DO INCOME SMOOTHING, CAPITAL MANAGEMENT, SIGNALING AND PRO-CYCLICALITY EXIST THROUGH LOAN LOSS PROVISIONS?

EVIDENCE FROM MALAYSIAN COMMERCIAL BANKS

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By

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Abstrak (BAHASA MALAYSIA)

Peruntukan untuk kerugian pinjaman adalah perbelanjaan akruan utama dicaj kepada penyata pendapatan bank untuk menyerap kerugian pinjaman yang timbul daripada pinjaman tidak berbayar. Tujuan utama disertasi ini adalah untuk mengkaji sama ada bank-bank perdagangan Malaysia menggunakan peruntukan kerugian pinjaman sebagai alat dalam pelicinan pendapatan, pengurusan modal, dan isyarat. Disertasi ini juga cuba mengkaji sama ada wujud pro-kitaran melalui peruntukan kerugian pinjaman di Malaysia. Merangkumi tempoh 2002-2012, keputusan menunjukkan bahawa bank-bank perdagangan di Malaysia melakukan pelicinan pendapatan melalui peruntukan kerugian pinjaman tetapi tidak ada bukti untuk pengurusan modal. Disertasi ini juga mendapati tiada bukti bagi bank perdagangan Malaysia untuk memberi isyarat maklumat peribadi kepada orang luar. Walaupun terdapat pekali negatif antara peruntukan kerugian pinjaman dan KDNK, keputusan menunjukkan bahawa bank-bank perdagangan di Malaysia tidak terlibat dalam tingkah laku pro-kitaran melalui peruntukan kerugian pinjaman. Keputusan juga menunjukkan bahawa krisis kewangan global pada tahun 2008 tidak menjejaskan peruntukan kerugian pinjaman bank perdagangan Malaysia.

Abstract (ENGLISH)

Loan loss provisions are the main accrual expenses charged to bank income statement to absorb loan losses arising from loans default. The main purpose of this dissertation is to examine whether Malaysia commercial banks use loan loss provisions as a tool in income smoothing, capital management, and signaling. This dissertation also examines whether pro-cyclicality exists through loan loss provisions in Malaysia. Covering period from 2002 to 2012, the results indicate that Malaysian commercial banks do smooth income through loan loss provisions but no evidence for capital management. This dissertation also finds no evidence for Malaysia commercial banks to signal private information to outsiders. Although there is a negative coefficient between loan loss provisions and GDP, the results demonstrate that Malaysian commercial banks do not involve in pro-cyclical behavior through loan loss provisions. The results also show that the global financial crisis in 2008 does not affect loan loss provisions of Malaysian commercial banks.

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BNM	Bank Negara Malaysia
CAP	Capital
CHEBTP	One year ahead change in earnings before taxes and provisions
CHLOAN	Change in total loans outstanding of bank
DCRISIS	Dummy for Crisis
EBTP	Earnings before taxes and provisions
GDP	Growth Domestic Product
LLA	Loan loss allowance
LLP	Loan loss provisions
MARC	Malaysian Rating Corporation Berhad
NPL	Non-performing loans
OLS	Ordinary Least Square
WO	Write-off

CHAPTER 1: INTRODUCTION

1.1 Introduction

Loan and advances are the largest assets of banking institutions where lending is the main activity to generate income. Study by Foos, Norden, & Weber (2010) found that loan growth represent an important driver of the riskiness of banks which the main source of credit risk. There will be probability of default when the borrower unable to make payment to the lender.

Loan is classified as non-performing when the borrower's payment is in arrears. Poor monitoring in loan activities may lead to bank failure. Several banks including developed and developing countries throughout the world experienced severe losses on their credit portfolios. The losses lead to banks failures and to a global fear of a systematic crisis (Boudriga, Taktak, & Jellouli, 2009 and Kauko, 2012).

The depository institutions are permitted to make a reserve for the future losses based on their recent loan loss experience from their flows of incomes. It is called as an allowance for loan losses. Bank should maintain sufficient loan loss allowances to cover expected losses and maintain equity capital to absorb unexpected losses (Benston & Wall, 2005). The deductions of allowance for loan losses will appear on the bank's income and expenses statement as non-cash expense item called provision for loan losses.

Provision for loan losses is another expense item that bank and selected financial institutions may deduct from its current income. The loan loss provision is the main accrual expenses for banks (Curcio & Hasan, 2013 and Rose & Hudgins, 2013).

Podder and Mamun (2004) also define loan loss provision as one of the method for banks to identify a reduction in realized value of their loans. It is charged to the bank's profit and loss statements that create reserves on bank's balance sheets to prevent losses whenever there is a financial crisis (Craigwell & Elliot, 2011).

Bank failures also have a relationship with financial crisis due to poor loan monitoring since bank engaged mostly in lending activity. Ahead of banking crisis, the provisions tend to be low and rise as losses increase (Angklomkliew, George, & Packer, 2009). Added by Jin, Kanagaretnam, & Lobo (2011) in examining the ability of selected accounting and audit quality variables measured to predict banks that subsequently failed during the financial crisis, they found that loan loss provisions is one of the reliable predictors of bank failures.

The case of Bank Islam Malaysia Berhad (BIMB) in year 2006 provides a good example regarding the manipulation of loan loss provision to achieve targeted earnings. The bank was predicted to make provisions not more than RM1.5 billion on non-performing loan (NPL) for the financial year ending June 2006. However, BIMB recorded the amount of RM774 million in loan loss provisions for the last financial year (2005), which resulted to a surprising amount of RM2.3 billion in the loan loss provisions (LLP). Based on the cases occurred, public confidence have dropped (Ram, 2006).

Therefore, it is essential to study on loan loss provisioning as the way banks determine their loan loss provisions may affect banks earnings and regulatory capital, which may affect shareholders returns (Hasan & Wall, 2004 and Bouvatire & Lepetit, 2008)

Prior literatures suggest that bank loan loss provisioning was associated with income smoothing and capital management (Benston & Wall, 2005; Chang, Shen, & Fang, 2008 and Dong et. al, 2012). It was also associated with signaling (Kanagaretnam, Lobo, & Yang, 2005; Anandarajan, Hasan, & McCarthy, 2007; and Leventis, Dimitropoulos, & Anandarajan, 2012). Loan loss provisions also associated with procylical behavior (Bikker & Hu, 2002; Bikker & Metzemakers, 2005; and Bouvatier & Lepetit, 2008). Most of the literatures detect the potential changes in banks behavior in earnings and capital management via loan loss provisions.

1.2 Problem Statement

There are rising numbers of studies that debated the use of loan loss provisions for income smoothing, capital management, signaling and pro-cyclicality. First, income smoothing occurs whenever the banks manager have an information regarding the value of their firm and wanted to communicate with outsiders. Second, capital management is when the capital constrained, banks use the discretionary accruals to achieve regulatory capital targets. Third, signaling occurs by increasing current loan loss provision when bank manager signal the earnings power of the bank that capable in absorbing future losses. Lastly, pro-cyclicality occurs whenever banks increase their provisions during bad times and reduce it when good times.

Anandarajan et. al 2007; Perez, Salas-Fumas, and Saurina, 2008; Chang et. al, 2008; Fonseca & Gonza'lez, 2008 and Kanagaretnam, Lim and Lobo, 2010 highlight that banks use loan loss provisions to smooth income and for capital management. There are also recent literature regarding income smoothing and capital management done by DeBoskey & Jiang, (2012), Dong et. al, (2012), Leventis et. al, (2012), Curcio & Hasan (2013), Bouvatier, Lepetit, & Strobel (2014) and Olson & Zoubi (2014).

The other strand of literature associate loan loss provisions with the issue of signaling (Kanagaretnam et. al, 2005; Anandarajan et. al, 2007; Leventis et. al, 2012; Curcio & Hasan, 2013 and Olson & Zoubi, 2014).

Previous literatures also highlight that loan loss provisioning is commonly associated with the pro-cyclicality (Cavallo and Majoni, 2001; Bikker & Hu, 2002; Laeven & Majnoni, 2003; Berger & Udell, 2004; Bikker & Metzemakers, 2005; Bouvatier and Lepetit, 2008; and Suhartono, 2012).

Most of the studies on loan loss provisions are done in the United States and outside of the Malaysian country. For Malaysian case, Shaharudin (2004) reviews past academic literatures on manipulating loan loss provisions for earnings and capital management. The study could not find conclusive evidence that banks in Malaysia manage their regulatory capital; and earnings through loan loss provisions. Empirical analysis done by Ismail et. al (2005) does not find evidence that Malaysian banks smooth income through loan loss provisions.

Banking panic in 2008 made countries around the world fell into severe recession. It has been shown during the peak of credit boom in mid 2007 followed by failures of subprime mortgages and all types of securitized products. Due to the failure of Lehman Brothers in September 2008, there was a run by short-term bank creditors making it difficult for banks to roll over their short-term debt. The crisis reduce demand for credit resulting declining in lending activities during crisis period (Ivashina & Scharfstein, 2010).

The recent global crisis shows the importance of the pro-cylicality in the financial sector. It makes banks weaken due to the changes in economy activities that potentially affecting financial stability and economic growth (Athansoglou, Daniilidis & Delisc. 2014). As the lending decline, the loan loss provision should be declined.

This dissertations differs from Shaharudin (2004) and Ismail et. al (2005) in several ways. Firstly, this dissertation will fill in the gap by examining whether income smoothing activities, capital management, signaling, and pro-cyclicality behavior exist through loan loss provision for Malaysian banking industry. Second, this dissertation adds dummy crisis as an additional variable to test whether global financial crisis in 2008 influence loan loss provisions of Malaysian commercial banks. Lastly, this dissertation contributes to the existing literature by covering the more recent period, which is from 2002 to 2012 that covers 2008 global financial crisis.

1.3 Research Questions

1. Does in this recent year (2002 to 2012), Malaysian commercial banks do smooth income through loan loss provisions?
2. Do Malaysian commercial banks manage capital through loan loss provisions?
3. Do Malaysian commercial banks engage in signaling through loan loss provisions?
4. Do pro-cyclicality exists through loan loss provisions for Malaysian commercial banks?
5. Does global financial crisis give an impact to loan loss provisions of Malaysian commercial banks?

1.4 Research Objectives

The objectives of this dissertation are:

1. To examine whether Malaysian commercial banks do smooth income through loan loss provisions.
2. To examine whether Malaysian commercial banks do manage capital through loan loss provisions.
3. To test whether Malaysian commercial banks engage in signaling through loan loss provisions.
4. To examine whether Malaysian commercial banks exhibit pro-cyclicality behavior through loan loss provisions.
5. To test whether global financial crisis gives impact on loan loss provisions of Malaysian commercial banks.

1.5 Significance of Study

Although there are many studies on loan loss provisions, very few studies discuss on loan loss provisioning in Malaysia. This dissertation complements existing literatures on loan loss provisions in Malaysia since there is lack of research discussing the signaling and pro-cyclicality of commercial banks in Malaysia.

Secondly, by using recent data covering the period 2002 to 2012, this dissertation provides valuable insights into the possible effect of 2008 global financial crisis on the way banks determining their loan loss provisions.

1.6 Research outline

The organization of this dissertation is as follows. Chapter 2 will review the previous literature and develop hypotheses. Chapter 3 discusses the methodology used to answer the research objectives. Chapter 4 will report the results and discuss the findings. Lastly, Chapter 5 summaries the dissertation, underlines the limitations and give suggestions for future research.

CHAPTER 2: LITERATURE REVIEW & HYPOTHESIS DEVELOPMENT

2.1 Introduction

This chapter reviews the previous litreatures to give a better understanding on loan loss provisions. Section 2.1 discusses the basic concept of loan loss provisioning. Section 2.2 discusses loan loss provisions and earnings management and capital management. Section 2.2.1 provide an overview of loan loss provisions guideline in Malaysia. Section 2.3 discusses relating to loan loss provisions and signaling; Section 2.4 discusses relating to loan loss provisions and pro-cyclicality and lastly Section 2.5 provides a summary of the chapter.

2.2 Bank loan loss provisioning

Loan loss provisions are defined as an estimation for probability of loan losses. This amount will be charged on income statement as an expense. The aim is to protect a portion of current earnings from taxes in preparing for default loans. Loan loss provisions play important role given the sensitive information they convey and being set aside to face future deteriorations of credit portfolio quality (Curcio & Hasan, 2013).

Loan loss allowance is a contra assets accounts that represent an accrued reserve against loans that acknowledged being uncollectible can be charged off. When a loan is considered uncollectible, the amount will be charged off by reducing the allowance for loan losses account and at the same time decreasing the asset account for gross loans.

The increase in loan loss provisions will result in increase of loan loss allowance and a reduction in current net income.

Generally, there are two categories for loan loss provisions which are specific provisions and general provisions. Specific provisions refer to the expected losses for individual or specific loans that have been recognized as an impaired. While, general provisions defined as groups of loans that have not been identified as impaired but may possibility contain some.

In reviewing previous study, they discover discretionary component due to utilization loan loss provisions for management objectives which are income smoothing, capital management, signaling and pro-cyclicality behavior. The next section will brief regarding loan loss provisions in Malaysia.

2.2.1 Overview of loan loss provision in Malaysia

Banking institution should establish a scientific and rational system of loan loss provisions to address financial risk (Dong, Liu, & Hu, 2012). It is said that by understanding the bank provisioning policy it will ensure the soundness of the banking financial structure (Duvan & Yurtoglu, 2004).

Therefore, as in Malaysia there is guideline provided by the central bank of Malaysia which is Bank Negara Malaysia (BNM). The central bank will regulate the banking institution to follow the requirements set by the central bank to establish provision amount. There is a guideline on Classification of Non-Performing Loans and

Provision for Substandard, Bad and Doubtful Debts (BNM/GP3). It is applicable to all licensed banking institutions which are commercial banks and investment under Banking and Financial Institutions Act 1989 (BAFIA).

The objective is to ensure the provisions set aside based on their potential losses. Banking institutions are required to review general and specific provision for substandard, bad and doubtful debts. They also need to maintain 1.5% of general provisions of total outstanding loans (including housing loan sold to Cagamas Berhad), net of unearned interest, specific provisions for substandard, bad and doubtful debts and additional provisions made for impaired loans (Bank Negara Malaysia, 2014).

Source by central bank of Malaysia (Bank Negara Malaysia), Classification of Non-Performing Loan and Provision for Substandard and Doubtful Debts (BNM/GP3) set up for the specific provision, banking institutions required to follow minimum benchmark.

The period default 6 month from the first day but less than 9 months classify as substandard unless there is evidence to support a worse-off classification. Need to provide 20% specific provisioning on the shortfall in collateral value over the amount outstanding and net of unearned interest unless overall loan loss provisions are adequate.

Period default 9 month from the first day but less than 12 months classify as doubtful unless there is evidence to support a worse-off classification. Need to provide 50% of specific provision. Lastly, for period of default 12 months and above classify as bad. It needs 100% of specific provision.

In summary, this guideline is applicable to loans offered under conventional banking principle only. The aim is to establish minimum standards for the classification of accounts, income recognition and loan loss provisioning. The next section will discuss on literature regarding loan loss provisions and income smoothing and capital management.

2.3 Literature relating to loan loss provisions and income smoothing and capital management

Income smoothing is common form of earnings management. It can be defined as manipulating method to smooth the firm's reported earnings to convey the private information. The need of income smoothing arises due to the need to reduce the information asymmetry. It occurs when bank managers understate expected loan losses to increase net income and capital in the current year (Benston and Wall, 2005).

Meanwhile, capital management is when capital constrained, bank will use disretionary accruals to achieve regulatory capital targets. Capital ratio is an important indicator reflect the risk of the bank. It plays an important role to shows the bank's ability to endure under current capital structure and denotes the undetectable risk of default (Chang et. al, 2008).

Study by Anandarajan, Hasan, and McCarthy (2007) found that Australian banks use loan loss provisions for capital management. The result also indicate that banks in Australia use loan loss provisions to manage earnings where listed commercial banks engaged aggresively in earnings management as compared to unlisted commercial banks.

Perez, Salas-Fumas, and Saurina (2008), on the other hand, examine the impact of statistical provisions on loan loss provisions of banks in Spain. The findings show that, even though strict regulations on loan loss provisions have been imposed, it appears that Spanish banks still practice income smoothing activities. However, there is no evidence to prove that they use loan loss provisions to manage capital.

Chang, Shen, & Fang (2008) investigate the relation between discretionary loan loss provisions and earnings management for the banking industry. The samples cover 164 listed companies in Taiwan Stock Exchange over 1999 to 2004 period. They found evidence that when the earning before loan loss provision (EBTP) or non-performing loan (NPL) are high level, bank managers may use discretionary loan loss provisions to engage in earnings management. However, they do not find evidence on relation between discretionary loan loss provision and capital ratio.

Fonseca & Gonza'lez (2008) examine determinants of income smoothing via the manipulation of bank loan loss provision. Using panel data toward 40 countries over the world, they found that bank income smoothing depends on investor protection, disclosure, regulation and supervision, financial structure and financial development.

In a recent study of earnings management and capital management in the banking industry, Kanagaretnam, Lim, and Lobo (2010) examine the impact of auditor reputation on banks' earnings management by utilizing samples from international banks in 29 countries. Being the first of its kind to study the impact of auditing on bank earnings management, the authors hypothesizes that auditors who are specialists in the banking industry. They may have better assess the adequacy of loan losses and able to reduce

earnings management activities through loan loss provisions. Covering period from 1993 to 2006, their tests on income-increasing abnormal loan loss provisions suggest that auditor type and auditor expertise could hinder the activities of earnings management through abnormal loan loss provisions.

DeBoskey & Jiang (2012) examine the impact of auditor specialization on banking loan loss provisions by utilizing large cross section of U.S banks. Covering period from 2002 to 2006, they suggest that bank manager use loan loss provisions to smooth earnings in the post-SOX period. Similar result obtained by Kanagaretnam et. al (2010), that audit industry expertise plays an affective monitoring role in reducing earnings management.

Dong et. al (2012) studies on 14 domestic commercial bank of China over 2001 to 2009 period. They found there is an evidence stated there is relation between bank loan loss provision and earnings management and capital management. Added by Dong et. al (2012), when bank's capital adequacy is lower, bank management plan more loan loss provision to add capital in order to meet the regulatory requirements.

Leventies et. al (2012) found no evidence to support capital management hypothesis in examining the impact of implementation of IFRS on the use of loan loss provision to manage bank capital. Their study focused on European listed banks for the period 1999 to 2008. In aspect of earnings management hypothesis, the findings conclude that earnings management through loan loss provision are significantly reduced after the implementation of IFRS in 2005.

Curcio & Hasan (2013) examine the use of loan loss provisions by European banks in earnings and capital management and signaling. Employing data from 1996 to 2006, they found that for EA group of banks strongly support the income smoothing hypothesis but not significant for non-EA credit institutions. Meanwhile, for capital management hypothesis, the result does not confirm for the EA banks. However, there is an evidence for non-EA credit institutions use loan loss provisions to manage their capital ratios.

Bouvatier, Lepetit, & Strobel (2014) examine whether the way a bank might use loan loss provisions to smooth its income is influenced by its ownership concentration and the regulatory environment. Using a panel of European commercial banks, they found evidence that banks with more concentrated ownership use discretionary loan loss provisions to smooth their income. This behavior is less pronounced in countries with stronger supervisory regimes or higher external audit quality. Banks with low levels of ownership concentration do not display such discretionary income smoothing behavior. This suggests the need to improve existing or implement new corporate governance mechanisms.

Olson & Zoubi (2014) examine the determinants of the allowance for loan losses (ALL) and loan loss provisions (LLP) for banks in the Middle East and North African (MENA). Using data for 75 banks in nine MENA countries over the period 2000-2008 found evidence in earnings management hypothesis. Indicate that MENA banks do engage in income smoothing over year to year. However, they fail to support capital management hypothesis.

However, studies done for local commercial bank samples in Malaysia Shaharudin (2004) failed to conclude Malaysian bank manage their earnings and regulatory capital through loan loss provision. It is being supported by Ismail et. al (2005) where they failed to conclude that Malaysian bank do not smooth income through loan loss provision.

In summary, empirical evidence from earlier studies indicates that banks generally use loan loss provisions to manage earnings. Manipulating activities happen because of the need to reduce the information asymmetry. Hence, the hypothesis regarding income smoothing and capital management will be developed as below:

H_1= Malaysian commercial banks do smooth income through loan loss provisions

H_2= Malaysian commercial banks manage capital through loan loss provisions

2.4 Literature relating loan loss provision and signaling

Signaling occurs whenever to signal the financial strength. Signaling the earnings power that the bank is capable in absorbing future losses by increasing the current loan loss provision (Shaharudin, 2004 and Bouvatier & Lepetit, 2008). According to Kanagaretnam et. al (2005) in order to reduce adverse selection component and thus their cost of capital, managers of banks with high earnings variability are more likely to engage in signaling through loan loss provision.

In Kanagaretnam et. al (2005) studies over 78 large U.S bank holding companies, they found there is an evidence to support their studies on determinants of signaling by bank through loan loss provision. The propensity to signal the information asymmetry and bank mangers undervalued their banks by communcating their private information about their banks future prospects.

Differents from Anandarajan, Hasan and McCarthy (2007) in use of loan loss provision for capital, earnings management and signaling by Australian banks. They do not find any evidence Australian banks use loan loan loss provision for signaling future intentions of higher earnings to investors.

The result are different for European Union. Studies done by Leventis et. al, (2012) investigate whether bank managers of countries within the European Union engage in signaling especially after implementing international financial reporting standards (IFRS) commencing 2005 found insufficient evidence that healthy bank engage in signaling behavior but bank that facing financial distress do engage in

signaling. Bouvatier and Lepetit (2008) find evidence suppporting signaling hypothesis for the sample of European banks for sample period in 1992 to 2004.

Curcio & Hasan (2013) examine the use of loan loss provisions by European banks in earnings and capital management and signaling. Employ data from 1996 to 2006, they found there is evidence for non-EA bank use loan loss provisions as a tool to convey information about their future earning's to the markets but not for the EA banks.

Olson & Zoubi (2014) examine the determinants of the allowance for loan losses (ALL) and loan loss provisions (LLP) for banks in the Middle East and North African (MENA). Using data for 75 banks in nine MENA countries over the period 2000-2008 found evidence that MENA banks do engage in signaling activities through ALL and LLP.

In summary, empirical evidence from earlier studies indicates that banks generally use loan loss provisions to engage in signaling. Therefore, the hypothesis regading the signaling will be developed as below:

H_3= Malaysian commercial bank engage in signaling through loan loss provision

2.5 Literature relating to loan loss provision and pro-cyclicality

Pro-cyclicality occurs whenever banks increase provisions during the bad times and reduce it in good times. Laeven & Majnoni (2003) analyse procylical pattern for banks around world supported the evidence of pro-cyclicality behavior of loan loss provisions which bank may increase provision during bad times and reduce it in good times. This could trigger a credit crunch that might worsen the economic depressions (Wall and Koch, 2000).

The most important in examining whether provisioning might gives an impact the business cycle is growth of domestic product (GDP). Bikker & Hu (2002) and Bikker & Metzemakers (2005) studies the procyclical pattern under Basel I and Basel II. In their studies, they found that provisioning tend to be higher when GDP growth is lower. It reflects increased in riskiness of credit portfolio when the business cycle turns downwards. It also increase the risk of credit crunch.

Majnoni & Cavallo (2001) investigate the effect of lack of regulation in loan loss provisioning practices that may strengthen the pro-cyclicality of bank capital. Using a sample of 36 countries for period from 1988-1999, the results show that the level of institutional development significantly affects loan loss provisioning practices across countries. Added by Majnoni & Cavallo (2001), they suggest that provisioning practices should be incorporated as a component of capital regulation to help reduce the pro-cyclicality effects on bank capital. The shortage of a bank's capital will reduce bank lending activities, which could lead to a credit crisis that may worsen the economic downturns.

Bikker & Hu (2002) estimated an unbalanced panel to evaluate sample of 26 OECD coutries for 1979-1999 period for pro-cyclicality of banks provision relate earnings and business cycle by using macroeconomic variables such as GDP, inflation and unemployment to bank specific variables. The result is significant between provision and business cycle. Loan loss provisions negatively related to GDP and inflation but significantly positive related with unemployment.

Berger & Udell, (2004) tested hypothesis to explain the pro-cyclicality of bank lending using data from individual U.S banks over 1980 to 2000 period; over 200,000 bank-level observations on commercial loan growth, over 2,000,000 loan-level observations on interest rate premiums, and over 2,000 bank-level observations on credit standards and loan spreads from bank management survey responses. They found the empirical analysis support the hypothesis although there are different in term of bank size.

Bikker and Metzemakers (2005) examine the relationship between bank provisioning and business cycle. Using data from OECD countries, their study supports theory of pro-cyclical behavior through loan loss provisions. Bank tend to increase loan loss provisions during economic downturns and cut the loan provisioning during good times.

Bouvatier and Lepetit (2008) examine banks' pro-cyclicality behavior for 186 European banks samples covering period from 1992 to 2004. They found that credit risk management without provisioning rules covering expected credit risk may have procylical effects. They also found non-discretionary loan loss provisions has significant

relationship with the business cycle. The findings consistent for execution of an active provisioning system in Europe banks.

Studies done by Suhartono (2012) in analyzing macroeconomic and bank specific determinants of loan loss provisioning used Generalized-Linear Model (GLM) to examine the determinants of credit loan provisions in Indonesia's banking sector. In term of the impact for growth development, the evidence in Indonesia shows economic growth reduces the credit risk. It support the procyclicality in the credit markets.

The recent global crisis shows the importance of the pro-cylicality in the financial sector. It weaken the banking institutions due to the changes in economy activities that potentially affecting financial stability and economic growth (Athansoglou et. al, 2014). As the lending decline, the loan loss provision should be declined. Ahead of banking crisis, the provisions tend to be low and rise as losses increase (Angklomkliew et. al, 2009). Added by Jin et. al, (2011) found that loan loss provisions is one of the reliable predictors of bank failures.

In summary, previous literature concludes that bank loan loss provisioning is highly cyclical. The hypothesis will be developed as below:

H_4= Malaysian commercial banks involve in procyclical behavior through loan loss provision

H_5= Global financial crisis 2008 gives an impact on loan loss provisions of Malaysian commercial banks

2.6 Chapter summary

This chapter has discussed literature regarding loan loss provisions and dicreationary behavior in banking industry. Most of the literature concludes the bank manager do manage income through loan loss provisions. The discussion also highlights that the bank manager tend to engage in signaling through loan loss provision. This chapter ends with discussion pertaining to bank procyclical behavior in banking industry. This chapter also include development of hypothesis to be examined in the empirical analysis. It will be discussed further in Chapter 3: Methodology.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The main objective of this dissertation is to examine the hypothesis whether income smoothing, capital management, signaling and pro-cyclicality exist through loan loss provisions in Malaysia commercial banks. Section 3.2 describes model selected in order to conduct the empirical test. Section 3.3 discusses variables used in developing the regression model to test the income smoothing, capital management, signaling and pro-cyclicality for Malaysian commercial banks. Section 3.4 describes theoretical framework of dependent and independent variable used. Section 3.5 describes data used. Section 3.6 describes selected samples used and Section 3.7 provides a summary of the chapter.

3.2 Model

To test the hypothesis, with some modification, this dissertation follows the model developed by Curcio & Hasan (2013). The models are as follows:

Model 1: Exclude 2008 global financial crisis dummy

$$LLP_{it} = \beta_1 + \beta_2 NPL_{it} + \beta_3 CHLOAN_{it} + \beta_4 EBTP_{it} + \beta_5 CHEBTP_{it} + \beta_6 LLA_{it} + \beta_7 WO_{it} + \beta_8 CAP_{it} + \beta_9 GDP_{it} + u_{it} \quad (1)$$

Model 2: Include 2008 global financial crisis dummy

$$LLP_{it} = \beta_1 + \beta_2 NPL_{it} + \beta_3 CHLOAN_{it} + \beta_4 EBTP_{it} + \beta_5 CHEBTP_{it} + \beta_6 LLA_{it} + \beta_7 WO_{it} + \beta_8 CAP_{it} + \beta_9 GDP_{it} + \beta_{10} DCRISIS_{it} + u_{it} \quad (2)$$

Where:

Variables	Definition
LLP_{it}	Loan loss provisions of bank *i* at year *t* / average total assets
NPL_{it}	Non-performing loan ratio
$CHLOAN_{it}$	Change in total loans outstanding of bank *i* at year *t* / average total assets
$EBTP_{it}$	Earnings before taxes and provisions of bank *i* at year *t* / average total assets.
$CHEBTP_{it}$	One year ahead change in earnings before taxes and provision
LLA_{it}	Beginning loan loss allowance of bank *i* at year *t* / average total assets.
WO_{it}	Write offs of bank *i* at year *t* / average total assets
CAP_{it}	Total equity of bank *i* at year *t* / average total assets
GDP_{it}	Growth Domestic Product
$DCRISIS_{it}$	Dummy for Crisis in 2008

3.3 Variables explanation

Dependent Variables

LLP_{it}= loan loss provisions of bank *i* at year *t* / average total assets

Previous studies employ loan loss provisions as dependent variables to test the evidence of management discretionary which are income smoothing, capital management, signaling and pro-cyclical. Following Curcio & Hasan (2013) this dissertation uses loan loss provision scaled by average total asset as dependent variable.

Independent Variables

$\boldsymbol{NPL_{it}}$ = non-performing loan ratio

Previous studies show one of important loan loss provisions determinant is non-performing loan. Non-performing loan is an important indicator in determining the loan default. They conclude the higher the non-performing loan, the higher loan loss provision would be (Hasan & Wall, 2004; Dong et al. 2012 and Ismail et al. 2005). Pinho & Martins (2009) in analyzing the Portuguese Bank's provisioning policy for two classes of provision which are generic and specific provision, covered period 1990 to 2000 shows the level of specific provision is determined by the amount of non-performing loan.

In Chang et al (2008) studies data of public companies liested in Taiwan Stock Exchange selecting 1999 to 2004 period found the result is different between non-performing loans and non-performing loans ratio. The non-performing loans is significantly related to dicretionary loan loss provision but non-performing loans ratio are not linked significantly. It is statistically significant with strong relationship indicate there is a causal relationship between non-performing loan and loan loss provisions. Therefore, NPL will be one of the independent variable and it is expected to have positive relationship with loan loss provisions.

$\boldsymbol{CHLOAN_{it}}$ = change in total loans outstanding of bank *i* at year *t* / average total assets

Change in total loans outstanding of bank is used as a proxy to measure default risk. The previous studies have dissent results pertaining to loan and advances. Ismail et al. (2005) in analyzing the 12 commercial banks in Malaysia from 1996 to 2002 conclude that loan and advances are important determinant for loan loss provision. The higher the loan growth, the higher the loan loss provision. The result also shows positive effect between loan and loan loss provisions (Dong et al. 2012 and Fonseca & Gonza´lez, 2008).

Laeven & Majnoni (2003) studies the cyclical pattern of bank loan loss provisions across the world. They found a negative correlation between loan loss provision and loan. Banks tend to increase provision during positive profit periods. Hasan & Wall (2004) studies on cross country data for determinants of loan loss allowance found result are significant for loan to total asset ratio in two of three U. S samples but never significant for non-U.S samples. Therefore, loan will be added as an explanatory variable since there is a causal relationship between loan and loan loss provisions. Loan is expected to have a positive relationship with loan loss provisions.

$\boldsymbol{LLA_{it}}$ = Beginning loan loss allowance of bank *i* at year *t* / average total assets.

Beginning loan loss allowance is one of the proxy act to measure the default risk. Wall & Koch (2000) in reviewing the bank loan-loss accounting stated if banks loan loss allowance exceeds it expected credit losses, bank can absorb more unexpected losses. Sitution reverse when the loan loss allowance less than expected losses, it will

reduce banks equity capital which bank unable to absorb the unexpected losses. In cross-country determinants of loan loss allowance by Hasan & Wall (2004) indicate it is sensitive to preprovision income.

There is positive relationship between loan loss allowance and loan loss provisions in studies done by (Fonseca & Gonza´lez, 2008 and Kanagaretnam, et. al, 2005). However, result is different from Chang et al. (2008) studies data of public companies liested in Taiwan Stock Exchange selecting 1999 to 2004 period found negative coefficient indicate when one unit increase in beginning balance allowance will cause loan loss provision to decrease. Since there is causal relationship between LLA and LLP it will be included as one of explanatory variable. It expected to have postive relationship with loan loss provisions.

$\boldsymbol{WO_{it}}$ = write offs of bank *i* at year *t* / average total assets

The account that classified as bad or deemed not collectible should be witten off. It is to ensure the health of the institutions and to ensure the proper monitoring of loan is enforced. The charge off result found in Hasan & Wall (2004) show there are statistically significant for U.S samples but not significant toward non-U.S samples in cross-country comparison in determining the loan loss allowance. Chang et al. (2008) examine Taiwan Stock Exchange listed companies indicate one unit increase in charge-off will cause one unit increase in loan loss provisions. It indicate bank manager mostly decide loan loss provision amount according to individual risk assessment on potential defaulted loans and loan write-offs.

Kanagaretnam et. al (2005) in determinants of signaling by bank through loan loss provisions found mean loan loss provisions greater than loan charge off. It indicate on average, addition to loan loss allowance by charging more than the need for current write off. It is expected to have positive sign.

$\boldsymbol{DCRISIS_{it}}$ = 2008 dummy crisis

Bank failure has a relationship with financial crisis due to poor loan monitoring since bank engaged mostly in lending activity. Eng & Nabar (2007) studies the loan loss provision by banks in Hong Kong, Malaysia and Singapore for 1993 to 2000 period. One of the objectives of the study is to examine the impact of crisis on behavior and valuation of loan loss reserve. They found that the Asian financial crisis of 1997 had an effect on the loan loss variables.

Jin et. al (2011) that examine the ability of selected accounting and audit quality variables measured in a period prior the financial crisis to predict banks that subsequently failed during the financial crisis. Using the larger full banks sample, they found that loan loss provision is one of the reliable predictors of bank failures.

As highlighted by Athanasoglou et. al, (2014) the recent global financial crisis shows the importance of the pro-cyclicality of the financial sector. The pro-cyclicality has transformed banks from mitigation mechanisms to amplify changes in economic activity that potentially affecting financial stability and economic growth.

To see the potential impact of financial crisis on bank loan loss provisions, this dissertation adds 2008 crisis dummy to see whether the recent financial crisis influence the way Malaysian commercial banks do their provisioning. 2008 dummy crisis is expected to have a negative relationship with loan loss provisions.

Measuring income smoothing

$\boldsymbol{EBTP_{it}}$ = Earnings before taxes and provisions of bank *i* at year *t* / average total assets.

EBTP will be included to control potential effects on discretionary LLP motivation related to income smoothing. It is expected to be positive coefficient if discretionary components of expected provision are used by bank manager to smooth income (Kanagaretnam et.al, 2005). There is significant positive relationship between loan loss provision and earning before taxes and provisions (Dong et al, 2012; Leventies et. al, 2012 and Curcio & Hasan, 2013). It support the earnings management hypothesis where banks increase loan loss provisions when net incomes fall.

However, in Ismail et. al (2005) and Shaharudin (2004) studies done in Malaysia found that Malaysian bank do not smooth income through loan loss provisions. Therefore, using recent data form 2002 to 2012, EBTP will be include in this study to examine whether in this recent period Malaysian bank do smooth income through loan loss provisions.

Measuring capital management

$\boldsymbol{CAP_{it}}$**=** Total equity of bank *i* at year *t* / average total assets

Capital ratio plays an important role as an indicator to reflect risk status of the bank. It indicates bank's ability to survive under current capital structure and implies the invisible risk of default (Chang et. al, 2008). Fonseca & Gonza'lez (2008) in cross country determinants of income smoothing by managing loan loss provisions include bank's capital normalized by risk-weighted assets in their studies.

Therefore, the negative coefficient for capital management hypothesis posit that bank manager have incentives to increase loan loss provisions with low regulatory capital (Kanagaretnam et. al, 2005; Bouvatier & Lepetit, 2008; Leventis et. al, 2012 and Curcio & Hasan, 2013). Therefore, it is expected to have negative relationship with loan loss provisions as prove that Malaysian commercial bank through recent year from 2002 to 2012 period do manage capital through loan loss provisions.

Measuring signaling

$\boldsymbol{CHEBTP_{it}}$**=** One year ahead change in earnings before taxes and provisions

For signaling, loan loss provisions (LLP) will be high when one year ahead change in earnings before taxes and provision is high. It is expected to have positive relationship between CHEBTP and LLP in order to prove the bank engage in signaling activities.

There are mixed result pertaining signaling. Bouvatier and Lepetit (2008), Curcio & Hasan (2013) and Olson & Zoubi (2014) find evidence supporting signaling hypothesis for the samples conducted. However, Anandarajan et. al (2007) do not find evidence that Australian banks use loan loss provisions to signaling future intentions of higher earnings to investors.

Therefore, CHEBTP will be added as on explanatory variables in order to test whether Malaysian commercial banks do signaling through loan loss provisions in the recent period. It will be interesting to find out since it was the first test conducted in Malaysia by using Malaysian commercial banks samples for 2002 to 2012 period.

Measuring pro-cyclicality

$\boldsymbol{GDP_{it}}$ = Growth Domestic Product

Pro-cyclicality associated with business cycle where bank tend to increase loan loss provisions during economic downturns. To measure the business cycle, this dissertation uses Growth domestic product. Bikker & Hu (2002) and Bikker & Metzemakers (2005) studies the procyclical pattern under Basel I and Basel II. In their studies, they found that provisioning tend to be higher when GDP growth is lower. The provisioning turn to be higher when grow domestic product is lower reflecting riskiness of the credit portfolio when the business cycle turns downwards which increase the risk of a credit crunch.

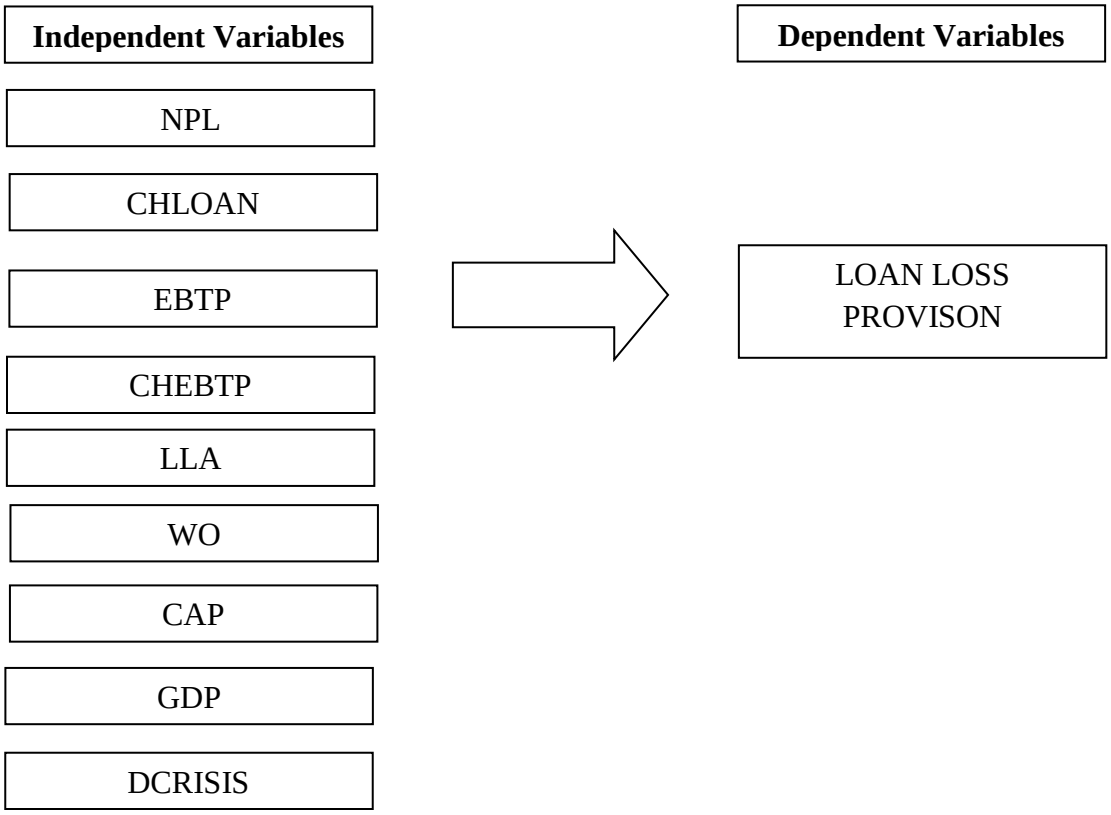
Provisioning expenses in previous empirical studies found negative relationship between growth domestic product and loan loss provision (Laeven & Majnoni, 2003 and Packer & Zhu, 2012). Fonseca & Gonza´lez (2008) in determine income smoothing for cross-country loan loss provisions found negative coefficient confirming the pro-cyclical effect of loan loss provisions. The result was supported by Kanagaretnam et al. (2005) and Bikker & Metzemakers (2005).

Studies done by Suhartono (2012) in Indonesia for growth development, there is evidence shows economic growth reduces the credit risk. It support the pro-cyclicality in the credit markets. It indicate there is relationship between GDP and loan loss provisions. It expected to be negatively related to loan loss provisions. Therefore, it is expected to have negative relationship with loan loss provisions.

Table 1: Variables definitions

Variables	Definition	Expected Sign
LLP_{it}	Loan loss provisions of bank *i* at year *t* / average total assets	N/A
NPL_{it}	Non-performing loan ratio	+
$CHLOAN_{it}$	Change in total loans outstanding of bank *i* at year *t* / average total assets	+
$EBTP_{it}$	Earnings before taxes and provisions of bank *i* at year *t* / average total assets.	+
$CHEBTP_{it}$	One year ahead change in earnings before taxes and provision	-
LLA_{it}	Beginning loan loss allowance of bank *i* at year *t* / average total assets.	-
WO_{it}	Write offs of bank *i* at year *t* / average total assets	+
CAP_{it}	Total equity/ average total assets	-
GDP_{it}	Growth Domestic Product	-
$DCRISIS_{it}$	Dummy for Crisis in 2008	-

3.4 Theoretical Framework



3.5 Data

This dissertation uses bank accounting data extracted from income statement and balance sheets of the selected banks. The banks' financial information was obtained primarily from annual reports. The data can be downloaded from banks' website. The macroeconomic data such as Growth Domestic Product (GDP) will be taken from the data world bank (World Development Indicators).

The period of analysis was from 2002 to 2012. The longer period thus covers the global recession in 2007 to test whether the crisis gives an impact to loan loss provisions of Malaysian commercial banks.

A few banks had to be excluded from the sample due to a lack of data on loan loss provision and having less than 10 years of accounting data. The final sample comprises 15 commercial banks consist of local-owned commercial bank and foreign-owned bank from 27 listed commercial banks in Malaysia. The biggest samples come from local-owned commercial banks.

3.6 Sample

This dissertation utilizes a sample of commercial banks in Malaysia. The sample will be observed through seven local-owned commercial banks and nineteen foreign-owned commercial banks in Malaysia. Table 2 shows a total number of local and foreign owned commercial bank listed with central bank of Malaysia which is Bank Negara Malaysia (BNM). Table 3 shows a selection of sample banks. This dissertation will select eight listed local-owned banks and seven listed foreign-owned banks. Out of nineteen listed foreign-owned banks only seven banks was selected due to availability of the data. Most of the foreign-owned bank did not disclose their loan loss provisions data.

Table 2: Commercial banks listed with central bank of Malaysia, Bank Negara Malaysia (BNM)

Local-owned commercial bank in Malaysia as listed below:

No.	Banks Name	No.	Banks Name
1	Affin Bank Berhad	5	Hong Leong Bank Berhad
2	Alliance Bank Malaysia Berhad	6	Malayan Banking Berhad
3	Ambank (M) Berhad	7	Public Bank Berhad
4	CIMB Bank Berhad	8	RHB Bank Berhad

Foreign-owned commercial bank in Malaysia as listed below:

No	Banks Name	No	Banks Name
1	BNP Paribas Malaysia Berhad	11	Mizuho Bank (Malaysia) Berhad
2	Bangkok Bank Berhad	12	OCBC Bank (Malaysia) Berhad
3	Bank of America Malaysia Berhad	13	Standard Chartered Bank Malaysia Berhad
4	Bank of China (Malaysia) Berhad	14	Industrial and Commercial Bank of China (Malaysia) Berhad
5	Bank of Tokyo-Mitsubishi UFJ (Malaysia) Berhad	15	Sumimoto Mitsui Banking Corporation Malaysia Berhad
6	Citibank Berhad	16	The Bank of Nova Scotia Berhad
7	Deutsche Bank (Malaysia) Berhad	17	The Royal Bank of Scotland Berhad
8	HSBC Bank Malaysia Berhad	18	United Overseas Bank (Malaysia) Bhd
9	India International Bank (Malaysia) Berhad	19	National Bank of Abu Dhabi Malaysia Berhad
10	J.P Morgan Chase Bank Berhad		

Table 3: Selection of samples banks

Type of commercial banks	No. of commercial banks
Local-owned bank	8
Foreign-owned bank	7
Total	15

Local-owned commercial bank in Malaysia as listed below:

No.	Banks Name	No.	Banks Name
1	Affin Bank Berhad	5	Hong Leong Bank Berhad
2	Alliance Bank Malaysia Berhad	6	Malayan Banking Berhad
3	Ambank (M) Berhad	7	Public Bank Berhad
4	CIMB Bank Berhad	8	RHB Bank Berhad

Foreign-owned commercial bank in Malaysia as listed below:

No	Banks Name	No	Banks Name
1	Bangkok Bank Berhad	5	Standard Chartered Bank Malaysia Berhad
2	Citibank Berhad	6	The Royal Bank of Scotland Berhad
3	HSBC Bank Malaysia Berhad	7	United Overseas Bank (Malaysia) Bhd
4	OCBC Bank (Malaysia) Berhad		

3.7 Chapter Summary

This chapter has explained the sample selection and defined the data set employed in this thesis to examine the research questions and objectives. The sample consists of 15 commercial banks from 27 listed commercial banks listed. Unbalanced panel data is utilized, which are common in the banking industry because of mergers and acquisitions. In this sense, panel data provides several advantages as bank- and time-invariant effects can be controlled in the regression analysis. The next chapter presents the results of the analysis and discusses the findings.

CHAPTER 4: FINDINGS

4.1 Introduction

This chapter summarises the empirical results and discusses the findings of the four hypotheses proposed in Chapter 2. Section 4.2 reports the results of desriptive statistics and correlation matrix; Section 4.3 reports regression results using ordinary least square (OLS) approach in Table 2 while Table 3 reports regression results using Fixed Effect test; Section 4.4 discuses the evidence of income smoothing, capital management, signaling and pro-cyclicality; and Section 4.5 summarises the chapter.

4.2 Descriptive Statistics and Correlation Matrix

Table 4: Summary Statistics

Panel A: Descriptive Statistics

STATS	LLP	LLA	EBTP	CHEBTP	CHLOAN	WO	CAP	NPL	GDP	DCRISIS
Mean	0.0026	0.0147	0.0131	0.0011	0.0357	0.00378	0.05666	3.7130	5.1545	0.0788
Min	0	0.0007	-0.0025	-0.0202	-0.1360	0	0.0235	0.14	-1.51	0
Max	0.0132	0.0477	0.0269	0.0132	0.2327	0.0238	0.1379	21.25	7.43	1
Sd	0.0020	0.0076	0.0040	0.0034	0.0382	0.0038	0.0187	3.8599	2.2341	0.2702

Table 4 reports summary statistics, as in Panel A reports descriptive statistics for the selected variables for sample of Malaysian commercial banks for 2002 to 2012 period. Most of the variables were divided by average total assets except for NPL, GDP and DCRISIS. As shown on table 1, loan loss provisions (LLP) on average was 0.27% with a maximum 1.32%.

The loan loss allowance (LLA) on average was 1.47% with a maximum 4.77%. The change in total loans (CHLOAN) on average shows 3.57% with a maximum 23.27%. While, the ratio of earnings before taxes and provision to total assets (EBTP) for entire period is 1.31% and the one year ahead changes in earnings before taxes and provisions (CHEBTP) to total assets is 0.11%. The non-performing loan (NPL) is 3.17%. On average, write-off (WO) for the entire period is 0.38%, the capital (CAP) is 5.67%, and the GDP is 5.15%. For entire period, DCRISIS for samples of Malaysian commercial banks is 7.87%. Table 1, Panel B provides correlation analysis of the variables used in this study.

Panel B: Correlation Matrix

	LLP	LLA	EBTP	CHEBTP	CHLOAN	WO	CAP	NPL	GDP	DCRISIS
LLP	1.0000									
LLA	0.5118	1.0000								
EBTP	0.2163	-0.0616	1.0000							
CHEBTP	-0.0035	-0.0947	0.5096	1.0000						
CHLOAN	-0.0707	-0.0380	0.0188	0.0880	1.0000					
WO	0.4032	0.5261	-0.1658	-0.0625	-0.0925	1.0000				
CAP	0.0269	0.1183	-0.1033	-0.0013	-0.0014	-0.0204	1.0000			
NPL	0.3645	0.6011	-0.3581	-0.2866	-0.2130	0.4849	0.0380	1.0000		
GDP	-0.0680	0.0667	-0.0024	0.1647	0.1232	0.0149	-0.0235	0.1294	1.0000	
DCRISIS	-0.0375	-0.0582	0.0886	0.0839	0.0694	0.0644	-0.0297	-0.1518	-0.0266	1.0000

Notes: LLP is the ratio of LLPs to total assets; NPL is the ratio of non-performing loan to total assets; CHLOAN is the ratio of change in loan to total assets; EBTP is the ratio of earnings before taxes and provision to total assets; CHEBTP is one year ahead change in earnings before taxes and provisions; LLA is the ratio of beginning balance of the total allowance for loan losses; WO is the ratio of write-offs to total assets; CAP is the ratio of total equity to total assets; GDP is growth domestic product in banks country; and DCRISIS is dummy for crisis in 2008.

The correlation matrix in Panel B indicates that loan loss provisions (LLP) correlate positively with LLA, EBTP, WO, CAP, and NPL. However, loan loss provisions correlate negatively with CHEBTP, CHTLOAN GDP, and DCRISIS.

The correlation matrix also shows that multicollinearity does not appear to be a problem in the analysis as the highest correlation is around 60% between LLA and NPL.

In Section 4.3 will discuss the regression result. The table 5 will discuss results of ordinary least square (OLS) without DCRISIS in model I and with DCRISIS in model II. Table 6 will discusses results of fixed effect test without DCRISIS in model I and with DCRISIS in model II.

4.3 Results

Table 5: Results of ordinary least square (OLS)

Test of income smoothing, capital management, signaling and pro-cyclicality

LLP	**Model I (without DCRISIS)**		**Model II (with DCRISIS)**
LLA	0.0826		0.0823
	(0.003)***		(0.003)***
EBTP	0.1813		0.1819
	(0.000)***		(0.000)***
CHEBTP	-0.0466		-0.0463
	(0.316)		(0.321)
CHLOAN	0.0011		0.0017
	(0.777)		(0.763)
WO	0.1047		0.1078
	(0.016)**		(0.015)**
CAP	0.0023		0.0027
	(0.707)		(0.712)
NPL	0.0001		0.0001
	(0.028)**		(0.035)**
GDP	-0.0000		-0.0000
	(0.140)		(0.140)
DCRISIS			-0.0002
			(0.642)
_CONS	-0.0016		-0.0015
	(0.047)		(0.051)
F(8, 127)	10.81	**F(9, 126)**	9.57
Prob > F	0.0000	**Prob > F**	0.0000
R-squared	0.4050	**R-squared**	0.4060
Adjusted R-squared	0.3675	**Adjusted R-squared**	0.3636
No. observation	136	**No. observation**	136

Notes: LLP is the ratio of loan loss provisions to total assets; NPL is the ratio of non-performing loan to total assets; CHLOAN is the ratio of change in loan to total assets; EBTP is the ratio of earnings before taxes and provision to total assets; CHEBTP is one year ahead change in earnings before taxes and provisions; LLA is the ratio of beginning balance of the total allowance for loan losses; WO is the ratio of write-offs to total assets; CAP is the ratio of total equity to total assets; GDP is growth domestic product in banks country; and DCRISIS is dummy for crisis in 2008.

Based on panel data, OLS model is respectively constructed and the result as in Table 5. Table 5 reports results for samples of commercial banks in Malaysia for 2002 to 2012. Model I shows that LLA, EBTP, WO, and NPL results has positive coefficient related to LLP and statistically significant. However, CHLOAN and CAP results has positive relationship with loan loss provisions but not statistically significant.

The explanatory variables for CHEBTP and GDP shows negative coefficient related to LLP and not statistically significant.

As in Model II (with DCRISIS), the results are similar with Model I (without DCRISIS). In Model II, dummy for crisis (DCRISIS) is negatively related with loan loss provisions and result is not statistically significant.

The non-performing loan (NPL) as most important indicator in measuring LLP shows positive coefficient and statistically significant. It is consistent with most literature that NPL influence in determining level of LLP (Hasan & Wall, 2004; Dong et. al, 2012; Pinho & Martins, 2009 and Chang et. al, 2008).

The change in total loans outstanding (CHLOAN) shows positive coefficient with LLP consistent with previous literature in (Fonseca & Gonza'lez, 2008 and Dong et. al, 2012). However, the result obtained for Malaysian commercial bank sample is not statistically significant.

The positive coefficient and statistically significant between LLP and LLA has similar result from previous studies in Hasan & Wall (2004), Fonseca & Gonza´lez, 2008 and Kanagaretnam et.al (2005). It indicates that when loan loss allowance (LLA) is higher, loan loss provisions (LLP) will be higher. The write-off (WO) results has positive relationship and statistically significant. The result is consistent with previous study by Hasan & Wall (2004), Kanagaretnam et. al (2005) and Chang et. al (2008). It indicates with one unit increase in write off, will cause one unit increase in LLP.

Table 6: Results of Fixed Effects model

Test of income smoothing, capital management, signaling and pro-cyclicality

LLP	**Model I (without DCRISIS)**		**Model II (with DCRISIS)**
LLA	0.0832		0.0841
	(0.025)**		(0.024)**
EBTP	0.2097		0.2142
	(0.000)***		(0.000)***
CHEBTP	-0.0435		-0.0445
	(0.367)		(0.356)
CHLOAN	-0.0006		-0.0004
	(0.891)		(0.929)
WO	0.0542		0.0572
	(0.266)		(0.245)
CAP	-0.0007		-0.0022
	(0.958)		(0.876)
NPL	0.0001		0.0001
	(0.027)**		(0.036)**
GDP	-0.0001		-0.0000
	(0.139)		(0.116)
DCRISIS			-0.0003
			(0.566)
_CONS	-0.0016		-0.0015
	(0.139)		(0.151)
F(8, 113)	6.28	**F(9, 112)**	5.59
Prob > F	0.0000	**Prob > F**	0.0000
R-squared	0.3910	**R-squared**	0.3898
No. observation	136	**No. observation**	136

Notes: LLP is the ratio of loan loss provisions to total assets; NPL is the ratio of non-performing loan to total assets; CHLOAN is the ratio of change in loan to total assets; EBTP is the ratio of earnings before taxes and provision to total assets; CHEBTP is one year ahead change in earnings before taxes and provisions; LLA is the ratio of beginning balance of the total allowance for loan losses; WO is the ratio of write-offs to total assets; CAP is the ratio of total equity to total assets; GDP is growth domestic product in banks country; and DCRISIS is dummy for crisis in 2008.

Table 6 report results of fixed effect models. The reason using fixed effect model because to observe the unobservable behavior. The result obtain are robust and consistent. As in table 6, the joint F-test shows significant in explaining relationship between LLP and the variables. However, coefficient and level of significant result shows a bit different from Ordinary Least Square (OLS) model.

As shown in Table 6, there are positive coefficients and statistically significant between LLA, EBTP and NPL with LLP. However, WO shows positive coefficient with LLP but not statistically significant.

Meanwhile, there are negative coefficients between LLP and CHEBTP, CHLOAN, CAP, GDP and the results are not statistically significant.

As in Model II (with DCRISIS), the results are similar with Model I (without DCRISIS). In Model II, dummy for crisis (DCRISIS) is negatively related with loan loss provisions and result is not statistically significant.

The non-performing loan (NPL) result obtained by using fixed effect model is similar with OLS test. The result shows positive coefficient and statistically significant. It is consistent with most literature that NPL influence in determining level of LLP (Hasan & Wall, 2004; Dong et. al, 2012; Pinho & Martins, 2009 and Chang et. al, 2008). However, the change in total loans outstanding (CHLOAN) shows contrary result from previous test in OLS. The result shows negative coefficient with LLP and not statistically significant.

The positive coefficient and statistically significant between LLP and LLA has similar result from previous test in OLS and consistent with previous studies in Hasan & Wall (2004), Fonseca & Gonza´lez, 2008 and Kanagaretnam et.al (2005). It indicates that when loan loss allowance (LLA) is higher, loan loss provisions (LLP) will be higher. However, the write-off (WO) shows contrary results using fixed effect test. The result shows positive coefficient with LLP but not statistically significant.

4.4 Evidence of income smoothing, capital management, signaling and pro-cyclicality

4.4.1 Evidence of income smoothing through loan loss provisions

Using OLS and Fixed Effect model, the ratio of earning before taxes and provision (EBTP) is positively associated with banks loan loss provision (LLP) and statistically significant (p>0.000). However, it is not consistent with Shaharudin (2004) and Ismail et. al (2005) studies for Malaysia using commercial banks samples.

The results are consistent with Anandarajan et. al (2007), Fonseca & Gonza'lez (2008), Dong et. al (2012), and Curcio & Hasan (2013). This provide strong evidence in supporting the income smoothing hypothesis. Using recent data from 2002 to 2012, the result found an evidence to prove that Malaysian commercial banks do smooth income through loan loss provisions.

4.4.2 Evidence of capital management through loan loss provisions

There is a dissent result when testing for capital (CAP) using OLS and Fixed effects. For OLS results, it is contrary with capital management hypothesis, results for Malaysian commercial banks samples has positive relationship but not statistically significant. From the results obtained it indicates Malaysian commercial banks do not involve in capital management. The findings are similar with Kanagaretnam et. al, 2005 and Fonseca & Gonza'lez (2008).

However, using fixed effect test, the result differ from previous test using OLS model. The result shows CAP has negative relationship with loan loss provisions. It is consistent with capital management hypothesis that negative coefficient posit that bank manager have intention to increase loan loss provisions with low regulatory capital. The finding is similar with Dong et. al (2012) and Curcio & Hasan (2013). However, it is not statistically significant indicates there is insufficient evidence to demonstrate Malaysian commercial banks manage capital through loan loss provisions.

4.4.3 Evidence of signaling through loan loss provisions

As to the signaling hypothesis, it should be positive relationship between one year ahead earnings before taxes and provision (CHEBTP) and loan loss provisions (LLP). However, the results obtained are different since the coefficient of the variables CHEBTP is negative and not statistically significant.

The result of OLS and Fixed Effects test is similar to Anandarajan et. al, (2007) that Australian banks do not engage in signaling activities. It is also consistent with Curcio & Hasan (2013) that Euro Area (EA) banks does not signal their future earnings to the market. Therefore, from result obtained, it is failed to conclude that Malaysian commercial bank invloves in signaling activities through loan loss provisions.

4.4.4 Evidence of pro-cyclicality behavior through loan loss provisions

Bouvatier and Lepetit (2008), Laeven & Majnoni (2003), Bikker & Hu (2002) and Bikker & Metzemekers (2005) found negative coefficient and statistically significant impact on provision while studying the economic cycle relating to loan loss provision.

However, the result obtained using Malaysian commercial banks sample is not statistically significant although it shows negative coefficient on macroeconomic indicators which is GDP. There is insufficient evidence to prove through loan loss provisions, Malaysian commercial banks exhibit pro-cyclicality behavior.

4.4.5 Evidence of effect on global financial crisis and loan loss provisions

Using OLS and Fixed Effect, the results are similar in both tests. As in Model II (with DCRISIS), the results are similar with Model I (without DCRISIS). In Model II, dummy for crisis (DCRISIS) is negatively related with loan loss provisions and result is

not statistically significant. Results on global financial crisis indicate it is not affected Malaysian commercial banks loan loss provisions.

4.5 Chapter summary

This chapter reports result and findings in this dissertation. The empirical analysis conducted which are income smoothing, capital management, signaling and pro-cyclicality.

In summary, the results of hypothesis 1 confirm that Malaysian commercial banks do smooth income through loan loss provisions using recent period studies from 2002 to 2012. However, there is no evidence to support Malaysian commercial banks do manage capital through loan loss provisions.

As in the result, it can be conclude that the Malaysian commercial banks do not engage in signaling activities since it failed to support signaling hypothesis which is in hypothesis 3. Although there is negative coefficient between loan loss provisions and GDP, the result show insufficient evidence for Malaysian commercial banks involved in pro-cyclicality behavior as in hypothesis 4.

Results on global financial crisis indicate it is not affected Malaysian commercial banks loan loss provisions contrary to hypothesis 5. Therefore, the result on macroeconomic factors does not affected loan loss provisions in Malaysia. Chapter 5 provides summary of the dissertations and suggestions for future research.

CHAPTER 5: SUMMARY & RECOMMENDATIONS

5.1 Introduction

This dissertation examines income smoothing, capital management, signaling and pro-cyclicality behavior through loan loss provisions. The sample covers 27 commercial banks in Malaysia over 10 year period from 2002 to 2012. However, these dissertations only examine 15 banks with 136 observations from 27 commercial banks listed with Bank Negara Malaysia (BNM) due to incomplete data to be observed. The data for variables used are gathered from annual report and for macroeconomic factors gathered from The Data World Bank. The period was chosen because it covers 2008 global financial crisis. In this dissertation also added crisis dummy for 2008 as to test whether these variables gives impact toward loan loss provisions.

5.2 Summary of findings

Briefly, a loan loss provisions is non-expense item that bank and selected financial institutions may deduct from its current income statement. It is widely used by commercial bank mangers when managing risk exposure in their lending activities. Overstating the amount may significantly affect bank net income and capital. Loan loss provisions are subject to managerial discretion and are commonly associated with issues of income smoothing, capital management, signaling and pro-cyclicality.

The objective of this dissertation is to examine whether Malaysian commercial banks do income smoothing, capital management, signaling and pro-cyclicality behavior through loan loss provisions. Also, the objective of this dissertation is to test whether global financial crisis gives impact on loan loss provisions for Malaysian commercial banks.

The first hypothesis of this dissertation find evidence that Malaysian commercial banks do smooth income through loan loss provisions since the result obtained is positive and statistically significant with income smoothing hypothesis. Contrary to previous study in Shaharudin (2004) failed to conclude Malaysian commercial banks do manage earnings and capital. Also contrary to Ismail et. al (2005) studies for Malaysia samples period 1996 to 2002 that the results shows local commercial bank in Malaysia do not smoothen income.

In hypothesis 2, the findings from this dissertation failed to conclude that Malaysian commercial banks manage capital through loan loss provisions. Although the result obtained is consistent with the hypothesis but it is not significant provides no evidence to prove capital management in Malaysian commercial banks.

There is also no evidence to support that Malaysian commercial banks engage in signaling activities through loan loss provisions. It failed to support signaling hypothesis as in hypothesis 3 since for Malaysian commercial bank samples, the result is negative and not statistically significant. Malaysian samples results are consistent with Anandarajan et. al (2007) studies for Australian banks that they do not find evidence use loan loss provision to signaling future intentions of higher earnings to investors.

Although there is negative coefficient between loan loss provisions and GDP, the result shows insufficient evidence to prove Malaysian commercial banks involved in pro-cyclicality behavior as in hypothesis 4. Finally, there is insufficient evidence to conclude that the global financial crisis have affected loan loss provisions in commercial banks of Malaysia as in hypothesis 5.

According to International Monetary Fund (2013) through stress testing the Malaysian & Labuan IBFC banking sectors, Malaysia was not immune to the global economic recession and being suffered through decline in real GDP growth for the first quarter of 2009. However, Bank Negara Malaysia (BNM) eased monetary policy and put it in place to sustain access to financing by small and medium enterprises. This would help to arrest the heightened risk aversion by banks and preserve domestic growth momentum, pushing the economy of recession into recovery.

In addition, after global financial crisis, BNM take action to enhance their credit management, infrastructure and underwriting practice. The banks also actively manage their balance sheets and maintain asset quality through stringent provisioning policies and write-offs (International Monetary Fund, 2013). This provides evidence why global financial crisis does not give impact towards loan loss provisions in Malaysia.

According to Malaysian Rating Corporation Berhad (MARC), Malaysia's banking system remained sturdy as at end of 2013 as evidenced by the improvement in asset quality as well as declining gross impaired loan ratios. The gross impaired ratio declined to 1.8% as at end-December 2013 (end-December 2012: 2.0%), supported by higher loan growth which offset the increase in gross impaired loans.

Banks continued to maintain prudent loan loss provisioning with a stable loan loss coverage ratio of 100.2% as at end-December 2013 (end-December 2012: 98.7%). The expected recovery of the external sector and the relatively resilient domestic demand in 2014, although slower than in 2013, are expected to continue supporting the banking system's asset quality.

Loan growth in the banking system continued to remain resilient with an overall trend has been upward since the year 2000 notwithstanding sharp declines during the global recession in 2009. The banking system remains stable and well-supervised as reflected by the strong capital ratios and wider supervision of financial institutions. (Alias & Mohamad, 2014)**.**

In summary, with the view from Malaysian Rating Corporation Berhad (MARC) and International Monetary Fund (IMF) in assessing economic development of Malaysia; it can be concluded that Malaysian are in stable condition and being well supervise by the authorities makes Malaysian bank does not involve in signaling and pro-cyclicality activities. However, from result obtained it seems that Malaysian commercial banks do manipulating earnings through loan loss provisions. The regulatory should tighten the regulation for the banks being prudent in managing their operations.

The next subsection will be discussed on the limitations and recommendations for this dissertation.

5.3 Limitations and Recommendations

Study on uses of loan loss provisions is important for banking manager as well as regulators who will ensure that provision covered the expected losses and capital is used for unexpected losses. This dissertation will contribute by enriching literature on loan loss provision in Malaysia since the dissertation do examine signaling and pro-cyclicality behavior using recent data from 2002 to 2012 instead of examine the income smoothing and capital management.

However, there are some limitations in this dissertation. Having a small number of observations with some of the sample incomplete and need to be withdrawn might reduce the accuracy of the analysis. Therefore, further study will be able to contribute to a new knowledge by having large samples by focusing on commercial banks outside of the Malaysia.

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APPENDIX

Appendix

Descriptive statistics

stats	llp	lla	ebtp	chebtp	chloan	wo	cap	npl	gdp	dcrisis
mean	.002626	.0147385	.0131186	.0010999	.0356762	.0037788	.0566611	3.713026	5.154545	.0787879
sd	.0020433	.0076035	.0040101	.0033682	.0382134	.0038215	.018741	3.859967	2.234075	.2702275
min	0	.0007413	-.0024912	-.0201561	-.1359806	0	.0235348	.14	-1.51	0
max	.0131999	.0476902	.0268944	.0132427	.2326637	.0238467	.1378607	21.25	7.43	1

Correlation matrix

	llp	lla	ebtp	chebtp	chloan	wo	cap	npl	gdp	dcrisis
llp	1.0000									
lla	0.5118	1.0000								
ebtp	0.2163	-0.0616	1.0000							
chebtp	-0.0035	-0.0947	0.5096	1.0000						
chloan	-0.0707	-0.0380	0.0188	0.0880	1.0000					
wo	0.4032	0.5261	-0.1658	-0.0625	-0.0925	1.0000				
cap	0.0269	0.1183	-0.1033	-0.0013	-0.0014	-0.0204	1.0000			
npl	0.3645	0.6011	-0.3581	-0.2866	-0.2130	0.4849	0.0380	1.0000		
gdp	-0.0680	0.0667	-0.0024	0.1647	0.1232	0.0149	-0.0235	0.1294	1.0000	
dcrisis	-0.0375	-0.0582	0.0886	0.0839	0.0694	0.0644	-0.0297	-0.1518	-0.0266	1.0000

Multicollinearity test

Variable	VIF	1/VIF
npl	2.18	0.458529
lla	1.94	0.514174
ebtp	1.57	0.637266
wo	1.52	0.656740
chebtp	1.47	0.680175
gdp	1.10	0.907370
chloan	1.10	0.907418
cap	1.05	0.952543
Mean VIF	1.49	

OLS without dcrisis

Source	SS	df	MS	Number of obs =	136
				F(8, 127) =	10.81
Model	.000194453	8	.000024307	Prob > F =	0.0000
Residual	.000285688	127	2.2495e-06	R-squared =	0.4050
				Adj R-squared =	0.3675
Total	.000480141	135	3.5566e-06	Root MSE =	.0015

llp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lla	.0826102	.0272405	3.03	0.003	.0287061	.1365143
ebtp	.1813156	.0395209	4.59	0.000	.1031109	.2595202
chebtp	-.0465994	.0463116	-1.01	0.316	-.1382417	.0450429
chloan	.0010904	.0038471	0.28	0.777	-.0065224	.0087032
wo	.1047246	.0429544	2.44	0.016	.0197256	.1897237
cap	.0027722	.0073632	0.38	0.707	-.0117983	.0173426
npl	.0001205	.0000542	2.22	0.028	.0000133	.0002277
gdp	-.0000828	.0000558	-1.48	0.140	-.0001932	.0000276
_cons	-.0015961	.0007967	-2.00	0.047	-.0031726	-.0000196

OLS with dcrisis

Source	SS	df	MS	Number of obs =	136
				F(9, 126) =	9.57
Model	.000194944	9	.00002166	Prob > F =	0.0000
Residual	.000285197	126	2.2635e-06	R-squared =	0.4060
				Adj R-squared =	0.3636
Total	.000480141	135	3.5566e-06	Root MSE =	.0015

llp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lla	.0823037	.0273328	3.01	0.003	.0282128	.1363945
ebtp	.1818979	.039663	4.59	0.000	.103406	.2603897
chebtp	-.0463189	.0464589	-1.00	0.321	-.1382598	.045622
chloan	.0011668	.0038625	0.30	0.763	-.0064771	.0088106
wo	.1078434	.0436046	2.47	0.015	.0215512	.1941356
cap	.0027348	.0073864	0.37	0.712	-.0118828	.0173523
npl	.0001171	.0000549	2.13	0.035	8.54e-06	.0002256
gdp	-.000083	.000056	-1.48	0.140	-.0001938	.0000277
dcrisis	-.0002099	.0004505	-0.47	0.642	-.0011015	.0006818
_cons	-.0015788	.0008	-1.97	0.051	-.0031621	4.38e-06

Fixed Effect test without dcrisis

```
Fixed-effects (within) regression               Number of obs      =       136
Group variable: bank                            Number of groups   =        15

R-sq:  within  = 0.3078                         Obs per group: min =         5
       between = 0.5697                                        avg =       9.1
       overall = 0.3910                                        max =        10

                                                F(8,113)           =      6.28
corr(u_i, Xb)  = -0.0231                        Prob > F           =    0.0000
```

llp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lla	.0831967	.0366899	2.27	0.025	.0105074	.155886
ebtp	.209745	.0556349	3.77	0.000	.0995223	.3199677
chebtp	-.043459	.0479845	-0.91	0.367	-.138525	.0516069
chloan	-.0006093	.0044225	-0.14	0.891	-.0093711	.0081526
wo	.0542268	.0484619	1.12	0.266	-.041785	.1502385
cap	-.0007185	.0137418	-0.05	0.958	-.0279436	.0265066
npl	.0001421	.0000632	2.25	0.027	.0000168	.0002673
gdp	-.0000879	.0000551	-1.60	0.113	-.0001971	.0000213
_cons	-.0015851	.0010637	-1.49	0.139	-.0036926	.0005223
sigma_u	.00064853					
sigma_e	.00145795					
rho	.16518432	(fraction of variance due to u_i)				

F test that all u_i=0: F(14, 113) = 1.53 Prob > F = 0.1120

Fixed Effect test with dcrisis

```
Fixed-effects (within) regression               Number of obs      =       136
Group variable: bank                            Number of groups   =        15

R-sq:  within  = 0.3098                         Obs per group: min =         5
       between = 0.5586                                        avg =       9.1
       overall = 0.3898                                        max =        10

                                                F(9,112)           =      5.59
corr(u_i, Xb)  = -0.0416                        Prob > F           =    0.0000
```

llp	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
lla	.0840613	.0368296	2.28	0.024	.0110882	.1570344
ebtp	.2141949	.0563333	3.80	0.000	.1025776	.3258121
chebtp	-.0446174	.0481692	-0.93	0.356	-.1400585	.0508237
chloan	-.0003978	.0044509	-0.09	0.929	-.0092166	.0084211
wo	.0571637	.0488731	1.17	0.245	-.039672	.1539995
cap	-.0021875	.014017	-0.16	0.876	-.0299605	.0255854
npl	.000136	.0000643	2.12	0.036	8.72e-06	.0002634
gdp	-.0000876	.0000553	-1.58	0.116	-.0001971	.0000219
dcrisis	-.0002616	.0004545	-0.58	0.566	-.001162	.0006389
_cons	-.0015465	.001069	-1.45	0.151	-.0036646	.0005716
sigma_u	.0006591					
sigma_e	.00146229					
rho	.16885523	(fraction of variance due to u_i)				

F test that all u_i=0: F(14, 112) = 1.53 Prob > F = 0.1127

--more--