
The Liquidity Impact on Bond Calculation on Credit Losses: A Malaysian Banks' Perspective*

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Abstract:

Purpose: Currently in Malaysia, the latest update in Financial Instrument-Credit Losses is of main concern. Previously, accountants have to record credit losses which have already been incurred. This research highlights the ways to calculate credit losses for bond and also how it will affect liquidity of banks. The main objective of this research is to study the liquidity impact of the latest update in bond calculation on credit losses among Malaysian banks.

Approach/Methodology/Design: There are several approaches to calculate credit losses. The research will focus on 3 approaches which are; loss-rate approach (Collective Evaluation), loss-rate approach (Individual Evaluation) and vintage-year basis.

Findings: Now, with this new update, accountants have to record credit losses based on historical information, current situation, and forecasts, in line with the introduction of CECL model. The paper draws on the impact of CECL model on the credit losses incurred by Malaysian banks using three distinctive methods on bonds and the related liquidity position on its balance sheet. This research uses the eight Malaysian local banks.

Practical Implications: This research is very useful for accountants to have a greater understanding about CECL model.

Originality/value: There are several studies by Goldwyn (2017), Journal of Accountancy (2016) and, Cohn and Statigna (2016) which resonates with this research, but hardly any seems to be pertaining to the Malaysian context.

Keywords: Credit losses, CECL model, financial instrument.

JEL: M41, G12, G24, G29.

Paper Type: Research article.

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1. Introduction

On 20 December 2012, the FASB issued a revised Accounting Standards Update, Financial Instruments—Credit Losses (Subtopic 825-15). This standard addresses issues related to the impairment reporting of credit losses of financial assets. The objective of this update is to significantly improve the decision usefulness of financial instrument reporting for users of financial statements. The Board believes that simplification of the accounting requirements for financial instruments should be an outcome of this improvement. The Board's goal is to develop a single credit loss model for financial assets that enables more timely recognition reporting of credit losses.

Beginning, 1 January 2018, Malaysian Accounting Standards Board (MASB) has implemented Malaysian Financial Reporting Standards 9 (MFRS) which includes a classification and measurement model, a single forward-looking 'expected loss' impairment model and a substantially-reformed approach to hedge accounting to replace MFRS 139 (PriceWaterhouse, 2015). This new model requires more timely recognition of expected credit losses. When financial instrument was first recognised, an entity has to recognise full lifetime expected losses on a timely basis. Previously, the International Accounting Standards Board (IASB) issued International Accounting Standard (IAS) 39 and this model recognises impairment loss of financial assets after the occurrence of the triggering event without credit risk and it led to delay in the recognition of a credit losses. When calculating credit losses using IAS 39, an entity has to consider both past events and current conditions. However, the IASB realised that the future credit losses events should be considered when calculating expected credit losses to prevent inaccurate reporting of losses (Tong, 2015). In July 2014, the IASB issued a new version of IFRS 9 to replace IAS 39. IFRS 9 is similar to MFRS 9 which measures at amortised cost or at fair value. The new model helps entities to have a clearer understanding of credit losses.

Table 1. *Old version vs new version of accounting standard*

	Old Version	New Version
MASB	<ul style="list-style-type: none"> • MFRS 139 	<ul style="list-style-type: none"> • MFRS 9
FASB	<ul style="list-style-type: none"> • incurred loss model of current GAAP 	<ul style="list-style-type: none"> • ASU 2016-13, Financial Instruments—Credit Losses (Topic 326)
IASB	<ul style="list-style-type: none"> • IAS 39 	<ul style="list-style-type: none"> • IFRS 9

Source: *Own calculations.*

Table 1, displays the old and new versions of impairment credit losses. FASB stated that Current Expected Credit Losses (CECL) model requires to consider past events, current conditions and also reasonable and supportable forecasts about the future when calculate credit losses (FASB, 2016). This research highlights the three methods to calculate bond on credit losses. The main objective of this research is to

study the liquidity impact of the latest update in bond calculation on credit losses among Malaysian banks. This research presents evidence of the liquidity impact upon the balance sheet of Malaysian banks.

2. Problem Statement

In Malaysia, the latest update in Financial Instrument-Credit Losses is of main concern. Previously, accountants have to record credit losses which are already incurred. Currently, accountants have to record credit losses based on historical information, current situation, and forecasts in pursuant to the Current Expected Credit Losses (CECL) model. There are several methods to calculate credit losses on bond and the amount of credit losses which will affect a company's liquidity. This research will focus on three approaches which are: loss-rate approach (Collective Evaluation), loss-rate approach (Individual Evaluation) and vintage-year basis, as it is practical and achievable. There are limited studies on the CECL model in Malaysia and it is crucial as it affects the balance sheet positioning and liquidity.

Among the international authors only a few discussed about the CECL model, such as the article of "*CECL is Coming: Are You Ready?*" written by Goldwyn (2017), which also highlights the preparation of the CECL standard and the challenges faced by the credit unions while implementing CECL standard. In an article appeared in the Journal of Accountancy (Tysiac, 2016) the authors have mentioned the differences between previous approach and the latest approach for financial reporting of credit losses. In addition, the article entitled "*Measuring Losses*" (Cohen and Scatigna, 2016) focuses on the objective of the latest update in credit losses, its requirements and its effective dates, and the types of companies which will be affected by the CECL model. Based on the articles which have been listed did not discuss the impact on banks' provision of credit losses and how the banks will be affected by using CECL model to calculate credit losses, especially in Malaysian context. Hence, this paper draws on the impact of CECL model on the credit losses incurred by Malaysian banks using three distinctive methods on bonds and the related liquidity position on its balance sheet. This research uses the eight Malaysian local banks.

3. Literature Review

3.1 Introduction on Credit Impairment

According to Tatum (2017), credit impairment is an activity which leads to a negative consequence on credit rating. Credit impairment is difficult in obtaining credit or borrowing money, due to lacking of lender's confidence in the business or individual's ability to repay the debt according to the terms and conditions. The common reasons for credit impairment are the consistency of the late payment of the obligations of the debtor which the late payment is reported to credit agencies, which later will calculate the credit worthiness of the debtor (Tatum, 2017).

3.2 MASB's Old Version of Credit Impairment

On 19 November 2011, MASB had issued MFRS 139 entitled, "*Financial Instruments: Recognition and Measurement*" (MASB, 2014). Beginning from 1 January 2012, entities have to follow this standard. MFRS 139 calculates credit impairment based on the incurred loss model. According to this standard, the loss is confirmed only on the basis of one or more "*loss events*" occurring after the initial recognition (Grant Thornton, 2014). On November 2014, MASB issued MFRS 9 to replace MFRS 139 (Asian Banking and Finance, 2017).

3.3 MASB's New Version of Credit Impairment

MASB has issued MFRS 9 which is equivalent to IFRS 9. The standard introduces a package of improvements which includes a classification and measurement model, a single forward-looking "*expected loss*" impairment model and a substantially-reformed approach to hedge accounting (MASB, 2014). Based on these two standards above, both of them calculates expected loss. Whereas the incurred loss model is the allowance and expenses of loan loss which is to be recognized during the losses which is essential in financial institutions' current loan portfolios and is reasonable and capable in estimating according to the availability of information (Ryan, 2009).

3.4 FASB's Old Version of Credit Impairment

The current GAAP requires the use of the "*incurred loss*" method to calculate credit losses which will delay recognition of credit losses until a loss has been incurred. The 2008 financial crisis demonstrated the disclosures of credit losses allowance and the deterioration in the value of investment portfolios held by banks. The accounting firms and financial intermediations felt that the current US GAAP's incurred loss model has led the recognition of losses which are too late and complex (Ernst and Young, 2012). Hence, the financial institution will take actions to delay their action in their favour, while it may not be an ideal decision (American Bankers Association, 2012).

3.5 FASB's New Version of Credit Impairment

In 2009, FASB and IASB launched a joint project to improve credit loss accounting and to reduce the differences in GAAP and IFRS accounting systems but there were a few accounting bodies which were disagreeable on some significant matters. FASB's concern was that the approach proposed by the agencies was too complex and it only allowed a one-year forecast period. Bankers also believe that the joint proposal does not take into account the diversity of US banking institutions (Neely, 2013). Majority of the stakeholders believe that additional information which is the forecast amount, is placed into the incurred loss model might enhance the accounting for credit losses (Ernst and Young, 2012).

Finally, FASB has developed an alternative model which is known as "*Current Expected Credit Loss Model*" (CECL) (FASB, 2012). FASB's CECL model operates where a company records credit allowance according to the current estimation of

expected credit losses of the financial assets on every financial statement reporting date. The estimated expected credit losses indicate current estimation of the payments which the company does not expect to collect on. The methods for deriving the estimation are according to the default expectations probability, loss rates, and discounting of expected cash flows (Etheridge, 2013). In order to capture the deterioration of the credit quality pattern of loans or other financial assets, three-bucket model were used which took into account the economic and financial information changes (Ernst and Young, 2012).

There are however, several difference, such as, the CECL model is consistent from period to period, whereas three-bucket model is inconsistent, so there is no transfer of financial assets between the buckets to determine the objectives of measurement in every period. Furthermore, CECL model has no requirement which losses are limited to a specific period (FASB, 2012). FASB believes that CECL model will keep the important characteristics of the three-bucket model, so as to facilitate the understanding and implementation. However, critics of CECL model had mentioned the disadvantages of the model where there could attempt to manipulate by the organisation (Selling, 2012).

3.6 IASB's Old Version of Credit Impairment

Before IASB introduced IFRS 9, they were using IAS 39 to calculate credit losses. IAS 39 records credit losses using incurred loss model. This model will lead to a delayed recognition of credit losses because there must have an evidence to show that there was an impairment. This standard recognises credit losses based on past events and current conditions only. However, the impact of future credit loss events will not be considered. It means when a company expect a future credit loss, it will not be able to recognise it (Arta and Arian, 2017).

3.7 IASB's New Version of Credit Impairment

Knowing the importance of Credit impairment, FASB and IASB began working together to establish an expected credit impairment model to account for credit losses. Until June 2012, the FASB and IASB jointly deliberated a model of expected impairment losses which was broadly similar to the provision for impairment in IFRS 9.

Although both models are based on expected credit losses, the FASB's impairment model would require entities to recognize current expected credit losses for all assets, not just those for which there has been a significant increase in credit risk since initial recognition (International Accounting Standards Plus, 2016). On 24 July 2014, IASB added a new standard about credit impairment to IFRS 9, which is a financial instruments standard. FASB issued amendments to the standard on recognition and measurement of financial instruments, as well as the impairment of equity investments (Tysiac, 2016).

3.8 Summary Comparison of Current vs. New Standard

Tables 2 and 3 shows the comparison of recognition and measurement of expected credit losses (Ricci, 2017).

Table 2. Recognition of new standard

Current US GAAP	New standard
Loans	
Incurring losses – probability threshold	Lifetime losses – no recognition threshold
Held-to-maturity debt securities	
Other-than-temporary impairment	Lifetime losses – no recognition threshold
Credit losses reduce amortized cost basis	Credit losses recognized using an allowance approach
Prospectively adjust acceptable yield if expectations of cash flows improve significantly subsequent to impairment recognition	Recognize subsequent changes in expected credit losses (favourable and unfavourable) immediately by adjusting the allowance

Source: Own calculations.

Table 3. Measurement of new standard

Current US GAAP	New standard
Generally, considers past loss experience and current conditions	Considers past loss experience, current conditions, and reasonable and supportable forecasts of future conditions
Measures incurred credit losses on loans considering a loss-emergence period	Considers lifetime expected losses
Generally, measures held-to-maturity debt securities and non-collateral dependent impaired loans on an individual asset basis using a discounted cash flow methodology	<ul style="list-style-type: none"> - Does not prescribe a specific methodology - Requires collective assessment for financial assets with similar risk characteristics.

Source: Own calculations.

3.9 Details of New Standard

Financial institutions and companies are required to measure expected credit losses for financial assets on the date of reporting. The expected losses are according to historical information, current situation, reasonable and able to support the forecasts. The transition from incurred loss model to expected loss model is to provide investors better information (Tysiac, 2016). In other words, entities have to predict current expected credit losses based on historical loss information. They also have to adjust for differences in asset attributes, adjust based on current economic circumstances and supportable estimations (FASB, 2016). The CECL model requires financial and lending institutions to immediately write all expected credit losses in the loan portfolio in order to provide investors with more information on credit losses (Tysiac, 2016). Hence, in the future, the issuers are required to fully disclose the financial statement with credit impairment model with significant estimations. The new credit impairment standard requires company to report and recognize

earlier credit losses on the financial assets, held-to-maturity debt securities and loans. It recognises lifetime expected credit losses immediately when a financial asset is originated or purchased and replaced the recognition of current incurred loss impairment (Althoff *et al.*, 2014).

3.10 Ways to Calculate Credit Losses

There are many approaches to estimate expected credit losses and FASB had published 17 examples to show users how to account for expected credit losses on financial assets (FASB, 2016). However, this research is focusing on bonds, hence aging schedules will be ignored since this approach is for trade receivable. Loss-rate approach can be classified into two, which are collective evaluation and individual evaluation.

Loss-rate approach (Collective Evaluation) shows that an entity may estimate expected credit losses on a portfolio of loans with similar risk characteristics. For example, a bank provides customers a 10-year amortization loan. The bank managed loans collectively according to similar risk characteristics. The investment portfolio began over the past decade and the amortization cost of the loan was \$3 million. The bank's historical lifetime credit loss rate for the most recent 10-year period is 1.5%. When the latest update on credit losses was implemented, the bank has to compare historical information for the similar financial assets with current and also forecast the economic cycle to predict the expected credit losses. Bank observed that real estate value has decreased and unemployment will increase. In this case, bank estimates an incremental 10 basis point increase in credit loss due to expected decrease in real estate value and 5 basis point increases due to expected increase in unemployment. The incremental of 15-basis point is added to the 1.5% that serves as the basis for the expected credit loss rate. After adding the 15-basis point, the expected credit losses rate will be 1.65%. The allowance for expected credit losses will be \$49,500 (Coughlan *et al.*, 2016).

Loss-rate approach (Individual Evaluation) shows that an entity may estimate expected credit losses on an individual loan using a loss-rate approach when no loans with similar risk characteristics exist. For example, a bank provides a commercial loan which has an amortized cost of \$1 million. Historical loss information for commercial loans in the community with similar risk characteristics shows a 0.50% loss rate over the contractual term. The bank determines that an upward adjustment of 10-basis points that is incremental to the historical lifetime loss information is appropriate based on factors such as unemployment, borrower-specific operating results and so on. The incremental of 10-basis point is added to 0.5% that serves as the basis for the expected credit loss rate. After adjusted, the expected credit losses rate will be 0.60%. The allowance for expected credit losses would be \$6,000 (Coughlan *et al.*, 2016). The example for vintage-year basis can be shown in Table 4. Bank A provides financial support to owners who plan to purchase new or second hand equipment to operate their businesses. They track the loans at the year of origination.

Table 4. Calculation of Vintage-year Basis

Year of Origination	Loss Experience in Years Following Origination					
	Year 1	Year 2	Year 3	Year 4	Total	Expected
20X1	\$ 50	\$ 120	\$ 140	\$ 30	\$ 340	–
20X2	\$ 40	\$ 120	\$ 140	\$ 40	\$ 340	–
20X3	\$ 40	\$ 110	\$ 150	\$ 30	\$ 330	–
20X4	\$ 60	\$ 110	\$ 150	\$ 40	\$ 360	–
20X5	\$ 50	\$ 130	\$ 170	\$ 50	\$ 400	–
20X6	\$ 70	\$ 150	\$ 180	\$ 60	\$ 460	\$ 60
20X7	\$ 80	\$ 140	\$ 190	\$ 70	\$ 480	\$ 260
20X8	\$ 70	\$ 150	\$ 200	\$ 80	\$ 500	\$ 430
20X9	\$ 70	\$ 160	\$ 200	\$ 80	\$ 510	\$ 510

Source: Own calculations.

Bank A will estimate the expected credit losses on the remaining expected loans at 31 December 20XX by looking at the historical loss information. \$1,260 is the expected credit losses for the period of reporting date of which included expected losses of \$60, \$260, \$430, and \$510 for loans originated in 20X6, 20X7, 20X8, and 20X9 (Coughlan *et al.*, 2016).

For prospective risky bonds, forward-looking assessments of the overall expected loss will be based on consolidation. When purchasing securities, held-to-maturity debt holders must provide allowances for the expected loss. Hence, when the bank buys held-to-maturity securities, they need to determine whether the security will be in trouble or not. If so, the bank has to consider the expected loss during purchase (Funsch, 2017).

When an entity applies the CECL Model to purchased financial assets with credit deterioration (PCD) assets, the entity has to follow the formula below (McKinney and Kronmiller, 2016).

Day 1 carrying amount = Purchase price + Allowance for expected credit losses (based on acquirer's evaluation at the originated date)

Net income is not influenced by the credit loss expense on acquisition under this method. This is opposite to the purchases of non-credit deteriorated financial assets, which will cause loss recognition at the date of acquisition. After acquisition, any changes in estimated of expected credit losses are recognized as credit loss expense will be recorded in subsequent periods as they arise.

Table 5. Differences between GAAP and new standard

Current US GAAP	New standard
No allowance recognized at acquisition.	Allowance recognized at acquisition through a gross-up that increases the amortized cost basis of the assets with no effect on earnings.
Discounted cash flow methodology required.	No specific methodology required.
Effective yield increases when subsequent changes in expected cash flows are favorable.	Immediately recognize in earnings subsequent changes (favorable and unfavorable) in expected cash flows by adjusting the allowance.

Source: Own calculations.

Below is the example when CECL model comes into real life.

Table 6. Annual report of CIMB Group Holding Berhad

Key Interest Bearing Assets and Liabilities

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RM million	As at 31 Dec RM' million	FY13	
		Effective interest rate %	Interest income/ expense RM' million
Interest earning assets:			
Cash and short-term funds & deposits and placements with banks and other financial institutions	37,468	2.08	875
Financial assets held for trading	23,403	2.58	635
Financial investments available-for-sale	30,334	3.92	1,203
Financial investments held-to-maturity	10,821	4.32	388
Loans, advances and financing	228,432	6.42	13,721
Interest bearing liabilities:			
Deposits from customers and financial liabilities designated at fair value	265,136	2.30	6,127
Deposits and placements of banks and other financial institutions	20,728	1.77	251
Bonds, debentures and other borrowings	15,263	3.79	507
Subordinated notes	12,067	4.98	625

Source: Own calculations.

Table 6 above is the CIMB Group Holding Berhad's annual report as at 31 December 2013. The existing financial statement shows that there is no allowance for expected credit losses recognized on financial assets, current incurred loss impairment methodology that recognizes losses when a probable threshold is met.

When CECL model is implemented, CIMB bank will recognized the allowance for expected credit losses immediately, in which the allowance will reduce the amortized cost basis to the amount which an entity expects to collect. Later, whether the changes are favourable or unfavourable, the changes in expected credit losses are recognized immediately in earnings. Table 7 shows the differences between existing standard and new standard in financial guarantees (KPMG, 2016).

Table 7. Differences between GAAP and new standard in financial guarantees

Existing US GAAP:	New changes US GAAP:
Recognize financial guarantee liability at fair value	Recognize financial guarantee liability at fair value + Measure and account for a separate liability for expected credit losses.

Source: Own calculations.

When a company received an up-front cash premium of \$300 and estimates the expected credit loss for the financial guarantee to be \$25. The transaction will be recorded based on Table 8 using existing standard.

Table 8. Double entry of the financial guarantee

	Debit	Credit
Cash	300	
Credit loss expense	25	
Financial guarantee liability		325
(To record fair value of financial guarantee)		

Source: Own calculations.

When the new model had implemented, company has to record allowance for credit losses and it can be shown in Table 9.

Table 9. Double entry of allowance for credit losses

	Debit	Credit
Cash	300	
Credit loss expense	25	
Financial guarantee liability		300
Allowance for credit losses – financial guarantee		25
(To record fair value of financial guarantee, and associated allowance for credit losses)		

Source: Own calculations.

For the available-for-sale (AFS) debt securities, the new standard amends the existing other-than-temporary impairment model. The new model requires to use allowance account to recognize credit loss. Entity has to calculate credit loss by using amortized cost basis minus fair value. Entity also has to evaluate the existence of a credit loss. However, it will not consider when the fair value is less than the amortized cost, the changes in fair value after the balance sheet date and the historical or implied volatility of the fair value as shown in Table 10 (KPMG, 2016).

Table 10. Differences between GAAP and new standard in credit losses

Current US GAAP	New standard
Credit losses recognized through a direct write down of the amortized cost basis.	Allowance approach.
Credit losses can exceed total unrealized losses.	Fair value floor for credit losses.
No immediate reversals of previously recognized credit losses.	Reversals of credit losses are recognized immediately.

Source: Own calculations.

When a company holds available-for-sale debt securities at the end of Year 1, the debt securities have the following characteristics (Table 11).

Table 11. Example debt securities

Fair value:	\$875,000
Par value:	\$1,000,000
Amortized cost basis:	\$952,000
Coupon:	5%
Effective interest rate at acquisition date:	6.8%
Date of Maturity	End of Year 4
Principal due:	Only on maturity

Source: Own calculations.

The transaction recorded in existing financial statement is shown in Table 12 and the future expected cash flows in Table 13:

Table 12. Financial statement

	Debit	Credit
Credit loss expense	952,000	
Amortized cost		952,000
(To record direct write down of the amortized cost basis)		

Source: Own calculations.

Table 13. Expected cash flows

Year	Expected cash flows	Present value of future expected cash flows
2	\$ 45,000	\$ 42,127
3	45,000	39,437
4	975,000	799,912
		\$881,476

Table 13 above shows that the amortized cost basis of the securities \$952,000 which exceeded the present value of future expected cash flows, \$881,476. When the new standard had implemented, the company might determine the existence of credit loss and records the following journal entries.

Table 14. Financial statement credit loss

	Debit	Credit
Credit loss expense	70,524	
Allowance for credit losses		70,524
(To record impairment related to credit losses) Difference between amortized cost basis (\$952,000) and the present value of cash flows expected to be collected (\$881,476).		
	Debit	Credit
Unrealized loss on debt securities (other comprehensive income)	6,476	
Debt securities – fair value adjustment		6,476
(To record non-credit related losses) Difference between present value of cash flows expected to be collected (\$881,476) and fair value of the available-for-sale debt securities (\$875,000)		

Note: *Immediately recognized the reversals of credit losses.

Source: Own calculations.

In the beginning of Year 2, the company determines that it will be required to sell the securities before recovery of its amortized cost basis (Table 15).

Table 15. Financial statement credit loss

	Debit	Credit
Allowance for credit losses	70,524	
Available-for-sale debt securities – fair value adjustment	6,476	
Debt securities (amortized cost)		77,000
To write off allowance for credit losses, reverse the fair value adjustment, and adjust the amortized cost basis		
	Debit	Credit
Impairment loss	6,476	
Unrealized loss on debt securities (other comprehensive income)		6,476
To recognize additional impairment loss in earnings		

Source: Own calculations.

As a result, the previously recognized allowance for credit losses is written-off and the amortized cost basis is written down to debt securities' fair value with any incremental impairment reported in earnings.

To sum up, overall, FASB issued credit impairment standard which is to change or replace the current models for the financial instruments. In these new changes, receivables, loans and held-to-maturity debt securities, companies are required to

estimate expected credit losses. As a result, the recognition of credit losses will be earlier. For debt securities, companies are required to recognize allowances for credit losses. Hence, companies will have to make more disclosures including disclosures by origination year for certain financing receivables.

However, some of the smaller institutions think that CECL model is not scalable for them. Bankers also have some concerns, in that bank examiners and auditors may interpret the criteria as requiring specific methods or requiring new and complex systems, which may involve heavy capital expenditures. To overcome these problems, FASB has been involving the CECL regulators, who are given the task to communicate to stakeholders concerned, emphasising that CECL does not require complex systems (ABA Banking Journal, 2016).

According to Gullette (2016), the CECL model will change the management of banks. When the expected interest rate is increase, it will drive a portfolio's pricing. In this case, bankers have to integrate the data into CECL estimates and the result will be fed into the bank's capital plans. Leslie Seidman, the Chairman of FASB estimated that banks and other financial institutions would see their losses increase by about 50% under the CECL model. An investment is currently doing well does not mean that will be the case for the duration of the bond or loan. CECL model would require more timely recognition of expected credit losses and more-transparent information about the reasons for any changes in these estimates (Hoffelder, 2013).

In an interview with PriceWaterhouseCoopers (PwC) Malaysia, however, representatives of the accounting firm had commented that based on early simulation exercises, the Day 1 impact of MFRS 9 adoption is that provisioning could potentially jump by more than 50% for some banks in Malaysia. Meanwhile the 59 global banks recently surveyed by Deloitte believes their provision levels may increase by up to 50% with the adoption of the standard (Asian Banking and Finance, 2017).

4. Research Hypotheses

After the global financial crisis, various stakeholders requested that accounting standard-setters work to enhance standards on loan loss provisioning to incorporate forward looking information. Standard-setters concluded that the existing approach for determining the impairment of financial assets, based on a "*probable*" threshold and an "*incurred*" notion, delayed the recognition of credit losses on loans and resulted in loan loss allowances that were "*too little, too late*" (Johnson, 2017). The new standards on reporting expected credit losses may be even more significant for banks. "*This is much more related to a bank's core business,*" said Reza Van Roosmalen, a KPMG LLP managing director (Tysiac, 5 tips for implementing FASB's credit loss standard, 2016). Banks are to consider how to approach

standards in the most efficient and scalable way and look for similarities and synergies, and even through existing models to validate some data and modelling.

The global financial crisis highlighted the need for more timely reporting of credit losses on loans and other financial assets held by banks, lending institutions, and public and private organizations. Current Generally Accepted Accounting Principles (GAAP) accounts for credit impairment using an “*incurred loss*” approach, which requires recognition of the credit loss to be deferred until the loss is probable (or has been incurred). Many have argued that the incurred loss approach fails to alert investors about credit losses in a timely manner (FASB, 2016).

Hypothesis 1:

H0: The latest update in Financial Instrument-Credit Losses will impact balance sheet.

H1: The latest update in Financial Instrument-Credit Losses will not impact balance sheet.

Hypothesis 2:

H0: Different methods to calculate credit losses on bond will affect a bank's liquidity.

H1: Different methods to calculate credit losses on bond will not affect a bank's liquidity.

5. Data Analysis

A bond is a debt investment in which investors lend their money to an entity which borrows the funds for a certain period of time at a variable or fixed interest rate. Bonds are classified into two major types which are government bonds and corporate bonds. Examples of government bonds being traded are Government Investment Issues (GII), Malaysian Government Securities (MGS), Bank Negara Malaysia Bills (BNB) and Malaysian Treasury Bills (MTB). Examples of corporate bonds issued in the Malaysian capital market are straight bonds, convertible bonds, bonds with warrants, floating rate bonds, zero-coupon bonds, mortgage bonds, Islamic bonds, secured and unsecured bonds and guaranteed bonds.

There are also quasi-government bonds, Cagamas bonds and Islamic private debt securities or Islamic bonds (Bondmy, 2017). When we look at the annual reports, we often see financial investments available-for-sale and held-to-maturity. An available-for-sale security is a debt or equity security and purchaser can sell before it reaches maturity, however a held-to-maturity security purchaser has to hold it until the maturity date (Bragg, 2017). This study analyses the annual reports of 8 local banks for the year 2016, to ascertain the impact on liquidity and profitability.

5.1 Malayan Banking Berhad

Financial investments portfolio consists of financial assets at fair value through profit or loss, financial investments available-for-sale and financial investments

held-to-maturity. Table 16 shows that Maybank's financial investments which are held-to maturity as at 31 December 2016 (Maybank, 2016).

Table 16. *Maybank's financial investments held-to maturity in year 2016*

	Group		Bank	
	2016	2015	2016	2015
	RM'000	RM'000	RM'000	RM'000
At amortised cost less accumulated impairment losses				
Money market Instruments:				
Malaysian Government Securities	2,017,799	2,013,210	2,017,695	2,013,104
Malaysian Government Investment Issues	2,522,557	4,416,726	2,522,557	4,416,726
Foreign Government Securities	1,275,579	710,147	-	-
Foreign Government Treasury Bills	67,403	47,098	-	-
Khazanah Bonds	827,825	989,959	827,825	989,959
Cagamas Bonds	50,259	50,259	50,259	50,259
Foreign Certificates of Deposits	92,935	45,893	-	-
	6,854,357	8,273,292	5,418,336	7,470,048
Unquoted securities:				
Foreign Corporate Bonds and Sukuk	1,373,041	1,096,913	911,100	871,902
Corporate Bonds and Sukuk in Malaysia	5,530,942	5,265,053	6,223,862	5,954,249
Foreign Government Bonds	1,285,495	69,076	30,745	34,764
Others	2,044	2,044	2,044	2,044
	8,191,522	6,433,086	7,167,751	6,862,959
Accumulated impairment losses	(24,282)	(24,248)	(3,776)	(3,776)
Total financial investments held-to-maturity	15,021,597	14,682,130	12,582,311	14,329,231

Source: Own calculations.

Since Maybank's annual report did not state clearly about the value of bond, in this research we will use the amount of financial investments held-to-maturity (HTM) as our data which include bonds, shares, stocks and warrants. Based on the Table above, the total amortised cost of financial investment HTM is RM 15,045,879,000 (RM6, 854,357,000 + RM 8,191,522,000) in 2016. When using loss-rate approach (Collective Evaluation) to estimate allowance for expected impairment loss, entities should compare historical information for the similar financial assets with current and forecast the economic cycle.

According to Department of Statistics Malaysia, unemployment rate for March 2017 decreased to 3.4 per cent. Meanwhile, year-on-year unemployment rate was 0.1 percentage points lower than March 2016 (Mahidin, 2017). Sarkunan Subramaniam, who is the Knight Frank Malaysia's Managing Director, said the housing market is expected to continue slow growth in 2017 compare to 2016, because of the economic slowdown and the poor performance of ringgit, among others (Global Property Guide, 2017). Based on the forecast of economic cycle, the allowance for impairment losses for year 2017 will decrease since the prediction of the unemployment rate will decrease and real estate value will increase or remain the same. According to Maybank's group chief financial officer Datuk Amirul Feisal Wan Zahir, the Credit Charge Off for year 2016 was 62 basis points and he aims to reduce it to 50 basis points (The Star Online, 2017). The historical credit loss rate is 0.62%. The decrease of 10 basis points will cause the expected credit loss rate

become 0.52%. The allowance made in year 2017 will be RM 78,238,570.80 (RM 15,045,879,000 * 0.52%).

When using loss-rate approach (individual evaluation) to estimate allowance for expected impairment loss, entities should compare historical information, current situation and forecast the economic cycle. The difference between both evaluations is when using collective evaluation to estimate expected credit losses on a portfolio of loans, it has to include with the similar risk characteristics. When using individual evaluation, an entity may estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist. When using this method to estimate the allowance for expected credit losses, we will look into Maybank's financial investments held-to-maturity.

Based on the above, Table 16 shows that Maybank provides financial investments held-to-maturity which has an amortized cost of RM 15,045,879,000 (RM6,854,357,000 + RM 8,191,522,000) (Maybank, 2016). According to Maybank's group chief financial officer Datuk Amirul Feisal Wan Zahir, the Credit Charge Off for year 2016 was 62 basis points and he aims to reduce it to 50 basis points (The Star Online, 2017). The historical credit loss rate is 0.62%. Bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan, Powell and Shough, 2016).

According to Department of Statistics Malaysia, unemployment rate for March 2017 decreased to 3.4 per cent. Meanwhile, unemployment rate was 0.1 percentage points lower than March 2016 (Mahidin, 2016). Since the prediction of the unemployment rate will decrease, the allowance for impairment losses for year 2017 will decrease marginally compared to year 2016. The researchers have estimated a proposed 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 0.57%. The total allowance for expected credit losses of financial investment held-to-maturity would be RM 85,761,510.30 (RM 15,045,879,000 * 0.57%).

When using vintage-year basis to estimate allowance for expected impairment losses, entities have to create a table which contain previous 4 years' allowance made. Yellow(shaded) boxes represent the forecasts of the future which will impact the expected credit losses (Table 17). The following pattern of credit loss experience has been developed based on the amount of amortized cost in each vintage that was written off as a result of credit losses (unshaded area) (Coughlan *et al.*, 2016).

Table 17. Losses Incurred/Projected -Maybank

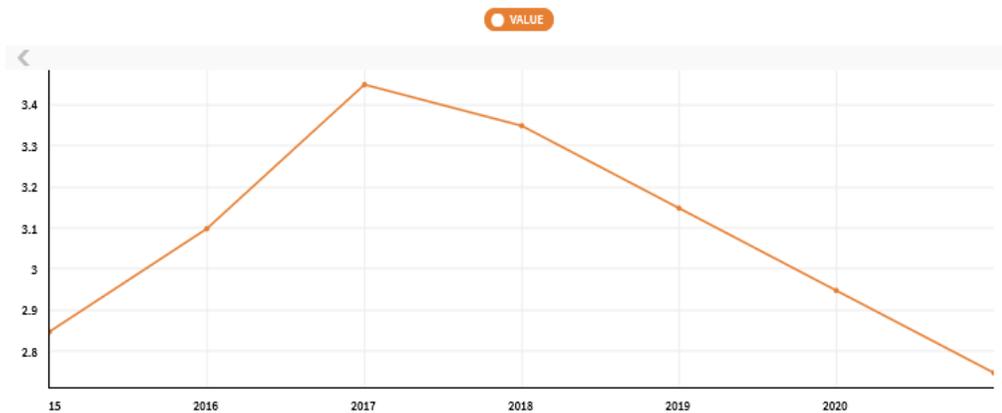
Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	219,308	370,101	265,440	180,000	180,000

2015	370,101	265,440	180,000	250,000	430,000
2016	265,440	180,000	250,000	220,000	650,000
2017	180,000	250,000	220,000	200,000	850,000

Source: Own calculations.

When using this method, bank has to consider the current conditions and reasonable and supportable forecasts. Figure 1 shows the statistic of Malaysia unemployment rate (Quandl , 2017).

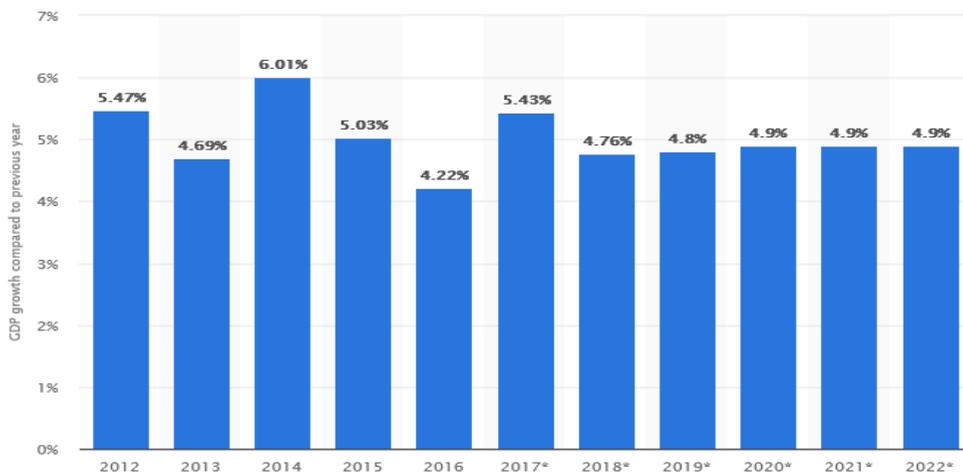
Figure 1. Malaysia’s unemployment rate



Source: Own calculations.

Figure 2 shows Malaysia’s growth rate of the real Gross Domestic Product (GDP) from year 2012 until 2022 (Statista, 2017).

Figure 2. Malaysia’s growth rate of the GDP



Source: Own calculations.

Based on Figure 1 above, the unemployment rate was 3.45% in January 2017. However, the unemployment rate in July 2017 was 3.4%. It shows that the unemployment rate for 2017 is decreasing. Malaysia's growth rate of GDP in Figure 2 in year 2017 was 5.43% which is higher than in the previous year. Based on the forecasts, the overall situation is positive than in the previous year. Through this, the researchers' estimate the credit loss for year 2017 will be RM 180,000,000 which is lower than year 2016.

In year 2018, the unemployment rate will keep decreasing but the growth rate also decreases compared to the previous year. In this case, the researchers estimate the credit loss will lower a little which the amount is RM 250,000,000. For year 2019, the unemployment rate is keep decreasing while the growth rate is higher than previous year but lower than two years ago. In this case, the researchers estimated the credit loss will be RM 220,000,000. In year 2020, the unemployment rate is keep decreasing while the growth rate is higher than in the previous year. In this case, the researchers estimated the credit loss will be RM 200,000,000. Based on the vintage-year basis Table, it shows that the expected credit loss for year 2017 will be RM 850,000,000.

5.2 RHB Bank Berhad

Table 18 shows that RHB's financial investments which are held-to-maturity as at 31 December 2016 (RHB Bank Berhad, 2016). It provides that the financial investments held-to-maturity has an amortized cost of RM 21,575,084,000.

Table 18. RHB's financial investments held-to maturity in year 2016

6 FINANCIAL INVESTMENTS HELD-TO-MATURITY ('HTM')

	Group		Bank	
	2016 RM'000	Restated 2015 RM'000	2016 RM'000	Restated 2015 RM'000
At amortised cost				
MONEY MARKET INSTRUMENTS:				
Malaysian Government Securities	2,236,862	2,239,247	2,216,567	2,218,877
Malaysian Government Investment Issues	5,037,022	5,366,226	4,388,725	4,478,120
Cagamas bonds	1,097,100	1,357,117	947,006	1,296,497
Khazanah bonds	101,094	106,368	69,103	66,033
Negotiable instruments of deposits	4,702,294	2,222,850	3,807,060	3,073,064
Wakala Global Sukuk	33,663	306,836	23,853	297,683
Sukuk Perumahan Kerajaan	111,125	111,147	101,155	101,190
Singapore Government Securities	62,630	61,267	62,630	61,267
Thailand Government Securities	13,674	163,746	13,674	163,746
Sukuk (Brunei) Incorporation	46,598	45,582	46,598	45,582
UNQUOTED SECURITIES:				
In Malaysia				
Corporate bond/sukuk	7,644,677	7,737,849	6,000,343	6,231,048
Corporate loan stocks	57,353	62,607	29,849	34,174
Prasarana bonds	254,101	808,227	233,870	767,840
Credit link notes	30,047	30,043	-	-
Outside Malaysia				
Corporate bond/sukuk	146,844	147,959	146,844	147,479
	21,575,084	20,767,071	18,087,277	18,982,600
	(209,981)	(234,835)	(101,165)	(106,292)
Accumulated impairment losses				
	21,365,103	20,532,236	17,986,112	18,876,308

Source: Own calculations.

When using loss-rate approach (collective evaluation) to estimate allowance for expected impairment loss, historical information for the similar financial assets with current and forecast the economic cycle is the key that entities have to consider. According to Department of Statistics Malaysia, unemployment rate for March 2017 decreased to 3.4 per cent. Unemployment rate was 0.1 percentage points lower than March 2016 (Mahidin, 2017). Meanwhile, the Knight Frank Malaysia's Managing Director said the housing market is expected to continue slow growth in 2017 compare to 2016, because of the economic slowdown and the poor performance of ringgit, among others (Global Property Guide, 2017). Based on the forecast of economic cycle, the allowance for impairment losses for year 2017 will decrease marginally since the prediction of the unemployment rate will decrease and real estate value will increase or remain the same because it is expected to have a slow growth.

This research estimated there will be 5 basis points decrease in credit losses due to expected decrease in unemployment and 5 basis points increase due to expected increase in real estate value. According to RHB's Group Managing Director Dato' Khairussaleh Ramli, the Credit Charge Off for year 2016 was 0.39% (Dato' Khairussaleh Ramli, 2017). The decrease of 10 basis points will cause the expected credit loss rate become 0.29%. The allowance made in year 2017 will be RM 62,567,743.60 (RM 21,575,084,000* 0.29%).

When using loss-rate approach (individual evaluation) to estimate allowance for expected impairment loss, an entity may estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist. Bank has to focus on amortized cost of bonds when calculate expected credit losses (Louisiana Bankers Association, 2016). When using this method to estimate the allowance for expected credit losses, we will look into RHB's financial investments held-to-maturity. Based on the above, Table 18 shows that RHB Bank Berhad provides financial investments held-to-maturity which has an amortized cost of RM 21,575,084,000 (RHB Bank Berhad, 2016). Bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan, Powell, and Shough, 2016).

According to RHB's Group Managing Director Dato' Khairussaleh Ramli, the Credit Charge Off for year 2016 was 0.39% (Dato' Khairussaleh Ramli, 2017). According to Department of Statistics Malaysia, unemployment rate for March 2017 was 0.1 percentage points lower than March 2016 (Mahidin, 2017). Since the prediction of the unemployment rate will decrease a little, the allowance for impairment losses for the year 2017 will decrease a little compare to year 2016. The researchers estimated there will be 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 0.34%. The total allowance for expected credit losses of financial

investment held-to-maturity would be RM 73,355,285.60 (RM 21,575,084,000* 0.34%) (Table 19).

Table 19. Losses Incurred/Projected – RHB Bank

Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	-	6,538	264,276	190,000	190,000
2015	6,538	264,276	190,000	230,000	420,000
2016	264,276	190,000	230,000	210,000	630,000
2017	190,000	230,000	210,000	200,000	830,000

Source: Own calculations.

When using vintage-year basis to estimate allowance for expected impairment losses, banks have to consider the current conditions and reasonable and supportable forecasts. Based on Figure 1, the unemployment rate was 3.45% in January 2017. However, the unemployment rate in July 2017 was 3.4%. It shows that the unemployment rate for 2017 is decreasing. Based on Figure 2, Malaysia's growth rate of GDP in year 2017 was 5.43% which is higher than in the previous year. Based on the forecasts, the overall situation is better than in the previous year. Through this, the researchers estimate the credit loss for year 2017 to be RM 190,000,000 which is lower than year 2016.

In the year 2018, the unemployment rate will keep decreasing but the growth rate also decreases compared to the previous year. In this case, the researchers estimate the credit loss will lower a little, the amount is RM 230,000,000. For the year 2019, the unemployment rate is decreasing while the growth rate is higher than in the previous year but lower than two years before. In this case, the researchers estimate the credit loss to be RM 210,000,000. In year 2020, the unemployment rate is decreasing while the growth rate is higher than in the previous year. In this case, the estimate credit loss will be RM 200,000,000. Based on the vintage-year basis Table 19 shows that the expected credit loss for year 2017 will be RM 830,000,000.

5.3 CIMB Bank Berhad

Table 20 shows CIMB's key interest-bearing assets and liabilities at the year ended 31 December 2016 (CIMB Group Holdings Berhad, 2016). Since this financial statement did not mention about the amortised cost of bonds, so we use the amount of bonds as at 31 December 2016 which is RM 16,926,000,000. When using loss-rate approach (collective evaluation), banks should compare historical information for the similar financial assets with current and forecast the economic cycle. According to Department of Statistics Malaysia, unemployment rate for March 2017 was 0.1 percentage points lower than March 2016 and it had decreased to 3.4 per cent (Mahidin, 2017).

Table 20. CIMB's key interest bearing assets and liabilities in year 2016

	Financial Year Ended 31 December 2016		
	As at 31 December RM'million	Effective interest rate %	Interest income/ expense RM'million
Interest earning assets:			
Cash and short-term funds & deposits and placements with banks and other financial institutions	29,018	2.15	859
Financial assets held for trading	22,769	2.35	563
Financial investments available-for-sale	31,530	3.93	1,266
Financial investments held-to-maturity	30,381	4.04	1,137
Loans, advances and financing	315,373	6.13	17,944
Interest bearing liabilities:			
Total deposits*	369,604	1.77	8,873
Bonds, Sukuk, debentures and other borrowings	16,926	3.46	661
Subordinated obligations	13,725	5.65	801

Source: Own calculations.

Based on the forecast of economic cycle, the allowance for impairment losses for the year 2017 will decrease a little since the prediction of the unemployment rate will decrease marginally and real estate value will increase or remain the same because it is expected to have a slow growth. The researchers estimated there will be 5 basis points decrease in credit losses due to expected decrease in unemployment and 5 basis points increase due to expected increase in real estate value. MIDF Amanah Investment Bank Bhd noted in an analyst briefing with CIMB's management recently, the banking group's credit cost for year 2016 is 60 basis points or equal to 0.60% (Ng, 2017). The decrease of 10 basis points will cause the expected credit loss rate become 0.50%. The allowance made in year 2017 will be RM 84,630,000 (RM 16,926,000,000* 0.50%).

When using loss-rate approach (individual evaluation), banks may estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist. Bank has to focus on amortized cost of bonds when calculate expected credit losses (Louisiana Bankers Association, 2016). Table 20 shows CIMB Bank Berhad's bonds amount of RM 16,926,000,000 at the year ended 31 December 2016 (CIMB Group Holdings Berhad, 2016). According to MIDF Amanah Investment Bank Bhd, it noted in an analyst briefing with CIMB's management recently, the banking group's credit cost for year 2016 is 60 basis points or equal to 0.60% (Ng, 2017). When using this method, bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan, Powell and Shough, 2016).

According to Department of Statistics Malaysia, unemployment rate for March 2017 was 0.1 percentage points lower than March 2016 (Mahidin, 2017). Since the prediction of the unemployment rate will decrease a little, the allowance for

impairment losses for year 2017 will decrease a likewise compared to year 2016. As such, the researchers estimated there will be 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 0.55%. The total allowance for expected credit losses of bonds would be RM 93,093,000 (RM 16,926,000,000 * 0.55%) (Table 21).

Table 21. Losses Incurred / Projected – CIMB Bank

Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	178,823	149,829	236,226	160,000	160,000
2015	149,829	236,226	160,000	215,000	375,000
2016	236,226	160,000	215,000	195,000	570,000
2017	160,000	215,000	195,000	175,000	745,000

Source: Own calculations.

Since the financial statement of CIMB Bank Berhad did not mention clearly about the amount of allowance made for financial investment AFS, so we will use the amount of other allowances made to calculate expected credit losses. When using vintage-year basis to estimate allowance for expected impairment losses, banks have to consider the current conditions and reasonable and supportable forecasts. Based on Figure 1, the unemployment rate was 3.45% in January 2017. However, the unemployment rate in July 2017 was 3.4%. It shows that the unemployment rate for 2017 is decreasing.

Based on Figure 2, Malaysia's growth rate of GDP in year 2017 was 5.43% which is higher than in the previous year. Based on forecasts, the overall situation is better than in the previous year. Through this, the researchers estimated the credit loss for 2017 will be RM 160,000,000 which is lower than in 2016. In 2018, the unemployment rate will keep decreasing but the growth rate also decreases compare to the previous year. In this case, the estimate credit loss will lower a little, the amount is RM 215,000,000. For 2019, the unemployment rate will keep decreasing while the growth rate being higher than in the previous year but lower than two years before. In this case, the estimate credit loss will be RM 195,000,000. In 2020, the unemployment rate will keep decreasing while the growth rate will be higher than in the previous year. In this case, the estimate credit loss will be RM 175,000,000. Based on the vintage-year basis Table 21, it shows that the expected credit loss for year 2017 will be RM 745,000,000.

5.4 Hong Leong Bank Berhad

Table 22 shows the Hong Leong Bank Berhad's financial investments held-to-maturity for the year ended 30 June 2016 (Hong Leong Financial Group Berhad, 2016).

Table 22. Hong Leong Bank Berhad's financial investments held-to-maturity in year 2016**6 FINANCIAL INVESTMENTS HELD-TO-MATURITY**

	The Group	
	2016 RM'000	2015 RM'000
Money market instruments		
Government treasury bills	54,922	-
Malaysian Government securities	3,403,858	3,003,596
Malaysian Government Investment Certificates	7,731,720	6,549,704
Cagamas bonds	30,356	30,454
Negotiable instruments of deposit	-	2,338
Other Government securities	395,513	335,159
	11,616,369	9,921,251
Unquoted securities		
Loan stocks	5,923	6,404
Malaysia Government sukuk	470,220	-
Corporate bonds and sukuk	777,763	838,113
Foreign currency bonds in Malaysia	-	98,029
Foreign currency bonds outside Malaysia	125,456	150,358
Investment in preference shares	32,066	54,000
	1,411,428	1,146,904
	13,027,797	11,068,155
Allowance for impairment losses	(116,479)	(126,317)
Total financial investments held-to-maturity	12,911,318	10,941,838

Source: Own calculations.

When using loss-rate approach (collective evaluation) to estimate allowance for expected impairment loss, entities need to compare historical information for the similar financial assets with current and forecast the economic cycle. According to Department of Statistics Malaysia, unemployment rate for March 2017 was 0.1 percentage points lower than in the previous year (Mahidin, 2017). The Knight Frank Malaysia's Managing Director said the housing market is expected to continue slow growth in 2017 compare to 2016, because of the economic slowdown and the poor performance of ringgit, among others (Global Property Guide, 2017). Based on the forecast of economic cycle, the allowance for impairment losses for 2017 will decrease a little bit since the prediction of the unemployment rate will decrease a little bit and real estate value will increase or remain the same because it is expected to have a slow growth. As such the researchers estimated that there will be 5 basis points decrease in credit losses due to expected decrease in unemployment and 5 basis points increase due to expected increase in real estate value. According to Fitch, the Hong Leong bank's gross impaired-loan ratio remained low at 0.80% at the end of March 2016 (The Star Online, 2016). The decrease of 10 basis points will cause the expected credit loss rate become 0.70%. The amortised cost of financial investments HTM is RM 13,027,797,000. The allowance made in 2017 will be RM 91,194,579 (RM 13,027,797,000 * 0.70%) (Table 22).

An entity may estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist when using loss-rate approach (individual evaluation). Bank has to focus on amortized cost of bonds when calculate expected

credit losses (Louisiana Bankers Association, 2016). Based on Table 22, the Hong Leong Bank Berhad's bonds amount is RM 13,027,797,000 at the year ended 30 June 2016 (Hong Leong Financial Group Berhad, 2016). According to Fitch, the Hong Leong Bank's gross impaired-loan ratio remained low at 0.80% at end-March 2016 (The Star Online, 2016). When using this method, bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan *et al.*, 2016).

As per the above, the researchers estimated there will be 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 0.75%. The total allowance for expected credit losses of bonds would be RM 97,708,477.50 (RM 13,027,797,000 * 0.75%) (Table 23).

Table 23. Losses Incurred/Projected – Hong Leong Bank

Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	3,700	74,122	141,488	75,000	75,000
2015	74,122	141,488	75,000	120,000	195,000
2016	141,488	75,000	120,000	100,000	295,000
2017	75,000	120,000	100,000	85,000	380,000

Source: Own calculations.

When using vintage-year basis to estimate allowance for expected impairment losses, banks have to consider the current conditions and reasonable and supportable forecasts. Malaysia's growth rate of GDP in year 2017 was 5.43% which is higher than in the previous year. As such, the overall situation is better than in the previous year. Through this, it was estimated that the credit loss for year 2017 will be RM 75,000,000 which is lower than in 2016. In 2018, the unemployment rate will keep decreasing but the growth rate also decreases compared to the previous year. In this case, the estimate credit loss will lower a little, the amount is RM 120,000,000. For 2019, the unemployment rate is keep decreasing while the growth rate is higher than in the previous year but lower than two years before. In this case, the estimate credit loss will be RM 100,000,000. In 2020, the unemployment rate will keep decreasing while the growth rate will be higher than in the previous year. In this case, the estimate credit loss will be RM 85,000,000. Based on the vintage-year basis Table 23 shows that the expected credit loss for year 2017 will be RM 380,000,000.

4.5 Public Bank Berhad

Table 24 shows the Public Bank Berhad's financial investments HTM for the year ended 31 December 2016 (Public Bank Berhad, 2016). It shows that the amortised cost of financial investments HTM is RM 5,278,841,000.

Table 24. Public Bank Berhad's financial investments held-to-maturity in year 2016**8. FINANCIAL INVESTMENTS HELD-TO-MATURITY**

	Group		Bank	
	2016 RM'000	2015 RM'000	2016 RM'000	2015 RM'000
At amortised cost				
Government securities and treasury bills:				
Malaysian Government Securities	1,934,046	2,051,435	1,903,918	2,021,357
Malaysian Government Investment Issues	12,157,420	12,334,574	9,683,010	10,103,680
Foreign government treasury bills	866,566	909,721	24,969	65,029
Other foreign government securities	473,031	135,131	–	–
	15,431,063	15,430,861	11,611,897	12,190,066
Money market instruments:				
Negotiable instruments of deposit and negotiable Islamic debt certificates	1,464,061	1,561,205	1,709,786	1,647,165
Non-money market instruments:				
Debt securities				
– Cagamas bonds	1,348,574	1,403,795	1,348,574	1,363,718
– Unquoted private debt securities	3,930,267	3,548,234	2,374,323	2,484,284
	5,278,841	4,952,029	3,722,897	3,848,002
Accumulated impairment losses	(39)	(46)	(39)	(46)
	22,173,926	21,944,049	17,044,541	17,685,187

Source: Own calculations.

When using loss-rate approach (collective evaluation) to estimate allowance for expected impairment loss, entities should compare historical information for the similar financial assets with current and forecast the economic cycle. Based on conditions as described above the forecast of economic cycle, the allowance for impairment losses for 2017 will decrease a little since the prediction of the unemployment rate will decrease a little and real estate value will increase or remain the same because it is expected to have a slow growth. As such the researchers estimated that there will be 5 basis points decrease in credit losses due to expected decrease in unemployment and 5 basis points increase due to expected increase in real estate value. According to annual report for 2016 which had published by Public Bank Berhad, the gross impaired-loan ratio remained low at 0.50% at the end of 2016 (Public Bank Berhad, 2016). The decrease of 10 basis points will cause the expected credit loss rate become 0.40%. The impairment made in 2017 will be RM 21,115,364 (RM 5,278,841,000 * 0.40%).

When using loss-rate approach (individual evaluation) to estimate allowance for expected impairment loss, bank has to estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist. And also, bank has to focus on amortized cost of bonds when calculate expected credit losses (Louisiana Bankers Association, 2016). Based on Table 24 the Public Bank Berhad's bonds amount is RM 5,278,841,000 at the year ended 31 December 2016 (Public Bank Berhad, 2016). According to annual report for the year 2016 which had published by Public Bank Berhad, the gross impaired-loan ratio remained low at

0.50% at the end of year 2016 (Public Bank Berhad, 2016). When using this method, the bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan, Powell, and Shough, 2016).

According to Department of Statistics Malaysia, unemployment rate for March 2017 decreased to 3.4 per cent. Meanwhile, year-on-year unemployment rate was 0.1 percentage points lower than March 2016 (Mahidin, 2017). Since the prediction of the unemployment rate will decrease a little, the allowance for impairment losses for 2017 will decrease a little compare to 2016. As such the estimate will be a 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 0.45%. The total allowance for expected credit losses of bonds would be RM 23,754,784.50 (RM 5,278,841,000 * 0.45%).

Table 25. Losses Incurred/Projected – Public Bank

Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	-	23	-	-	-
2015	23	-	-	10	10
2016	-	-	10	-	10
2017	-	10	-	-	10

Source: Own calculations.

When using vintage-year basis to estimate allowance for expected impairment losses, banks have to consider the current conditions and reasonable and supportable forecasts. Based on conditions stated above the overall situation is better than in the previous year. Through this, the estimate credit loss for year 2017 will be RM 0.

In 2018, the unemployment rate will keep decreasing but the growth rate also decreases compared to previous year. In this case, the estimate for the credit loss will increase a little which is RM 10,000. For 2019, the unemployment rate will keep decreasing while the growth rate is higher than in the previous year but lower than two years before. In this case, the estimated credit loss will be RM 0. In 2020, the unemployment rate will keep decreasing while the growth rate will be higher than in the previous year. In this case, it was estimated that the credit loss will be RM 0. Based on the vintage-year basis Table, it shows that the expected credit loss for year 2017 will be RM 10,000 (Table 25).

4.6 AmBank (M) Berhad

Table 26 shows the AmBank Berhad's financial investments held-to-maturity as at 31 March 2016. It does not show how much the amount of bonds are so in this case

we use financial investment HTM to calculate its allowance of expected credit losses (AMMB Holdings Berhad, 2016).

Table 26. AmBank Berhad's financial investments held-to-maturity in year 2016

10. FINANCIAL INVESTMENTS HELD-TO-MATURITY

	Group		Company	
	31 March 2016 RM'000	31 March 2015 RM'000	31 March 2016 RM'000	31 March 2015 RM'000
At Amortised Cost				
Money Market Instruments:				
Foreign Treasury Bills	780,153	518,486	-	-
Unquoted Securities:				
In Malaysia:				
Private debt securities	3,390,349	3,352,220	-	-
	4,170,502	3,870,706	-	-
Less: Accumulated impairment losses	(3,008)	(6,198)	-	-
	4,167,494	3,864,508	-	-

Source: Own calculations.

When using loss-rate approach (collective evaluation) to estimate allowance for expected impairment loss, bank has to compare historical information for the similar financial assets with current and forecast the economic cycle. According to Department of Statistics Malaysia, unemployment rate for March 2017 decreased to 3.4 per cent. Meanwhile, year-on-year unemployment rate was 0.1 percentage points lower than March 2016 (Mahidin, 2017). The Knight Frank Malaysia's Managing Director said that the housing market is expected to continue slow growth in 2017 compare to 2016, because of the economic slowdown and the poor performance of Ringgit, among others (Global Property Guide, 2017).

Based on the forecast of economic cycle, the allowance for impairment losses for 2017 will decrease a little since the prediction of the unemployment rate will decrease a little and real estate value will increase or remain the same because it is expected to have a slow growth. As such the researchers estimated that there will be 5 basis points decrease in credit losses due to expected decrease in unemployment and 5 basis points increase due to expected increase in real estate value. According to annual report for 2016 which had published by AmBank Berhad, the gross impaired-loan ratio was higher at 1.9% in year 2016 (AMMB Holdings Berhad, 2016). The decrease of 10 basis points will cause the expected credit loss rate to become 1.8%. The allowance for expected credit losses in year 2017 will be RM 75,069,036 (RM 4,170,502,000 * 1.8%).

When using loss-rate approach (individual evaluation) to estimate allowance for expected impairment loss, bank has to estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist. Bank has to focus on amortized cost of bonds when calculate expected credit losses (Louisiana

Bankers Association, 2016). Based on Table 26 the AmBank Berhad's financial investment HTM at amortised cost is RM 4,170,502,000 (AMMB Holdings Berhad, 2016). According to annual report for the year 2016 which had published by AmBank Berhad, the gross impaired-loan ratio was higher at 1.9% in 2016 (AMMB Holdings Berhad, 2016). When using this method, bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan *et al.*, 2016).

As such, the researchers estimated there will be 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 1.85%. The total allowance for expected credit losses of bonds would be RM 77,154,287 (RM 4,170,502,000 * 1.85%).

Table 27. Losses Incurred/Projected - AMBank

Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	12,606	13	8,734	5,000	5,000
2015	13	8,734	5,000	7,500	12,500
2016	8,734	5,000	7,500	7,000	19,500
2017	5,000	7,500	7,000	6,500	26,000

Source: Own calculations.

When using vintage-year basis to estimate allowance for expected impairment losses, banks have to consider the current conditions and reasonable and supportable forecasts. The estimate credit loss for 2017 will be RM 5,000,000. In 2018, the unemployment rate will keep decreasing but the growth rate also decreases compared to previous year. In this case, the estimated credit loss will increase a little, the amount is RM 7,500,000.

For 2019, the unemployment rate was decreasing while the growth rate was higher than in the previous year but lower than two years before. In this case, it was estimated that the credit loss was RM 7,000,000. In 2020, the unemployment rate is keep decreasing while the growth rate will be higher than in the previous year. In this case, the estimate credit loss will be RM 6,500,000. Based on the vintage-year basis Table, it shows that the expected credit loss for 2017 will be RM 26,000,000 (Table 27).

4.7 Affin Bank Berhad

Table 28 shows the Affin Bank Berhad's financial investments HTM for the year ended 31 December 2016 (AFFIN Bank Berhad, 2016). It shows that the amount of bonds at amortised cost is RM 377,061,000.

Table 28. *Affin Bank Berhad's financial investments held-to-maturity in year 2016*

	The Group		The Bank	
	2016 RM'000	2015 RM'000	2016 RM'000	2015 RM'000
At amortised cost				
Unquoted securities:				
Corporate bonds/Sukuk in Malaysia	377,061	380,832	304,939	304,550
Allowance for impairment losses	(3,537)	(178)	(3,537)	(178)
	373,524	380,654	301,402	304,372
Movement in allowance for impairment losses				
	The Group 2016 RM'000	2015 RM'000	The Bank 2016 RM'000	2015 RM'000
At beginning of the financial year	178	44,278	178	44,278
Allowance made during the financial year	3,537	-	3,537	-
Amount write-back	-	(22,037)	-	(22,037)
Amount written-off	(178)	(22,063)	(178)	(22,063)
At end of the financial year	3,537	178	3,537	178

Source: *Own calculations.*

When using loss-rate approach (collective evaluation) to estimate allowance for expected impairment loss, bank should compare historical information for the similar financial assets with current and forecast the economic cycle. According to Department of Statistics Malaysia, unemployment rate for March 2017 decreased to 3.4 per cent. Meanwhile, year-on-year unemployment rate was 0.1 percentage points lower than in March 2016 (Mahidin, 2017). The Managing Director of Knight Frank Malaysia said that the housing market is expected to continue slow growth in 2017 compare to 2016, because of the economic slowdown and the poor performance of ringgit, among others (Global Property Guide, 2017).

Based on the forecast of economic cycle, the allowance for impairment losses for year 2017 will decrease a little bit since the prediction of the unemployment rate will decrease a little and real estate value will increase or remain the same because it is expected to have a slow growth. As such the researchers estimated that there will be 5 basis points decrease in credit losses due to expected decrease in unemployment and 5 basis points increase due to expected increase in real estate value. According to annual report for the year 2016 which had published by Affin Bank Berhad, the gross impaired-loan ratio was lower at 1.60% (AFFIN Bank Berhad, 2016). The decrease of 10 basis points will cause the expected credit loss rate become 1.50%. The allowance for expected credit losses in year 2017 will be RM 5,655,915 (RM 377,061,000 * 1.50%).

When using loss-rate approach (individual evaluation) to estimate allowance for expected impairment loss, bank has to estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist. Bank has to focus on amortized cost of bonds when calculate expected credit losses (Louisiana Bankers Association, 2016). Based on Table 28 above, the Affin Bank Berhad's financial investment HTM at amortised cost is RM 377,061,000 (AFFIN Bank Berhad, 2016). According to annual report for the year 2016 which had published by

Affin Bank Berhad, the gross impaired-loan ratio was lower at 1.60% (AFFIN Bank Berhad, 2016).

When using this method, bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan *et al.*, 2016). Researchers estimated that there will be 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 1.85%. The total allowance for expected credit losses of bonds would be RM 5,844,445.50 (RM 377,061,000 * 1.55%).

Table 29. Losses Incurred/Projected – Affin Bank

Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	550	-	318	180	180
2015	-	318	180	255	435
2016	318	180	255	240	675
2017	180	255	240	220	895

Source: Own calculations.

When using vintage-year basis to estimate allowance for expected impairment losses, banks have to consider the current conditions and reasonable and supportable forecasts. As such the overall situation is better than in the previous year. Through this, it was estimated that the credit loss for year 2017 will be RM 180,000 (Table 29).

In year 2018, the unemployment rate will keep decreasing but the growth rate also decreases compared to the previous year. In this case, the estimate credit loss will increase a little, the amount is RM 255,000. For year 2019, the unemployment rate is keep decreasing while the growth rate is higher than in the previous year but lower than two years before. In this case, the estimate credit loss will be RM 240,000. In 2020, the unemployment rate is keep decreasing while the growth rate is higher than in the previous year. In this case, the estimate credit loss will be RM 220,000. Based on the vintage-year basis table, it shows that the expected credit loss for year 2017 will be RM 895,000 (Table 29).

4.8 Alliance Bank Malaysia Berhad

Table 30 shows the Alliance Bank Malaysia Berhad's financial investments HTM for the year ended 31 March 2016 (Alliance Bank Malaysia Berhad, 2016). The total amount of financial investment HTM at amortised cost is RM 1,143,500,000 (RM 1,124,562,000 + RM 18,938,000).

Table 30. Alliance Bank Malaysia Berhad's financial investments held-to-maturity in year 2016**8. FINANCIAL INVESTMENTS HELD-TO-MATURITY**

	Group	
	2016 RM'000	2015 RM'000
At amortised cost		
Money market instruments:		
Malaysian Government securities	700,570	701,521
Malaysian Government investment certificates	233,390	423,739
Khazanah bonds	190,602	183,932
	1,124,562	1,309,192
At cost		
Unquoted securities:		
Debt securities	18,938	37,668
Accumulated impairment	(14,193)	(27,825)
	4,745	9,843
	1,129,307	1,319,035

Source: Own calculations.

When using loss-rate approach (collective evaluation) to estimate allowance for expected impairment loss, entities should compare historical information for the similar financial assets with current and forecast the economic cycle.

Based on the forecast of economic cycle, the allowance for impairment losses for year 2017 will decrease a little bit since the prediction of the unemployment rate will decrease a little bit and real estate value will increase or remain the same because it is expected to have a slow growth. As such the researchers estimated that there will be 5 basis points decrease in credit losses due to expected decrease in unemployment and 5 basis points increase due to expected increase in real estate value. According to annual report for 2016 which was published by Alliance Bank Malaysia Berhad, the gross impaired-loan ratio was lower at 1.30% (Alliance Bank Malaysia Berhad, 2016). The decrease of 10 basis points will cause the expected credit loss rate become 1.20%. The allowance made in 2017 will be RM 13,722,000 (RM 1,143,500,000 * 1.20%).

When using loss-rate approach (individual evaluation) to estimate allowance for expected impairment loss, bank has to estimate expected credit losses on an individual loan when no loans with similar risk characteristics exist. Bank has to focus on amortized cost of bonds when calculate expected credit losses (Louisiana Bankers Association, 2016). Based on Table 30 above, the Alliance Bank Malaysia Berhad's financial investment HTM at amortised cost is RM 1,143,500,000 (Alliance Bank Malaysia Berhad, 2016). According to annual report for 2016 which had published by Alliance Bank Malaysia Berhad, the gross impaired-loan ratio was lower at 1.30% (Alliance Bank Malaysia Berhad, 2016). When using this method, bank has to consider current conditions and reasonable and supportable forecasts that relate to its bonds practices and determines those factors which will affect the bond's performance such as local unemployment rates (Coughlan, Powell and Shough,

2016). The researchers estimate there will be 5 basis points decrease in credit losses due to expected decrease in unemployment. The decrease of 5 basis points will cause the expected credit loss rate become 1.25%. The total allowance for expected credit losses of bonds would be RM 14,293,750 (RM 1,143,500,000* 1.25%).

Table 31. Losses Incurred/Projected – Alliance Bank

Year of Origination	Loss Experience in Year Following Origination				
	Year 1	Year 2	Year 3	Year 4	Expected
	RM'000	RM'000	RM'000	RM'000	RM'000
2014	12,236	1,759	6,050	4,800	4,800
2015	1,759	6,050	4,800	5,800	10,600
2016	6,050	4,800	5,800	5,500	16,100
2017	4,800	5,800	5,500	5,000	21,100

Source: Own calculations.

When using vintage-year basis to estimate allowance for expected impairment losses, banks have to consider the current conditions and reasonable and supportable forecasts. Based on forecasts, the overall situation is better than in the previous year. Through this, the estimate credit loss for 2017 will be RM 4,800,000 (Table 31).

In 2018, the unemployment rate keeps decreasing but the growth rate also decreases compared to the previous year. In this case, the estimate of the credit loss will increase a little, the amount is RM 5,800,000. For 2019, the unemployment rate is keep decreasing while the growth rate is higher than in the previous year but lower than two years before. In this case, the estimate credit loss will be RM 5,500,000. In 2020, the unemployment rate is keep decreasing while the growth rate is higher than in the previous year. In this case, the estimate credit loss will be RM 5,000,000. Based on the vintage-year basis table, it shows that the expected credit loss for year 2017 will be RM 21,100,000 (Table 31).

6. Discussion and Conclusion

The major contribution of the study is to determine the way to calculate credit losses on bond using different methods. To achieve this objective, researchers had found that, FASB had published 17 examples to show users how to account for expected credit losses on financial assets (FASB, 2016). Due to too many methods, researchers decided to provide 3 approaches which are rudimentarily used to calculate credit losses such as loss-rate approach (collective evaluation and individual evaluation) and vintage-year basis. When using loss-rate approach, researchers had to compare historical information for the similar financial assets with current and forecast the economic cycle. When forecasting the economic cycle, unemployment rate and the performance of ringgit should be considered as factors that may affect a country's economy. However, the growth rate of GDP and unemployment rate are the major factors that researchers had to consider when using vintage-year basis.

Subsequently, this research had shown the calculation on expected credit losses on bonds using the selected methods. Based on the calculation, researchers found that different methods provided different amount of expected credit losses because each method uses different factors to consider the current conditions and reasonable and supportable forecasts. According to the above statement, the null hypothesis of hypothesis 1 is rejected because different methods will bring different amount of expected credit losses and this will impact the balance sheet.

Different methods will bring different amount of expected credit losses. If banks set their expected credit losses too high, it may reduce their available funds and this will affect bank's liquidity and vice versa. According to the above statement, the null hypothesis of hypothesis 2 is rejected because different methods to calculate credit losses on bond will affect a bank's liquidity.

The researchers also found that the vintage method under the CECL model embraces past, current and future economic uncertainties, which seems more prudent than the other two loss approaches. It confirms that the CECL model is procyclical. It also shows that CECL loss estimates were impactful on the profitability and the liquidity of local banks. The greatest impact would be the three mega banks in Malaysia, i.e., Maybank, RHB Bank and CIMB giving an additional impact under the vintage method, of RM850 mil, RM830 mil, RM745 mil respectively.

This study also indicates greater impact on total risk-based capital ratios under Basel III requirements. Hence, Malaysian banks would need to set aside higher Capital under Basel III as the expected losses are higher with CECL model.

7. Limitations and Future Recommendations

This research focuses on the way to calculate bonds and to determine whether the different methods to estimate credit losses on bond will affect a bank's liquidity. The researchers found that there are some limitations. This research uses quantitative method and researchers collected and analysed secondary data. Below are two suggestions for future research:

- Similar study to be carried out but to focus on other approaches, therefore the readers may have choices which approach is the best for them to use.
- To focus on different financial assets.

References:

- ABA Banking Journal. 2016. CECL from the inside: a Conversation with FASB's Russell golden. ABA Banking Journal, Vol. 108, Issue 5, 25-27.
- AFFIN Bank Berhad. 2016. Annual Report 2016. Kuala Lumpur, AFFIN Bank Berhad.
- Alliance Bank Malaysia Berhad. 2016. Annual Report 2016. Kuala Lumpur, Alliance Bank Malaysia Berhad.

- Althoff, J., Halterman, S., Lee, Y.B. 2014. PwC. Accounting for hedging activities. IASB new general hedge accounting requirements, Available online at: http://www.pwc.com/en_US/us/cfodirect/assets/pdf/dataline/dataline-2014-03-accounting-for-hedgingactivities.pdf.
- American Bankers Association. 2012. Comment Letter on Proposals to Comprehensively Revise the Regulatory Capital Framework for U.S. Banking Organizations. Retrieved from American Bankers Association: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=7&cad=rja&uact=8&ved=0ahUKEwi3yoDW2aPVAhWKTbwKHQIWCYIQFghEMAY&url=https%3A%2F%2Fwww.federalreserve.gov%2FSECRS%2F2012%2FDecember%2F20121206%2FR-1442%2FR-1442_102212_110014_386243203248_1.pdf&us.
- AMMB Holdings Berhad. 2016. Annual Report 2016. Kuala Lumpur, AMMB Holdings Berhad.
- Arta, L., Arian, M. 2017. IFRS 9 and key changes with IAS 39. Retrieved from Deloitte: <https://www2.deloitte.com/al/en/pages/audit/articles/deloitte-kosovo-audit-publication.html>.
- Asian Banking and Finance. 2017. 3 implications on banks' financials when MFRS 9 takes effect in 2018. Retrieved from Asian Banking & Finance: <http://asianbankingandfinance.net/retail-banking/news/3-implications-banks-financials-when-mfrs-9-takes-effect-in-2018>.
- Bondmy. 2017. What are the Different Types of Bonds? Retrieved from Bond.my: <http://www.bond.my/menu-2/What%20are%20the%20Different%20Types%20of%20Bonds.htm>.
- Bragg, S. 2017. Available for sale securities. Retrieved from Accounting Tools: <https://www.accountingtools.com/articles/2017/5/14/available-for-sale-securities>.
- CIMB Group Holdings Berhad. 2016. Annual Report 2016. Kuala Lumpur, CIMB Group Holdings Berhad .
- Cohen, B., Scatigna, M. 2016. Banks and capital requirements: channels of Adjustment. *Journal of Banking and Finance*, 69(1), S56-S69.
- Coughlan, A., Powell, H., Shough, C. 2016. A Comprehensive Look at the CECL Model. Retrieved from BKD CPAs & Advisors: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwj524q4pJjZAhXJsY8KHSfoDIkQFggmMAA&url=https%3A%2F%2Fwww.bkd.com%2Fdocs%2Fpdf%2FA-Comprehensive-Look-at-the-CECL-Model.pdf&usg=AOvVaw256EMNEGQkUxl9ttm9Dfnn>.
- Dato' Khairussaleh Ramli. 2017. Analysts Presentation FY2016 Financial Results. Retrieved from RHB Bank Berhad: <https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=3&cad=rja&uact=8&ved=0ahUKEwic2c26m4TZAhUfT48KHZoTBloQFggxMAI&url=https%3A%2F%2Fwww.rhbgroup.com%2F~%2Fmedia%2Ffiles%2Fmalaysia%2Finvestor-relations%2Ffinancial-reports%2Fquarterly-financial-st>.
- Ernst and Young. 2012. The new impairment model. Retrieved from EY: http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwjr-5zy1qPVAhUKE7wKHWGvA5sQFgghMAA&url=http%3A%2F%2Fwww.ey.com%2FPublication%2FvwLUAssets%2FThe_new_FASB_and_IASB_impairment_model_US_financial_institutions_weigh_in%2.

- Etheridge, H.K. 2013. FASB Current Expected Credit Loss (CECL) Model. Financial Instrument Credit Impairment Models - A Rift in the Convergence of Iasb and Fasb Accounting Standards, 123.
- FASB. 2011. Accounting for Financial Instruments-Credit Losses. Retrieved from Financial Accounting Standards Board:
http://www.fasb.org/jsp/FASB/FASBContent_C/ProjectUpdatePage&cid=1176159268094.
- FASB. 2012. Summary of Board Decisions. Retrieved from FASB:
http://www.fasb.org/jsp/FASB/FASBContent_C/ActionAlertPage&cid=1176160275211&rss=1
- FASB. 2016. Financial Instruments-Credit Losses (Topic 326): Measurement of Credit Losses on Financial Instruments. Retrieved from FASB:
http://www.fasb.org/jsp/FASB/Document_C/DocumentPage?cid=1176168232528&acceptedDisclaimer=true.
- FASB. 2016. Votes to Proceed With Final Standard on Credit Losses. Retrieved from FASB:
http://www.fasb.org/cs/ContentServer?c=FASBContent_C&pagename=FASB%2FFASBContent_C%2FNewsPage&cid=1176168101253.
- Frequently Asked Questions on the New Accounting Standard on Financial Instruments--Credit Losses. 2017. Retrieved from Board of Governors of the Federal Reserve System: <https://www.federalreserve.gov/supervisionreg/topics/faq-new-accounting-standards-on-financial-instruments-credit-losses.htm>.
- Funsch, H.A. 2017. CECL and Your Bank's Investment Portfolio. Illinois Banker, Vol. 102, Issue 3, 22-23.
- Global Property Guide. 2017. Subdued house price rises in Malaysia. Retrieved from Global Property Guide: <https://www.globalpropertyguide.com/Asia/Malaysia/Price-History>.
- Goldwyn, T. 2017. Prepare now for this significant and potentially disruptive approach to plan for credit risk. CECL is Coming: Are you Ready? 37.
- Grant Thornton. 2014. Trade receivables and impairment (Part 1). Retrieved from MFRS Hot Topics:
<http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=11&cad=rja&uact=8&ved=0ahUKEwjF0vrnmprXAhWIMI8KHbeADXo4ChAWCCYwAA&url=http%3A%2F%2Fwww.grantthornton.com.my%2Fglobalassets%2F1.-member-firms%2Fmalaysia%2Fpublications%2Fmfrs-2014%2Fjan-mfrs-hot-/>.
- Gullette, M. 2016. CECL: what you need to know now. ABA Banking Journal, Vol. 108, Issue 5, 20-22.
- Hoffelder, K. 2013. FASB wants banks to forecast loan losses. CFO, The Magazine for Senior Financial Executives, Vol. 29, Issue 1, 12.
- Hong Leong Financial Group Berhad. 2016. Annual Report 2016. Kuala Lumpur, Hong Leong Financial Group Berhad .
- International Accounting Standards Plus. 2016. FASB issues new standard on impairment of financial instruments. Retrieved from International Accounting Standards Plus:
<https://www.iasplus.com/en/news/2016/06/fasb-asu-credit-losses>.
- Johnson, J.W. 2017. Current Expected Credit Losses (CECL): How to Calculate and Maintain a Proper Allowance. Retrieved from BankWebinars:
<https://www.bankwebinars.com/Webinar/Details/2498?idaff=17149>.
- KPMG. 2016. FASB accelerates the recognition of credit losses. Retrieved from KPMG:
<http://www.kpmg->

- institutes.com/content/dam/kpmg/financialreportingnetwork/pdf/2016/defining-issues-16-23-credit-impairment.pdf.
- Louisiana Bankers Association. 2016. CECL handout LBA CFO conference 2016. Retrieved from Louisiana Bankers Association:
<http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0ahUKEwiX5oz18LjZAhWFKJQKHePUAPMQFggmMAA&url=http%3A%2F%2Fwww.lba.org%2Ffiles%2FCECL%2520Handout%2520LBA%2520CFO%2520Conference%25202016.pdf&usg=AOvVaw3PPCTyJ9BXOs44o-rm2Q8>.
- McKinney, S.J.H. 2016. Heads Up-FASB issues final standard on accounting for credit losses. Retrieved from Deloitte: https://www.iasplus.com/en-us/publications/us/heads-up/2016/issue-18#_idTextAnchor007.
- Mahidin, D.M. 2017. Unemployment rate decreased to 3.4%. Retrieved from Key Statistics of Labour Force in Malaysia:
https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&cad=rja&uact=8&ved=0ahUKEwiYh8mvgNbVAhUMCMAKHbD_AmAQFggqMAE&url=https%3A%2F%2Fwww.dosm.gov.my%2Fv1%2Findex.php%3Fr%3Dcolumn%2FpdfPrev%26id%3Da2prMDQ3cXVRanJPbFU3cldseVJLQT09&usg=AFQjCNGqA1Onv.
- MASB. 2014. Malaysian Financial Reporting Standards (MFRSs). Retrieved from Malaysian Accounting Standards Board: <http://www.masb.org.my/pages.php?id=89>.
- MASB. 2014. MASB issues comprehensive standard on financial instruments and limited amendments. Retrieved from MASB:
http://www.masb.org.my/press_list.php?id=12.
- Maybank. 2016. Annual Report 2016. Kuala Lumpur, Maybank.
- Maybank Investment Bank Berhad. 2017. Appendix A Condensed Financial Statements. Kuala Lumpur, Maybank Investment Bank Berhad.
- McKinney, S., Kronmiller, C. 2016. TRG Snapshot-Meeting on credit losses. Kronmiller, Deloitte & Touche LLP,
<https://www.iasplus.com/en/publications/us/trg-snapshot/credit-losses-april-2016>.
- Neely, M.C. 2013. Can FASB Get Loan Loss Accounting Just Right? *Central Banker*, Spring, Vol. 23, Issue 1, 4-5.
- Ng, Min Shen. 2017. CIMB expected to achieve key targets but risk keeps on lingering. Retrieved from the Malaysian Reserve:
<https://themalaysianreserve.com/2017/10/23/cimb-expected-achieve-key-targets-risk-keeps-lingering/>.
- Public Bank Berhad. 2016. Annual Report 2016. Kuala Lumpur, Public Bank Berhad.
- PWC. 2015. PwC Alert (Issue 123): Embracing the new financial instruments standard-MFRS 9. Retrieved from Price Waterhouse Cooper:
<https://www.pwc.com/my/en/publications/pwcalert123-mfrs9.html>.
- Quandl. 2017. Malaysia Unemployment Rate, % of Total Labor Force. Retrieved from Quandl : https://www.quandl.com/data/ODA/MYS_LUR-Malaysia-Unemployment-Rate-of-Total-Labor-Force.
- RHB Bank Berhad. 2016. Financial Report 2016 . Kuala Lumpur, RHB Bank Berhad.
- Ricci, P. 2017. CECL is Coming Are You Ready? Retrieved from Linked In:
<https://www.linkedin.com/pulse/cecl-coming-you-ready-paul-ricci>.
- Selling, T. 2012. Pick a Number: Anything but Market for Loan Accounting (Part 2). Retrieved from the Accounting Onion: <http://accountingonion.com/2012/09/pick-a-number-anything-but-market-for-loan-accounting-part-2.html>.

-
- Statista. 2017. Gross Domestic Product (GDP) growth rate in Malaysia 2022. Retrieved from Statista: <https://www.statista.com/statistics/318977/gross-domestic-product-gdp-growth-rate-in-malaysia/>.
- Tatum, M. 2017. What is a Credit Impairment? Retrieved from wise GEEK: <http://www.wisegeek.com/what-is-a-credit-impairment.htm>.
- The Star Online. 2016. Fitch gives thumbs up to Maybank, Hong Leong Bank. Retrieved from The Star Online: <https://www.thestar.com.my/business/business-news/2016/08/19/fitch-gives-thumbs-up-to-maybank-hong-leong-bank/>.
- The Star Online. 2017. Maybank aims to reduce provision for bad loans. Retrieved from The Star Online: <https://www.thestar.com.my/business/business-news/2017/04/06/maybank-aims-to-reduce-provision-for-bad-loans/>.
- Tong, T.L. 2015. A Review of the Expected Credit Loss Model of IFRS 9(2014). Retrieved from Malaysia Accounting Standard Board: http://www.masb.org.my/pdf.php?pdf=Expected%20Credit%20Loss%20Model%20of%20IFRS%209_FI_20Jan2015.pdf&file_path=pdf.
- Tysiac, K. 2016a. 2016. How expected credit loss standards will challenge auditors. *Journal of Accountancy*. <https://www.journalofaccountancy.com/news/2016/mar/auditing-expected-credit-losses-201613987.html>.
- Tysiac, K. 2016b. 5 tips for implementing FASB's credit loss standard. Retrieved from CGMA Magazine: <http://www.cgma.org/magazine/2016/jul/implement-fasb-credit-loss-standard-201614755.html>.
- Tysiac, K. 2016c. FASB requires earlier reporting of credit losses: a new financial instruments standard is designed to align accounting with the economics of lending. *Journal of Accountancy*, 222, 14.