitability, capital adequacy and asset quality variables, and

- those relating capital adequacy ratios to current and lagged profitability ratios. While several estimates were made, only the most significant are reported.

We generally expect banks with strong pre-bear phase profitability and capital or liquid asset ratios to have created reasonable liquidity in the subsequent bear phase indeed, they may also succeed in doing this, and maintaining comfortable profitability ratios (into the later bull phase, but we are not testing for this).

Note again that in Table 2 as well as Table 3, "L1" at the end of a variable name represents a lag of one period for the variable, "L2" a lag of two periods for the variable etc. *Note also that the independent variable names are entered alongside the estimated coefficients for convenience.* Significance of the estimated coefficients at the one percent level is denoted by three stars, at the 5% level by two stars, and at the 10% level by a single star.

Table 2. Estimated equations for the 2006-2008 period Dependent variable with value in 2008)

No	Dep. Var.	Const.	Indep. Var.1	Indep. Var.2	Indep. Var. 3	Indep. Var. 4	Indep. Var. 5	Adj. R Sq
1	LIQUID	0.528	.769 LIQUIDL1***	.0513 CARL1	.1554 CARL2	.1134 ROEL1**	-.0088 ROEL2	.844
2	LIQUID	0..164	.804 LIQUIDL1***	.1402 CARL1	.1248 ROEL1**			.821
3	LIQUID	-0.170	.798 LIQUIDL1***	.260 CARL1**	.119 ROEL1**	-.503 LLRL1		.797
4	CAR	1.24	.697 CARL1***	.713 NIM***	-.283 NIML1*			.799

The results for the 2006 – 2008 regressions are given in equations [1] to [4] in the upper part of the table. Dependent variable values are from 2008, and a variable with a lag specified as L1 at the end of the variable name takes its value from 2007 etc.

From equation [1], it is seen that liquidity is positively influenced by return on equity in the lagged phase, at the 5% level. Thus, pre-bear profitability condition in 2007, ROEL1, affects liquidity creation in the bear phase, in 2008, with a positive sign. Lagged liquidity is also a positive influence. In equation [3], when the capital adequacy variable is added, lagged, it has a positive coefficient, significant at the 5% level. The loan loss reserve variable turns out to be insignificant in explaining liquidity creation in the subsequent period. So the only determinants of liquidity observable from the estimations are lagged profitability (as seen in the return to equity ratio), and lagged capital adequacy ratios.

Thus, the *results for the impacts on the creation of liquidity in the bear phase of 2008 point to a positive contribution from a sound pre-bear phase position, characterized by good profitability and capital adequacy positions,* thus providing a counterthrust to the recessionary trends - in the bear phase.

Net interest margin, another indicator of profitability, is also seen to have an indirect influence on liquidity, since higher net interest margins are seen to have a positive influence on the capital adequacy ratio, in equation 4, which stands to reason since banks with higher interest margins have the possibility of adding to their capital positions from this source.

These relationships can be seen even by a casual look at the appendix tables giving data for a few selected banks in the sample. For instance, Wells Fargo Bank, Sumitomo Mitsui Bank and the Union Bank of India, all of whom managed to increase liquidity in 2008, had high capital adequacy ratios in 2007. Wells Fargo Bank and the Union bank of India had also high ROE ratios in 2007.

Results for the determinants of liquidity in the 2001 bear phase are presented in equations [1] to [6] in the lower part of the table. The adjusted R-squared for these regressions are surprisingly high as far as cross-section runs go, around 0.95 to 0.97.

The dependent variable in all the equations in Table 3 is liquidity in year 2001. "L1" at the end of a variable name means that its value is for 2000, and the "L2" suffix means its value is taken from 1999.

Table 3. Estimated equations for the 1999-2001 period (Dependent variable with value in 2001)

No	Dep. Var.	Const.	Indep. Var.1	Indep. Var.2	Indep. Var. 3	Indep. Var. 4	Indep. Var. 5	Indep. Var. 6	Adj. R Sq
1	LIQUID	-90.11	.813LIQUIDL1***	.262 ROEL1	-.254 ROEL2**	22.49 CARL1***	-12.46 CARL2***		.973
2	LIQUID	11.95	2.637 NIM	-2.041 NIML1	3.714 LLR***	-1.292 LLRL1	.443 CARL1	-.141 CAR	.153
3	LIQUID	-108.69	-15.97 NIML1***	-5.224 LLRL1***	22.09 CARL1***				.964
4	LIQUID	-181.89	.752LIQUIDL1***	-0.352 ROEL1	21.725 CARL1***				.953
5	LIQUID	-147.07	-0.345 ROEL1	21.954 CARL1***	-6.715 LLRL1***				.961
6	LIQUID	-151.13	.318 LIQUIDL1	-.445 ROEL11	21.904 CARL1***	-7.373 LLRL1***			.961

In equation 1, liquidity in the bear phase of 2001 is seen to be responding positively to capital adequacy positions in 2000 as well as in 1999. However, profitability indicators do not do well as in the runs for the bear phase of 2008; in fact, the return on equity variable turns up the wrong sign in equation 1. So does the net interest margin variable NIM in equation 3?

However, the asset quality variable, loan loss reserves to gross loans, comes out highly significant in equations 3, 5 and 6. The estimated coefficient has a negative sign, which stands to reason again, since higher values of the variable represents deteriorating loan quality. Thus, worsening loan quality in the pre-bear phase (of 2000) is seen to affect liquidity creation in the bear period (2001) negatively.

Some of these relationships are even evident from the small sample of banks for which data is provided in the appendix. Banks such as Wells Fargo, Royal Bank of Canada, which had good capital adequacy ratios increased liquidity between 2000 and 2001. These banks also had good ROE ratios and high asset quality, as exhibited by low loan reserve ratios.

5.   Concluding remarks

The recent financial crises saw concerted action by governments and central banks, all over the world, to inject liquidity into the banking system. Such action has enabled many banks to stay operational, and has also contained the spread of the financial crisis to the real economy.

Within this supportive macro-framework, some banks have succeeded more than others in maintaining good liquidity positions during crisis years. It would be of interest to see which bank-specific characteristics have enabled such relative success, since it has broader implications for the economy as a whole.

This paper has presented a study covering liquidity creation in the previous decade in the global banking industry, represented by 500 banks from all over the world. The main finding from this cross-section study for the period 1999 – 2008 is that key financial ratios in the pre-financial crisis or bear period have a bearing on how banks perform in the crisis period.

There are similarities in the results obtained for the two bear phases of 2008 and 2001, but also some differences. Strong capital positions, observed from capital adequacy ratios in the pre-bear phase period are seen to facilitate high liquidity creation in the subsequent bear phase. Profitability indicators, the return on equity and net interest margins, come out

significant only in the 2006-2008 period; strong pre-bear phase profitability helps liquidity creation in the 2008 bear phase.

Results for the 1999 – 2001 period show that asset quality has also an important influence on the ability of the banks to create liquidity. Deterioration in asset quality, seen in higher loan loss reserves to gross loans ratios, has a negative impact non-liquidity creation by banks in the subsequent bear phase.

To sum up, taking a bird's view of the operations of the 500 banks in the sample for the entire period from 1999 to 2008, it can be stated that banks that have managed to foster asset quality and maintain strong capital adequacy and profitability positions in the pre-bear phase periods have been successful in liquidity creation in the subsequent bear phases.

Would these findings imply that countries which have had controls on their banking industry, protecting the sector from international competition, may have been able to ride out the crisis better? Banks in such countries, for instance in the Gulf region, typically exhibit higher banking profitability ratios, and may have been able to improve their capital bases by maintaining large net interest rate margins. Results from microanalyses of the determinants of banking and currency crises also suggest that financial liberalization, particularly seen in high ratios of short-run foreign debt to total debt, is a cause of such crises. However, other international dimensions of the matter - where proper regulatory frameworks recommended by the Basle specifications take centre stage - also do come to the forefront in the analysis, in the significance obtained for high asset quality in banks.

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APPENDIX

All the data in the appendix is from BANKSCOPE.

Table A.1 Capital Adequacy Ratios for Selected Banks From the Sample of 500

Bank	1999	2000	2001	2006	2007	2008
Arab Banking Corporation	9.94	9.24	9.51	10.44	8.83	11.31
Wells Fargo Bank, NA	18.61	18.95	18.29	14.5	12.68	11.31
China Development Corporation			7.46	9.38	15.56	11.3
Commerzbank AG	5.76	5.49	4.95	4.81	4.94	5.59
Royal Bank of Canada	4.93	7.44	7.79	6.48	5.98	6.26
Sumitomo Mitsui Banking Corporation	9.08	1.01	1.37	9.4	8.2	6.9
UBS AG	5.44	6.06	5.12	3.06	2.67	2.72
Union Bank of India	6.86	6.7	7.19	9.15	9.83	9.25

Table A.2 Liquidity Data for variable, LIQUID, Selected Banks from the Sample

Bank	1999	2000	2001	2006	2007	2008
Arab Banking Corporation	33.32	36.98	33.64	30.9	30.73	29.25
Wells Fargo Bank, NA	13.58	20.34	7.64	10.86	13.16	15.46
China Development Corporation			16.44	30.56	159.78	95.32
Commerzbank AG	50.79	58.76	56.19	39.99	37.85	30.81
Royal Bank of Canada	35.46	35.92	41.22	52.38	51.16	39.84
Sumitomo Mitsui Baning Corporation	11.86	84.93	86.76	10.33	10.83	10.98
UBS AG	82.9	85.71	86.76	99.71	96.92	66.55
Union Bank of India	20.92	15.11	12.31	9.43	9.44	11.27

Table A.3. Profitability Data, ROE, for Selected Banks in the Sample

Bank	1999	2000	2001	2006	2007	2008
Arab Banking Corporation	6.11	7.31	6.01	10.02	6.97	-39.39
Wells Fargo Bank, NA	7.87	10.62	19.15	16.81	13.9	8.7
China Development Corporation			18.01	19.16	11.65	7.27
Commerzbank AG	8.67	11.03	1.17	12.35	12.24	0.34
Royal Bank of Canada	12.85	16.42	14.67	21.77	23.4	16.17
Sumitomo Mitsui Baning Corporation	2.18	98.56	62.18	9.08	7.88	-5.6
UBS AG	20.35	20.01	11.17	23.85	-9.42	-48.47
Union Bank of India	5.9	8.65	15.88	17.35	22.12	21.46

Table A.4. Net Interest Margin NIM for Selected Banks from the Sample

Bank	1999	2000	2001	2006	2007	2008
Arab Banking Corporation	1.84	1.83	1.89	1.3	1.13	1.48
Wells Fargo Bank, NA	5.42	5.13	4.59	4.6	4.33	4.5
China Development Corporation			1.77	2.52	2.69	2.53
Commerzbank AG	0.97	0.9	0.79	0.77	0.68	0.79
Royal Bank of Canada	1.98	1.99	2.14	1.43	1.41	1.52
Sumitomo Mitsui Baning Corporation	1.43	0.28	1.55	1.22	1.26	1.,22
UBS AG	0.8	1.1	0.92	0.36	0.27	0.31
Union Bank of India	3.44	3.83	3.66	3.03	2.84	3

Table A.5. Asset Quality Variable Loan Loss Reserves to Gross Loans Ratio LLR)

Bank	1999	2000	2001	2006	2007	2008
Arab Banking Corporation	6.31	4.23	4.25	4.23	2.52	3.46
Wells Fargo Bank, NA	2.42	2.21	1.52	0.73	1.18	2.38
China Development Corporation			3.66	1.37	1.47	2.12
Commerzbank AG	2.52	2.3	2.51	2.5	2.06	1.93
Royal Bank of Canada	1.3	1.2	1.33	0.67	0.62	0.76
Sumitomo Mitsui Baning Corporation	2.75	2.1	3.42	1.42	1.33	1.51
UBS AG	4.32	3.16	2.35	0.25	0.2	0.64
Union Bank of India			4.73	.19	2.1	1.66