Masters of Science (Banking)

UUM-IBBM

WBB 6013: SEMINAR IN BANKING

Sound Credit Underwriting: Does It Undermine Growth?

By

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Abstract

This paper explores the relationship between credit underwriting standards and loan growth for the Malaysian banking industry and selected banks using correlation and trend analysis. The paper also attempted to identify whether there were any differences between local banks and foreign banks using the Paired-Samples T-Test. It was found that sound credit underwriting practice generally undermines loan growth. However banks employing superior loan technology are able to achieve high loan growth without compromising credit standards with the use of proper loan technology. Although local banks appear to outperform the foreign banks both in terms of loan growth and NPL, further studies involving a larger pool of local and foreign banks are needed before generalisation could be made.

JEL classifications: G01; G21
Keywords: credit underwriting; bank lending; lending standards, loan losses

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1 INTRODUCTION

The on-going Global Financial Crisis has demonstrated the importance of maintaining prudent lending standards during periods of credit boom. Evidences from the U.S. subprime mortgage crisis suggest that the rapid growth in lending to this sector was accompanied by a decline in the credit underwriting standards. This resulted in excessive risk taking by lenders.

While excess liquidity, increased competition, lack of supervision and financial innovation have all contributed to the crisis, it however does not provide sufficient excuse for lenders to disregard prudent lending practices in their pursuit of profits.

With lending activities still being the main activity of bankers, lenders are caught in a catch 22 situation. In pursuing growth, banks have had to compromise on their standards whereas if they were to maintain their credit standards, growth would be compromised to the detriment of the share prices. This may give rise to agency problem as shareholders would not be happy and management's compensation is also almost always tied to bank's performance.

1.1 Malaysian Banking Sector

The Malaysian Financial System has witnessed tremendous changes over the last decade in the aftermath of the Asian Financial Crisis of 1997-98. The Financial Sector Master Plan (FSMP) has succeeded in transforming the financial landscape to become more resilient and sound. The Asian Crisis caused the commercial bank's NPL to increase to 12% in 1998 and the net NPL has gradually declined to stand at 1.9% as at September 2008.

Similar to the United States, Malaysian financial system has also been experiencing rapid growth with assets growing at an average annual rate of 8.2% since 2000, driven mainly by strong growth in loans and holdings of private debt securities

(PDS).[1] Again similarly to the U.S., the main growth engine for the Malaysian banking system came from lending to the household sector with contribution of 55.6% of the total increase in banking system loans outstanding in 2007. Lending for the purchase of properties and cars which accounted for 20.4% of total outstanding loans for the first half of 1990s had increased to 41.8% in 2007.[2]

1.2 Problem Definition

The U.S. subprime crisis has exploded into a Global Crisis and it is only a matter of time before Malaysia feels the full brunt of it. Having endured the Asian Crisis of 1997-98, the Malaysian banking institution have matured and grown both in terms of size as well as risk management systems. Most banks in the country have already implemented the Basel II requirements in 2008.

This poses an interesting scenario. Can banks practice sound credit underwriting standards and achieve credit growth at the same time? If this is possible, then the credit culture of that bank should be studied further to arrive at industry best practice. This could ensure that the Malaysian banking sector grows with a sound footing and thus avoiding the mistakes of U.S. banks which is the cause of the current Global Financial Crisis.

1.3 Classification of Non-Performing Loan (NPL)

Before proceeding further, it would be timely for us to have a clear understanding of the definition of Non-Performing Loans (NPLs) in Malaysia. Bank Negara Malaysia's guideline on Classification of Non-Performing Loans and Provision for Substandard, Doubtful and Bad Debts[3] provides the minimum standards on the classification of NPLs and provisions for substandard, doubtful and bad debts by banks in Malaysia.

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[1] BNM, Financial Stability and Payment Systems Report 2007
[2] BNM's Annual Report 2007
[3] Refer to BNM/GP3 issued on 1 January 2008 for the latest classification and treatment of NPL accounts for banks in Malaysia

The minimum requirements for loans to be classified as NPL are:

- When principal or interest for a loan is due and unpaid for six months or more from the first day of default
- For an overdraft account:
    - When the account has been dormant for six months or more and the outstanding amount is in excess of the approved limit
    - Active account that is in excess of the approved limit for six months or more from the date the approved limit was breached
    - When the facility has been recalled, the overdraft account is classified as NPL immediately
- Trade finance facilities such as bankers acceptances, trust receipts, bills of exchange and other instruments of similar nature
    - when the instrument is due and unpaid for three months or more from the first day of default
- Credit cards, when the credit card holder fails to settle his minimum monthly repayments for three months or more from first day of default
- Term loans, revolving credit facilities, leasing loans, block-discounting facilities, hire-purchase loans and other loans
    - when principal or interest is due and unpaid for six months or more from the first day of default.

NPLs are also broken down into three categories i.e. substandard, doubtful and bad. The guidelines for the classification are:

Table 1: Classification of Substandard, Doubtful and Bad Loans

Facility Type	**Substandard**	**Doubtful**	**Bad**
General	6 months to less than 9 months	9 months to less than 12 months	12 months and above
Trade Finance	Not applicable	3 months to less than 6 months	6 months and above

2 RESEARCH OBJECTIVE

The research objective is to identify whether Malaysian banks are able to achieve credit growth while maintaining sound credit underwriting standards. This is done by:

- Establishing the relationship between credit underwriting practice and loan growth of selected banks in Malaysia
- Identifying whether there are distinct differences between local banks and locally incorporated foreign banks

3 LITERATURE REVIEW

There have been several researches done on the area of the causes and effect of non-performing loans. Giovanni, Deniz and Luc Laeven (2008) have established that higher loan growth is achieved by lowering credit standards during boom times. In their research, they used loan denial rates and loan-to-income (LTI) ratios as proxies to determining lending standards.

Researches by Santiago, Martinez and Saurina (2000), Foos, Norden and Weber (2007), and Hardy and Tieman (2008) have all shown that rapid loan growth is achieved by lowering of credit standards. The reduced credit standards are best observed after a lag of 3 years (Santiago, Martinez and Saurina, 2000 and Foos, Norden and Weber, 2007). Jiminez and Saurina (2005) noted that lower credit standards are also a result of disaster myopia, herd behaviour, agency problems and fading recollections of past bad experiences, coupled with increasing competition.

Lown, Morgan and Rohatgi (2000) however concluded that loan growth is affected by credit standards. Their findings indicate that bankers allocate loans not by simply raising and lowering rates, but by tightening and loosening standards. Studies have also shown that problem loans are cyclical (Santiago, Martinez and Saurina, 2000). Their study revealed that there is a tendency for banks to loosen credit standards during economic upturn resulting in over-extension of credit. The same paper also noted that bank's efficiency in performing credit screening and monitoring

of borrowers affects its loan quality. In a similar vein, Hardy and Tieman (2008) found that banks with better loan technologies have better screening and management techniques and benefit by generating on average higher returns. This indicates that banks with a sound credit underwriting techniques and procedures can achieve growth without compromising on their lending standards.

Shofiqul Islam, Shil and Mannan (2005) identified loan type and structure as determinants of NPLs. They identified that:

- Small size loans outperform large loans,
- It is better to give short term loan instead of long term loan, and
- Loan for commercial purposes is less risky than infrastructure loans

In another study, it was discovered that the behaviour of banks in the Asian Crisis countries differs than that of banks in the U.S. and Europe. While higher NPLs reduces banks' aspiration to increase lending in the U.S. and Europe, South East Asian countries continue to lend mainly due to government intervention (Dickinson and Hou, 2007).

4 RESEARCH DESIGN

4.1 Purpose of Study

This study attempt to identify whether banks, are able to achieve loan growth without compromising on the lending standards. While studies have consistently shown that rapid loan growth is usually achieved by lowering credit standards which results in higher loan loss during downturns, other studies (Hardy and Tieman, 2008) have shown that banks with better loan technologies have been able to avoid this pitfall. The study will be confined to selected banks operating in Malaysia to identify which of these banks are able to achieve growth while maintaining credit standards.

4.2 Type of Investigation

As the objective of this study is to observe the effect of sound credit underwriting on loan growth, correlation analysis and trend analysis were used to compare the four selected banks. In addition, to compare the performance of local banks and foreign banks, test of means was carried out.

4.3 Research Methodology

The study will use entirely secondary data collected from the annual reports of the banks concerned coupled with the industry figures obtained from BNM reports. The banks identified for the study consist of two main local banks and two main locally incorporated foreign banks. They are:

- Maybank Berhad
- Public Bank Berhad
- Citibank Malaysia Berhad
- HSBC Malaysia Berhad

The choice of banks was also to enable comparison between behaviours of local banks and foreign banks operating in Malaysia. Maybank and Public Bank was chosen as they were the largest bank in terms of asset size and in terms of market capitalisation respectively while Citibank and HSBC were the choice of foreign banks by virtue of them being the two most prominent in Malaysia.

The variables used were Gross Loans Growth and Gross Non-Performing Loan (NPL) figures from the period of year 2001 to 2008. With the exception of Maybank, all figures were for the calendar year end (31 December). The September 2008 figures were used as approximation for 2008. The figures for Maybank are as of their financial year end (30 June). The period 2001 to 2008 was chosen to control the effects of adverse economic condition on the NPL levels. Adverse economic conditions such as high unemployment, recession, credit crunch and high inflation

would disable the NPL as a reliable indicator for sound credit standards. Although Malaysia's inflation rates spiked in 2008, it occurred only in the second half of 2008.

While it is acknowledged that loan denial rates or loan-to-income (LTI) ratios (Giovanni, Deniz and Luc, 2008) or survey on credit standards (Lown, Morgan and Rohatgi, 2000) would be better indicators of lending standards used, NPL is used as a proxy for credit standards in this study due to unavailability of the individual banks' loan denial rates, loan-to-income ratios and/or surveys on credit officers' opinion on credit standards.

4.4 Analysis Method

Gross loans growth was used to represent the bank's growth while NPL was used as an indicator of sound credit underwriting. Loans growth was calculated based on the total gross loans outstanding inclusive of housing loans sold to Cagamas. Gross NPL ratio was derived by using the following formula:

$$\text{Gross NPL ratio (\%)} = \frac{\text{Gross NPL (before SP) + Sale of NPL}}{\text{Gross outstanding loans (inclusive of HL sold to Cagamas)}}.$$

The sale of NPLs by the respective banks were added back to derive the gross NPL ratio so as to more accurately depict the underwriting standards employed by the bank. To identify the effect of underwriting standards on loan growth, the gross NPL ratio of year four (Y4) was compared with the loans growth of year one (Y1) i.e. NPL for 2008 against loan growth for 2005.

The following are additional adjustments made to the respective banks data:

- Maybank
    - 2007 Gross NPL is derived from the gross NPL of RM8,054,673,000 less sale of NPL of RM512,313,000
    - 2008 Gross NPL is derived from the gross NPL of RM5,214,212,000 add sale of NPL of RM97,625,000

- 2005 Gross NPL of RM10,459,292,000 less NPL transferred from Mayban Finance for RM2,476,787,000
- 2005 Gross loan outstanding of RM122,794,854,000 less RM11,432,561,000 of hire purchase which is used as approximation for loans transferred from Mayban Finance
- 2001 figures were left out as due to the acquisition of Phileo Allied Bank and Pacific Bank, the figures are not reflective of the true situation

- Public Bank
  - 2004 Gross NPL of RM1,405,815,000 less NPL transferred from Public Finance for RM569,278,000
  - 2005 Gross loan outstanding of RM54,898,009,000 less RM19,570,181 of hire purchase which is used as approximation for loans transferred from Public Finance
  - 2001 figures were left out as due to the acquisition of Hock Hua, the figures are not reflective of the true situation
- Citibank and HSBC
  - No additional adjustments necessary as they were not involved in any merger exercise

However in deriving the 2006 loan growth rate for Maybank, the unadjusted gross loan outstanding for 2005 was used, as figures from 2005 onwards included loans from the bank as well as those originating from the finance company. Similarly the 2005 loan growth for Public Bank was derived by using the unadjusted loan outstanding for 2004.

In order to determine whether credit standards influences loan growth, two methods of analysis was used:

i. correlation analysis was carried out with the loan growth as the dependent variable and gross NPL ratio as the independent variable. SPSS software was used in performing this analysis. The analysis was carried out for the four identified banks as well as for the industry as a whole.

ii. Trend analysis was carried out for each bank against the industry. This analysis is used to identify whether any of the four banks were able to outperform the industry.

To ascertain whether there are any significant differences between the selected local banks and foreign banks, test of means was used using the Paired-Samples T-Test. The average of loan growth and NPL for local banks (PBB and MBB) and foreign banks (Citibank and HSBC) was used for this test.

The hypothesis tested here are:

H_0 – Null hypothesis: there are no differences between the means for Loans growth and NPL between local and foreign banks.

H_1 - Alternative hypothesis: there are differences between the means for Loans growth and NPL between local and foreign banks.

5 FINDINGS

Table 2: Gross Loan Growth (t) and Gross NPL (t+3)

Year (t)	LG Ind	NPL Ind	LG PBB	NPL PBB	LG MBB	NPL MBB	LG CITI	NPL CITI	LG HSBC	NPL HSBC
2001	20.93	11.46	34.01	2.56	25.53	10.12	16.26	3.22	11.92	5.35
2002	5.02	9.19	14.16	1.96	-3.39	7.17	16.20	3.65	10.57	3.11
2003	5.48	8.29	20.02	1.86	6.64	6.54	11.33	2.96	5.02	2.15
2004	9.01	6.37	26.09	1.46	6.44	6.01	4.92	3.26	8.11	1.64
2005	8.90	4.96	19.71	1.04	19.11	3.68	-4.73	3.01	12.15	1.66

The table above represents the gross loan growth on year (t) and the corresponding gross non-performing loan ratio for year (t+3).

5.1 Correlation Analysis

The summary results for the correlation analysis are as depicted in the table below. The full results are available as appendix.

Table 3: Summary Results of Correlation Analysis

	Industry	PBB	MBB	Citi	HSBC
No of observation	4	4	4	5	5
Mean (Loan Growth)	7.1025	19.9950	7.2250	8.7960	9.5540
Standard Deviation (Loan Growth)	2.14778	4.87436	9.21562	8.87310	3.00049
Mean (NPL)	7.2025	1.5800	5.8500	3.2200	2.7820
Standard Deviation (NPL)	1.90216	0.41984	1.52239	0.27304	1.55440
Pearson Correlation	-0.940	-0.454	-0.960	0.538	0.429
Sig. (1-tailed)	0.030	0.273	0.020	0.175	0.235

The figures for 2001 were left out for the industry, Public Bank and Maybank as they were found to be outliers. Public Bank and Maybank also went through merger exercises in 2001 which greatly distorted the figures.

All four banks have mean NPL levels which are lower than that of the industry indicating that all four have sound credit underwriting practices. In terms of loan growth, all four banks also have means higher than industry. However a cursory analysis of the means reveal that Public Bank stands out as having superior loan growth with mean of 19.9950% and superior NPL with a mean of 1.5800%. Maybank's (7.2250%) mean of loan growth is only marginally higher than the industry's (7.1025%) while Citibank (8.7960%) and HSBS (9.5540%) have slightly better results.

From the table above, only the results for the Industry and Maybank were significant at the 0.05 level. Both the industry (-0.940) and Maybank (-0.960) had a strong negative correlation between loan growth and NPL. The strong negative correlation for the industry and Maybank indicate that sound credit underwriting practices results in lower loan growth.

The correlation analysis for Public Bank, Citibank and HSBC however were not significant indicating that loans growth and credit standards are not related. The possible explanation for the non-significant result from the correlation analysis is that the sample size may be too small. It was deemed not feasible to expand the sample size as it would cross into the crisis period resulting in reduced reliability of the NPL as a proxy for credit standards.

Trend analysis was therefore carried out to observe the relationship between loan growth and NPL for all four banks against the industry.

5.2 Trend Analysis

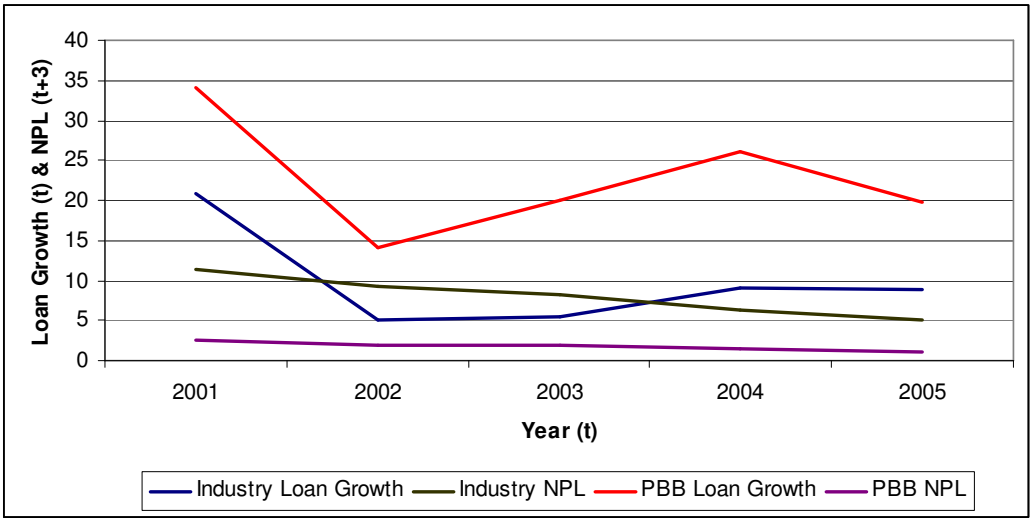
The premise of the trend analysis was:

- Banks with sound credit underwriting standards would have better NPL ratios compared with the industry
- Banks with high loan growth are those with loan growth higher than industry growth.

5.2.1 Public Bank

The chart below provides a comparison between the gross loan growth and gross NPL ratios between the industry as whole and Public Bank.

Chart 1: Gross Loan Growth and Gross NPL Ratios (Industry vs. Public Bank)

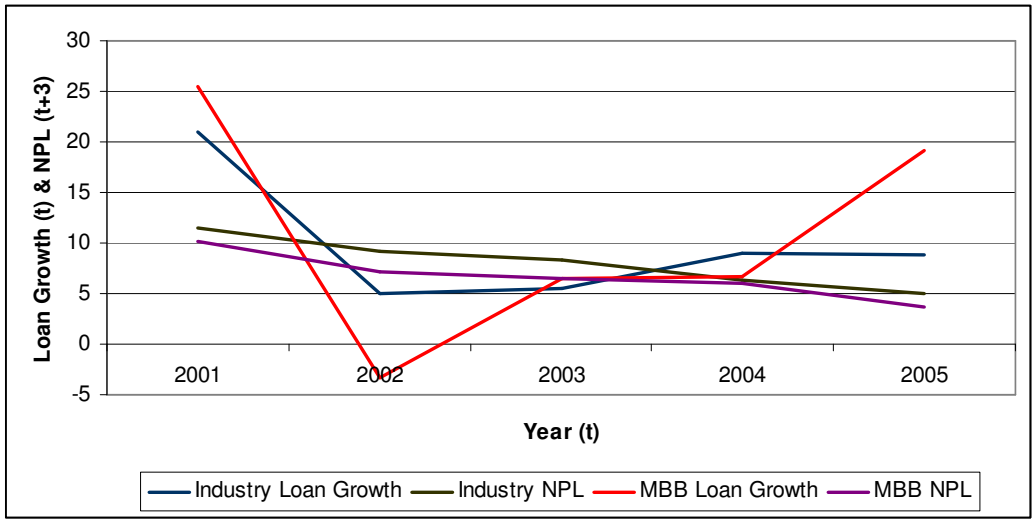


From the chart above, it can be seen that Public Bank's has been able to consistently achieve loan growth higher than that of the industry while maintaining its NPL levels below the industry level for all the five periods of analysis. This suggests that Public Bank has sound credit underwriting standards and yet it is able to achieve high loan growth. There is a possibility that Public Bank has superior loan technology in place.

5.2.2 Maybank

The chart below provides a comparison between the gross loan growth and gross NPL ratios between the industry as whole and Maybank.

Chart 2: Gross Loan Growth and Gross NPL Ratios (Industry vs. Maybank)



Maybank's NPL ratio has shown a declining trend in tandem with the declining NPL ratio for the industry. Although Maybank's NPL ratio is lower than that of the Industry, the difference is very low indicating that Maybank's credit underwriting standards while can be considered sound, is not superior to that of the industry as a whole.

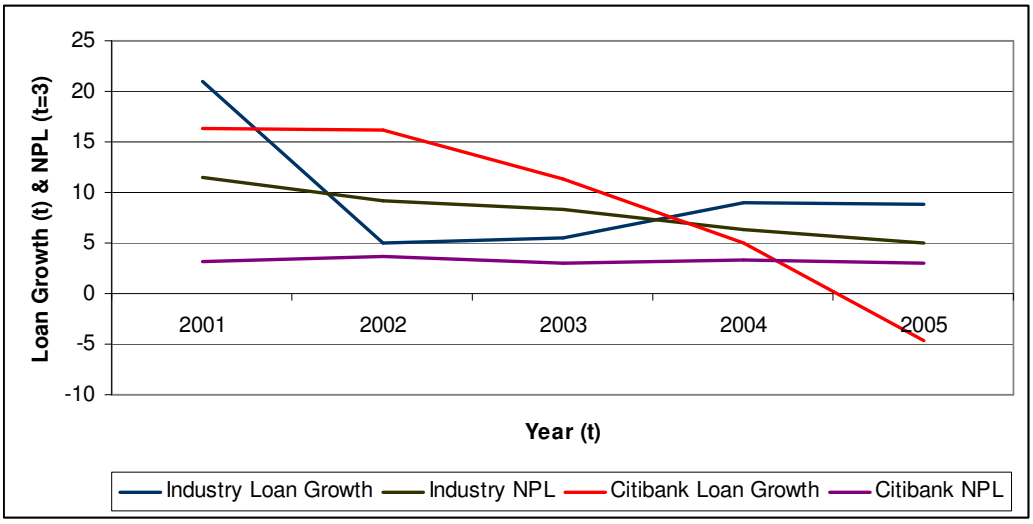
Maybank's loan growth however shows an erratic pattern. However if we were to discount the 2005 figures due to the approximation figures used instead of actual figures, the loan growth achieved by Maybank was generally lower than the industry growth.[4] These indicate that while Maybank has sound credit underwriting standards in place, it has been at the expense of loan growth.

[4] The loan growth for Maybank for 2005 was approximated with the total Gross loan outstanding of RM122,794,854,000 less RM11,432,561,000 of hire purchase which is used as approximation for loans transferred from Mayban Finance. Although HP is the biggest component of loans for a finance company, the existence of other facilities would result in higher loan growth calculated for 2005.

5.2.3 Citibank

The chart below provides a comparison between the gross loan growth and gross NPL ratios between the industry as whole and Citibank.

Chart 3: Gross Loan Growth and Gross NPL Ratios (Industry vs. Citibank)



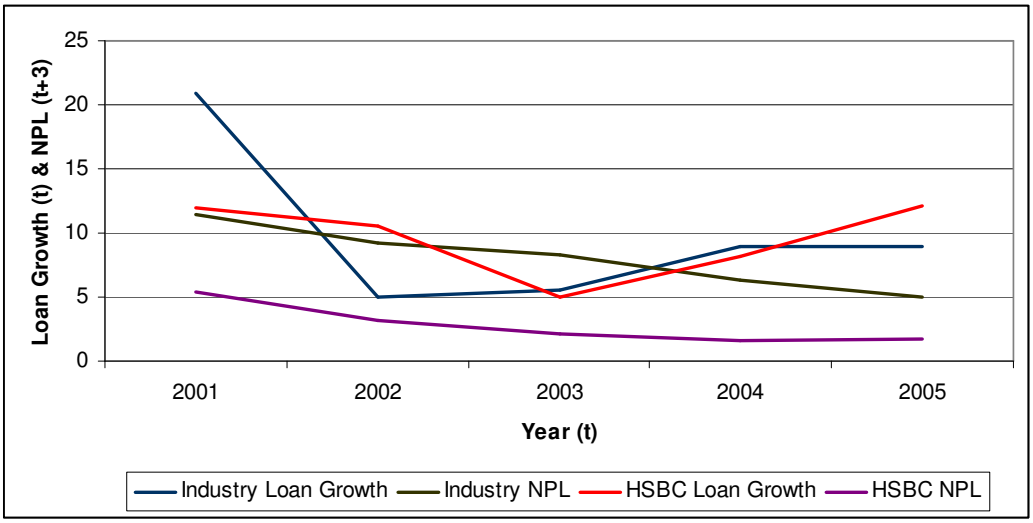
Citibank has managed to maintain a fairly constant NPL ratio which is also below the industry levels throughout the analysis period indicating that it has sound credit underwriting standards in place. The loan growth however is showing a steady declining trend with negative growth recorded in 2005.

The trend above suggests that sound credit underwriting standards has affected its loan growth.

5.2.4 HSBC

The chart below provides a comparison between the gross loan growth and gross NPL ratios between the industry as whole and HSBC.

Chart 4: Gross Loan Growth and Gross NPL Ratios (Industry vs. HSBC)



HSBC has achieved NPL ratio below the industry consistently throughout the analysis period. The loan growth achieved however is mixed with lower than industry levels in 2001, higher than industry in 2002 and 2005, and similar to industry levels in 2003 and 2004.

These indicate that similar to Maybank, although HSBC has sound credit underwriting standards in place, it has not been able to achieve consistent high loan growth.

5.3 Paired-Samples T-Test

The results of the Paired-Samples T-Test are as depicted below:

Table 4: Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	LGloc	16.8420	5	8.91935	3.98886
	LGfor	9.84100	5	6.285437	2.810933
Pair 2	NPLloc	4.2400	5	1.44106	.64446
	NPLfor	4.9620	5	1.21290	.54243

Table 5: Paired Samples Test

	Pair 1: LG Local – LG Foreign	Pair 2: NPL Local - NPLForeign
Mean	7.001000	-0.72200
Std Deviation	5.361569	0.27351
Std. Error Mean	2.397766	0.12232
Lower: (95% Confidence Interval of the Difference)	0.343733	-1.06161
Upper: (95% Confidence Interval of the Difference)	13.658267	-0.38239
t	2.920	-5.903
df	4	4
Sig. (2-tailed)	0.043	0.004

Both the means of loan growth and NPL for local banks and foreign banks are significantly different prompting us to reject the null hypothesis and accept the alternative hypothesis. The mean loan growth for the two local banks at 16.8420% is significantly higher than that of the foreign bank (9.84100%). Similarly the mean NPL levels for the two local banks were lower at 4.2400% compared to the 4.9620% registered by the two foreign banks.

Although the results of this analysis shows that local banks have better performance both in terms of loan growth and NPL levels, the results could be biased

by Public Bank's performance which recorded substantially higher loan growth and lower NPL compared to the industry as well as the other three banks analysed.

6 LIMITATIONS

The study conducted here has several limitations as listed below:

- 2005 and 2004 figures for the gross loan outstanding for both Maybank and Public Bank respectively was derived from the total gross loan outstanding less the hire purchase financing outstanding. This method was used to adjust the loan growth due to the merger of the finance companies into the bank. This method may result in overstatement of loan growth for that particular period.
- Other factors that influence loan growth such as GDP growth, economic cycle, liquidity levels, capital adequacy and interest rates were not factored in.
- Using NPLs as a measure of credit underwriting standards by itself is not ideal as NPLs may arise from factors other than poor credit standards such as economic crisis, unexpected retrenchments etc.
    - However during the period of study, the global economic crisis has yet to fully hit our shores therefore the use of NPL as a measure of credit underwriting is acceptable.
- The small of period of observation by itself is a limitation as it is probably the main reason for the non-significant findings for Public Bank, Citibank and HSBC.
    - A longer period was not deemed feasible as it would have involved periods during the previous crisis and as such the main reason for NPLs would have been economic conditions instead of credit underwriting standards
- As only two local and two foreign banks were used in the study, the comparison between the performance (loans growth and NPL levels) between local and foreign banks may not be representative of the actual situation.
    - Future similar studies could be carried out with a higher representation of local and foreign banks.

7 CONCLUSION

The industry on the whole after excluding the figures for year 2001 has shown a strong negative correlation (-0.940) which is significant at the 0.05 level between loan growth and NPL. This enables us to conclude that sound credit underwriting does affect loan growth in Malaysia. At the individual bank levels however, only Maybank has exhibited a strong negative correlation (-0.960) which is significant at the 0.05 level indicating that sound credit underwriting has undermined Maybank's loan growth.

As the results of the correlation analysis was not significant for Public Bank, Citibank and HSBC, trend analysis was used with mixed results for the four banks analysed.

All four banks analysed have demonstrated sound credit underwriting standards but only Public Bank has consistently achieved high loan growth. While HSBC has no clear trend, Citibank's trend indicates that sound credit underwriting has adversely affected its loan growth. Maybank's trend analysis result is consistent with the correlation analysis, i.e. sound credit underwriting has undermined Maybank's loan growth.

Therefore we can conclude that while generally sound credit underwriting does affect loan growth as seen from the correlation analysis for the industry and Maybank as well as the trend analysis for Citibank, banks can still achieve high loan growth without compromising credit standards as exhibited by Public Bank.

The results shown by Public Bank is consistent with the findings of Hardy and Tieman (2008) that found that banks with better loan technologies are able to achieve growth without compromising on their lending standards. Loan technology here refers to the whole process of credit evaluation, acceptance, administration, monitoring and control. It involves credit screening and risk management models as well as techniques and procedures employed and general portfolio management.

The comparison between the performance of local banks and foreign banks on loans growth and NPL levels indicate that local banks are able to achieve higher loan growth with lower NPLs compared to foreign banks. However this may not be reflective of the actual situation as the study could be biased by the exceptional performance recorded by Public Bank.

The implication of this study is that banks do not need to sacrifice their credit standards in their pursuit of higher loan growth. However before embarking on a high loan growth strategy, banks must first put in place a good loan technology. Although lending is one of the principal activities of banks, as custodian of public funds, credit must only be extended for qualified borrowers to avoid facing our very own subprime crisis.

Banking supervisors should also closely monitor the lending activities of banks to ensure that prudent lending practices are not discarded in pursuit of higher growth especially during boom periods. As most banks would not be willing to share their loan technology which is regarded as their competitive advantage, supervisors should encourage all banks to develop their own loan technology to avoid bank failures and systemic risk to the financial industry. The Second Pillar of Basel II, Supervisory Review could be used as a tool to monitor and provide incentive to banks to adopt sound risk management and credit underwriting practices.

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APPENDIX 1: Industry Correlation Analysis Results

Descriptive Statistics

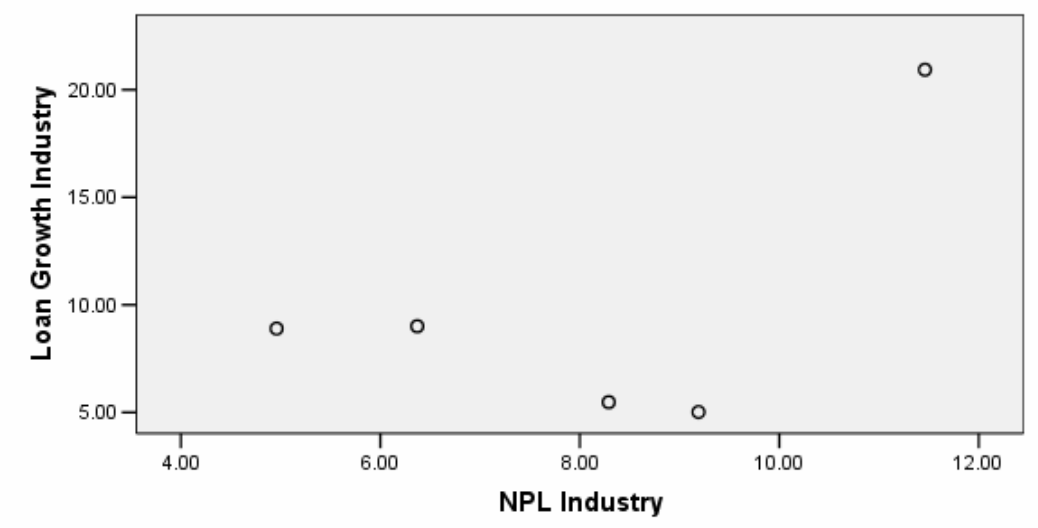
	Mean	Std. Deviation	N
Loan Growth Industry	7.1025	2.14778	4
NPL Industry	7.2025	1.90216	4

Correlations

		Loan Growth Industry	NPL Industry
Loan Growth Industry	Pearson Correlation	1	-.940(*)
	Sig. (1-tailed)		.030
	Sum of Squares and Cross-products	13.839	-11.522
	Covariance	4.613	-3.841
	N	4	4
NPL Industry	Pearson Correlation	-.940(*)	1
	Sig. (1-tailed)	.030	
	Sum of Squares and Cross-products	-11.522	10.855
	Covariance	-3.841	3.618
	N	4	4

* Correlation is significant at the 0.05 level (1-tailed).

Scatterplot Graph for Industry Loan Growth and NPL



APPENDIX 2: Public Bank Correlation Analysis Results

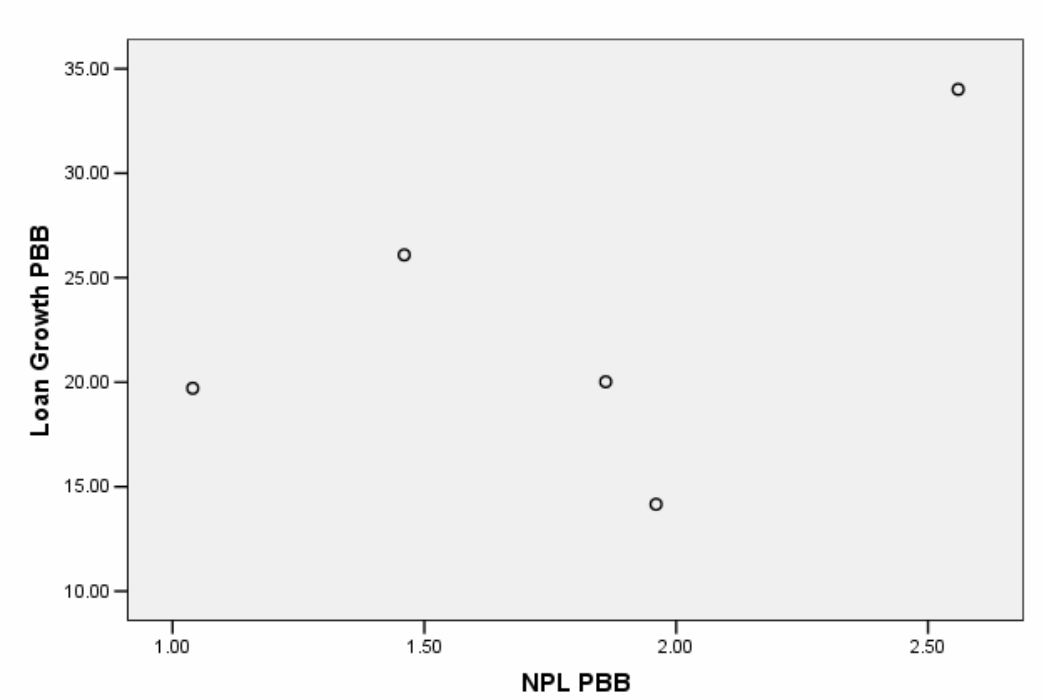
Descriptive Statistics

	Mean	Std. Deviation	N
Loan Growth PBB	19.9950	4.87436	4
NPL PBB	1.5800	.41984	4

Correlations

		Loan Growth PBB	NPL PBB
Loan Growth PBB	Pearson Correlation	1	-.454
	Sig. (1-tailed)		.273
	Sum of Squares and Cross-products	71.278	-2.788
	Covariance	23.759	-.929
	N	4	4
NPL PBB	Pearson Correlation	-.454	1
	Sig. (1-tailed)	.273	
	Sum of Squares and Cross-products	-2.788	.529
	Covariance	-.929	.176
	N	4	4

Scatterplot Graph for Public Bank Loan Growth and NPL



APPENDIX 3: Maybank Correlation Analysis Results

Descriptive Statistics

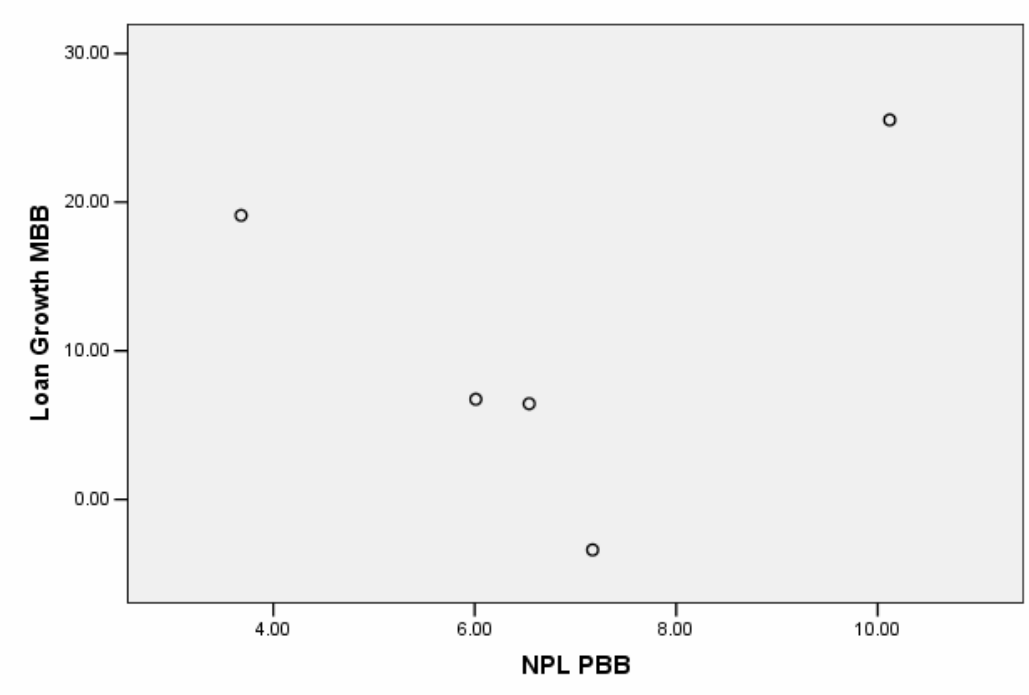
	Mean	Std. Deviation	N
Loan Growth MBB	7.2250	9.21562	4
NPL PBB	5.8500	1.52239	4

Correlations

		Loan Growth MBB	NPL PBB
Loan Growth MBB	Pearson Correlation	1	-.960(*)
	Sig. (1-tailed)		.020
	Sum of Squares and Cross-products	254.783	-40.422
	Covariance	84.928	-13.474
	N	4	4
NPL PBB	Pearson Correlation	-.960(*)	1
	Sig. (1-tailed)	.020	
	Sum of Squares and Cross-products	-40.422	6.953
	Covariance	-13.474	2.318
	N	4	4

* Correlation is significant at the 0.05 level (1-tailed).

Scatterplot Graph for Maybank Loan Growth and NPL



APPENDIX 4: Citibank Correlation Analysis Results

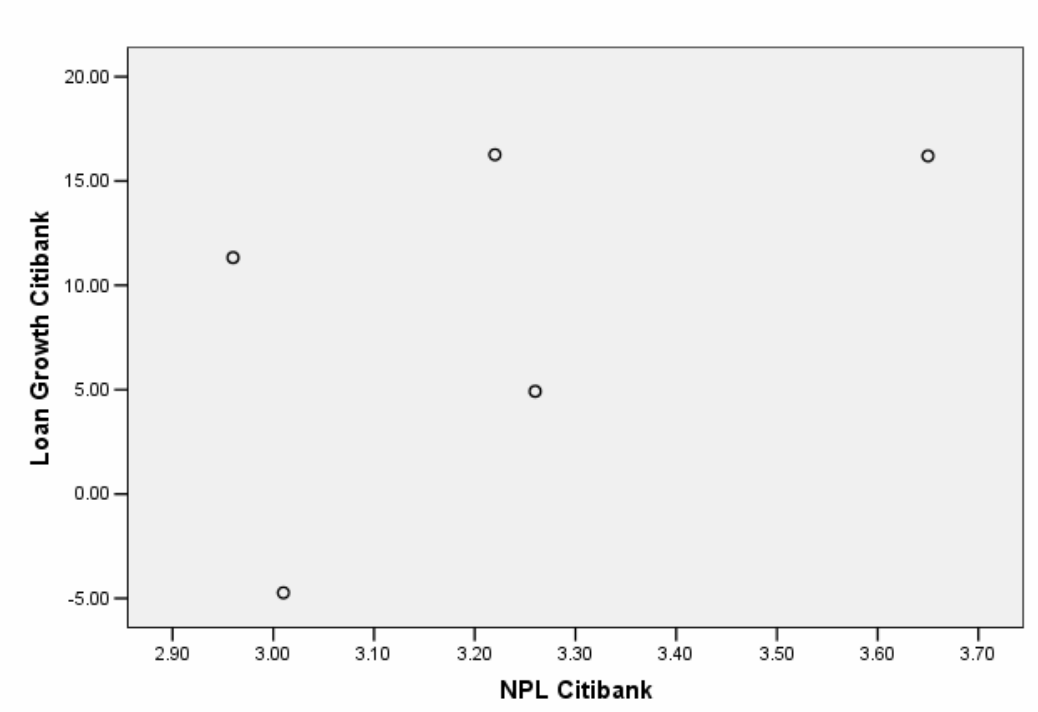
Descriptive Statistics

	Mean	Std. Deviation	N
Loan Growth Citibank	8.7960	8.87310	5
NPL Citibank	3.2200	.27304	5

Correlations

		Loan Growth Citibank	NPL Citibank
Loan Growth Citibank	Pearson Correlation	1	.538
	Sig. (1-tailed)		.175
	Sum of Squares and Cross-products	314.928	5.210
	Covariance	78.732	1.303
	N	5	5
NPL Citibank	Pearson Correlation	.538	1
	Sig. (1-tailed)	.175	
	Sum of Squares and Cross-products	5.210	.298
	Covariance	1.303	.075
	N	5	5

Scatterplot Graph for Citibank Loan Growth and NPL



APPENDIX 5: HSBC Correlation Analysis Results

Descriptive Statistics

	Mean	Std. Deviation	N
Loan Growth HSBC	9.5540	3.00049	5
NPL HSBC	2.7820	1.55440	5

Correlations

		Loan Growth HSBC	NPL HSBC
Loan Growth HSBC	Pearson Correlation	1	.429
	Sig. (1-tailed)		.235
	Sum of Squares and Cross-products	36.012	8.011
	Covariance	9.003	2.003
	N	5	5
NPL HSBC	Pearson Correlation	.429	1
	Sig. (1-tailed)	.235	
	Sum of Squares and Cross-products	8.011	9.665
	Covariance	2.003	2.416
	N	5	5

Scatterplot Graph for HSBC Loan Growth and NPL