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A Comparative Analysis of Derivatives Usage in Malaysia: Evidence from China Stock Market Crisis

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ABSTRACT--- *Emotional intelligence is the key to control one's emotion. It is the capacity to monitor own as well as others emotions. It is a type of social intelligence that involves the ability to monitor one's own as well as others emotions, to discriminate among them and to use this information to guide one's thinking and action. Emotional intelligence helps students to study other emotions, to regulate their own emotions to be more successful. The capability to recognize other emotions is the potentiality for an individual to become successful in life. Self-awareness, self-regulation, self-motivation, social awareness and, social skill are the five stages in designing emotional intelligence. In academic field achievement requires emotional intelligence. Positive emotions increase life satisfaction by building resilience and Emotional Intelligence has facilitator effects on performance. Basing on this idea, the present study aims at investigating the co relational relationship exist in two variables i.e. emotional intelligence and academic performance of final year students of training college, Sambalpur (N=50). All the subjects are in age group of 20-22 years. A five-point scale of emotional intelligence will be administered to test the hypothesis. The hypothesis of the study is that there is a positive relationship between academic excellence and high emotional intelligence. The findings reveal that the highly emotional intelligent students have more academic achievement. Relevance of the investigations will focus on the positive steps to groom girl teacher-students with emotional intelligence for better development.*

Keywords--- *Derivatives, Stock Market Crisis, Foreign Direct Investment, Capital Intensity, Investment Growth.*

I. INTRODUCTION

The derivatives market and its rapid development has long been an interest topic among many researchers, policy makers, banking and financial organizations. It directly plays a significant role in a country's financial system and is a huge contributor to a country's economy as a whole. Derivatives are securities in which its price is derived from one or more underlying assets. Most commonly found types of derivatives are future contracts, forward contracts, options and swaps. Through theoretical and empirical studies, the derivatives market plays an important role in emerging economies such as Malaysia, in helping banks and firms to manage interest rate risks, currency exchange rates and equity markets (Lien & Zhang, 2008). Derivatives can also be used for speculative purposes to gain profits. Derivatives usage and the cost of equity is closely related, substantiated by evidences showing how banks and firms use derivatives to decrease their financial distress and for hedging purposes instead

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of speculating in foreign exchange markets (Gay et al., 2011). It is an effective mechanism facilitating the price risks' sharing of commodities traded on the market, enhancing ways to deal with price volatility. Moreover, it allows effective hedging and risk management by boosting capital inflows in developing countries, despite having a negative effect on financial systems by introducing more unpredictable crisis dynamics. Besides, the derivatives market has proven to be a risk reduction and redistribution channel. Hence, many researchers have pursued studies to further investigate the determinants of derivatives usage in developing countries' markets. This study aims to measure the performance of derivatives among financial institutions in Malaysia, from 2010 to 2017, and to examine the impact of the China stock market crash, from 2015-2016.

Since 2005, Malaysia and the broader ASEAN region have been key beneficiaries from China's progressive economic growth. The rapid Chinese economic growth over the past decade has increased China's world gross domestic product (GDP) share, from 5% in 2005 to about 15% in 2015. However, this economic growth has moderated in recent years, decreasing from 10.6% in 2010 to 6.9% in 2015, as the Chinese economy slowed down and experienced a crucial structural transformation. The manufacturing sector, which was China's key growth sector, the manufacturing field has experienced overcapacity. The 2015-2016 China economic slowdown and manufacturing sector has negatively impacted the Southeast Asian manufacturing supply chains, with many Asian economies witnessing huge decreases in their total exports over the period, especially China exports (Li, 2018).

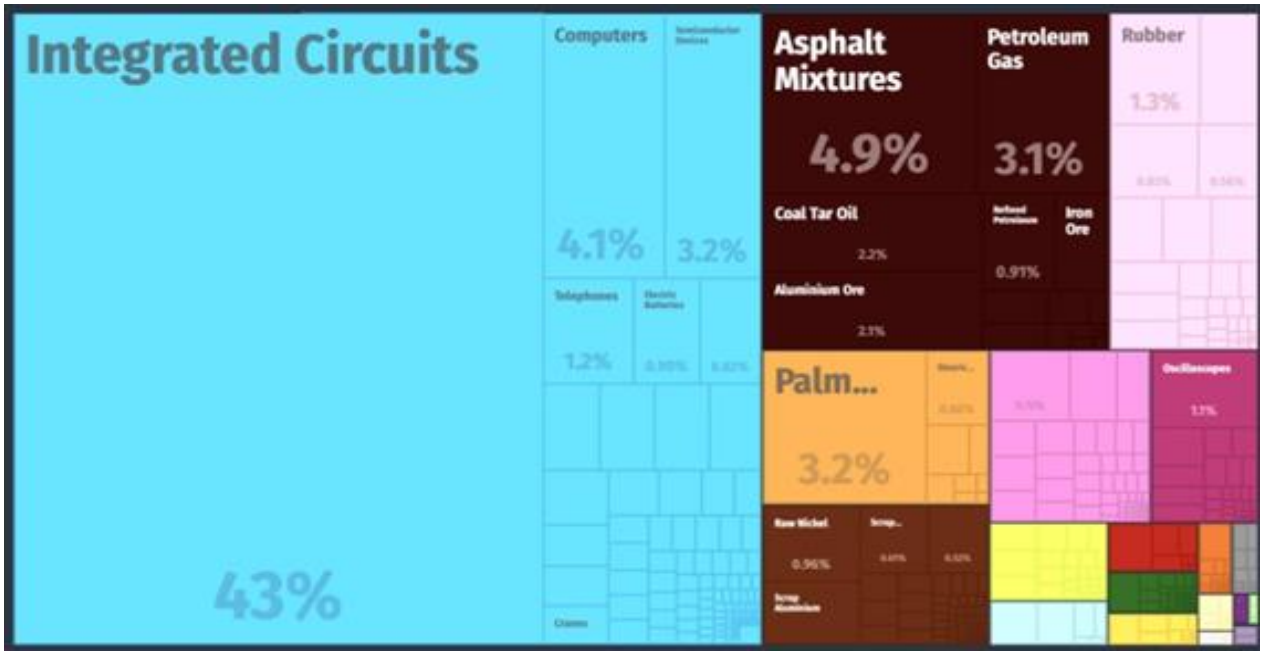

Figure 1: Composition of Malaysian exports to China in 2015

Similar to most developing economies, there lies a crucial financial intermediary role for the banking system in the Malaysian economy (Sufian & Habibullah, 2010). It controls majority of financial flows and accounts for above 70% of the financial system's total assets. Hence, the importance of an efficient and profitable banking sector is important for Malaysia's prosperous economic growth. In the recent years, it is observed that there is a steep increase of derivatives activities among Asia-Pacific Banks. The daily turnover of Over the Counter, OTC foreign

currency and interest rate derivatives in this region was USD 400,000 million and USD 67,341 million respectively, showing a 40% increase and a 110% increase respectively, in comparison to 2001 (BIS, 2001).

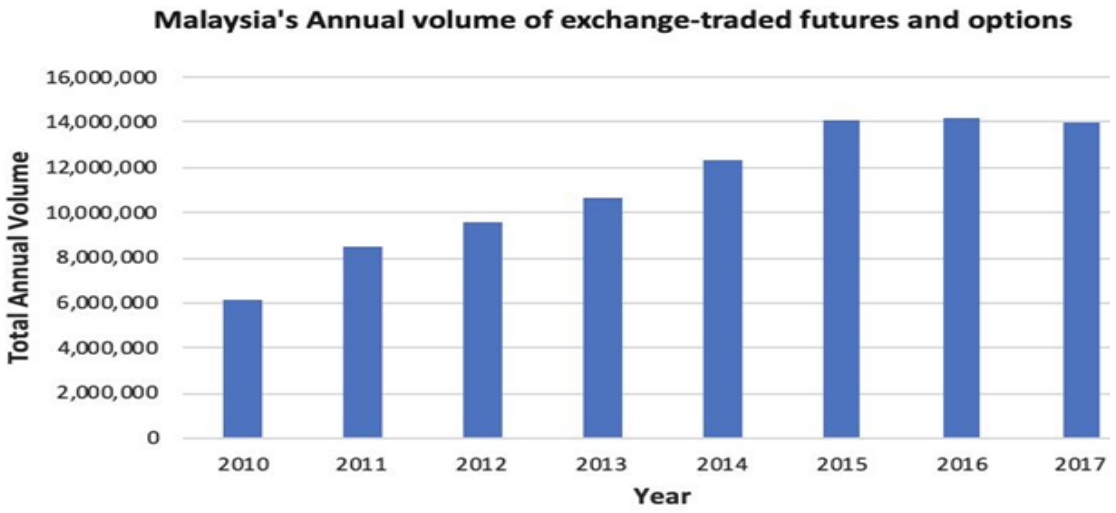

Figure 2: Annual volume of exchange-traded futures and options

Table 1: Total annual volume of derivatives traded by Malaysia 2010-2017

Year	Total Annual Volume	Growth (%)
2010	6,154,745	
2011	8,460,000	37.45%
2012	9,596,896	13.44%
2013	10,621,629	10.68%
2014	12,313,490	15.93%
2015	14,060,527	**14.19%**
2016	14,226,034	**1.18%**
2017	14,015,364	-1.48%

13.01%

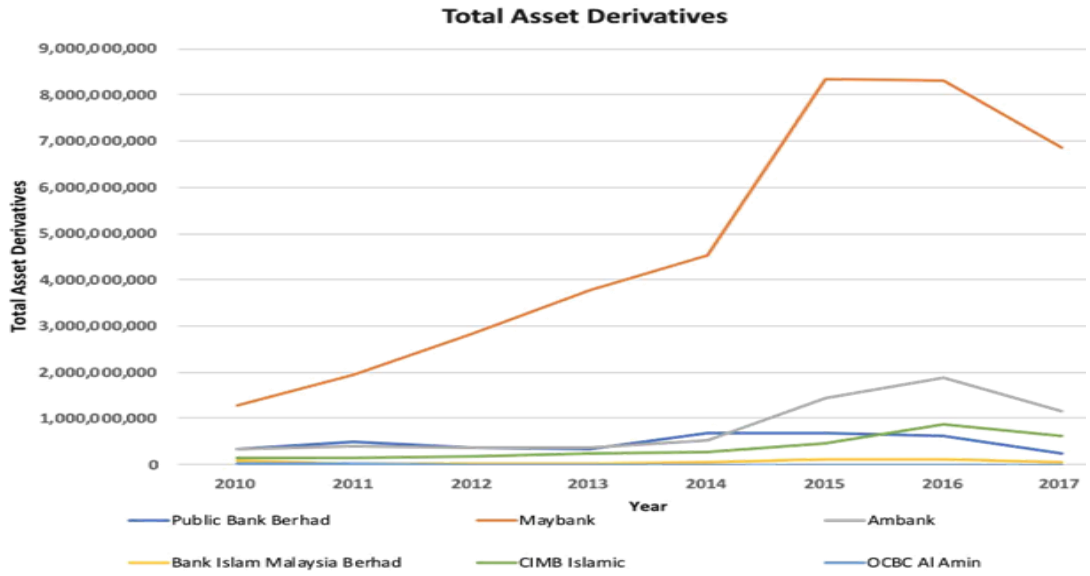

Figure 3: Annual volume of exchange-traded futures and options

Likewise, a similar pattern of increased derivatives traded is observed in Malaysia, as shown in Figure 2 and Table 1. The total annual volume of derivatives traded by Malaysia has increased consistently from year 2010-2017. However, it is noticed that the growth rate from year 2016-2016 had a drastic drop, from 14.19% to 1.18%, which is highly due to the China economic slowdown. Zooming into banking institutions, the overall significant growth in derivative activities by the banks has also increased steadily, however growth has slowed down from the period of 2015-2016 as shown in Figure 3, with a sample size of 6 banks, further discussed in the next sections.

Hence, due to the heavy reliance of exports Malaysia has to China, especially in the E&E industry, and the dependence of banks towards derivatives as an important financial instrument, this study aims to investigate the determinants of derivatives usage among both commercial and Islamic banks in Malaysia from 2010-2017, to drive bank efficiency and boost the country's economic growth.

II. LITERATURE REVIEW

After thorough research and reviewing literatures, substantial findings have shown that bank size, in the form of total assets, profitability in the form of interest income, foreign direct investment (FDI) inflow, earnings per share, debt and capital intensity, investment growth, agency and signaling theories are the independent variables impacting total asset derivatives among the 6 studied commercial and Islamic banks in Malaysia, which will be discussed in depth below.

1) Total Asset Derivatives

Research regarding the increasingly important role derivatives play in the banking sector have typically been surrounded on derivatives usage among commercial banks. For example, Gunther and Siems (1995) discovered that most banks use derivatives, to hedge rather than to speculate. Financial theory has proven that imperfections in the capital market provide incentives for firms like banks to use derivatives for hedging purposes. Several researchers have proven three major benefits from derivatives usage: decreased taxes under a progressive tax schedule, decreased agency cost problems and decreased expected cost of financial distress (Smith & Stulz, 1985). Besides, hedging against financial risks also reduces the bank's cash flow volatility, allowing the bank to maintain enough funds to pay off its obligations and debt holders on time, adding value and benefiting the bank's shareholders. Hence, it is important to investigate the factors affecting total asset derivatives by the banks in Malaysia

2) Bank Size-Proxy: Total Assets

The relationship between derivatives and the size of the banks has contradictory directions, according to research. There are two main arguments regarding the impact of bank size has, on the propensity of derivatives usage: economies of scale and financial distress costs. Argument on there are substantial scale of economies in setting up derivative trading areas such as research and infrastructure (Nance et al., 1993). As such, large firms are more likely to establish derivative trading groups. It is also noticed that informational economies of scale exist with derivatives usage. Firms grow bigger and have more complex operations, information asymmetries between the various contracting groups worsen (Jensen & Meckling, 1976; Zahra & Pearce, 1989). Consequently, the agency costs within the bank increase, to prevent managers' opportunistic behaviors and to enable ex post

contractual realignment, if required. Hedging has been proven as a convenient mechanism to mitigate agency incentive conflicts and reduce agency costs within large firms (Nance et al., 1993). An example of a potential agency incentive conflict in firms are under investment problems, whereby shareholders will not be inclined to invest in positive net present value projects, because the benefits of such investment will appeal to debtholders, instead of themselves.

3) Debt-Proxy: Total Debt

The Modigliani- Miller theory states that firms will opt for debt-financing, instead of equity financing, as the former's cost is lower than the latter (Miller, 1988). However, the financial distress risk exists when short-term and long-term debt obligations of the firm are unsettled. In other words, the firm would probably default on advance when it has more borrowings. Firms can choose to alter their capital structure or reduce their leverage ratio to decrease their financial distress costs (Froot et al., 1993). However, the tax advantage that arises with debt cannot be utilized then. Hence, Szabo and Herman (2012) proposed hedging, as a better alternative to reduce financial distress costs. This is because hedging reduces cash flow volatility, consequently minimizing the firm value volatility, without giving up any debt's tax advantages. Hence, their results proved that firms experiencing higher financial distress and debt levels will hedge more.

4) Proxy 3: Capital Intensity

Capital intensity is the measure of the bank's assets deployment efficiency. Myers (1984), Shapiro and Titman (1986) believe that capital intensity, typically measured by fixed assets divided by total assets/total sales is the operational leverage indicator, and a higher capital intensity tends to increase the firm's risks. Capital intensity might be negatively correlated with the firm's risk, so that it is a representative for the firm's ability to cut expenses.

5) Proxy 4: Earning per share

EPS is one of the most popular and commonly used financial performance benchmark of all. A 400 surveys on financial executives in the USA and stated that majority have held the judgement that earnings were the most significant performance measure reported, EPS is also the linchpin behind strategic decision-making such as share valuations, incentive schemes and merger and acquisition negotiations (Graham & Harvey, 2005). It is easy to be calculated and understood, and positive EPS growth is always welcomed, as an indicator of positive company growth.

6) Investment Growth

High levels of investment growth opportunities among firms signal positive states. The pecking order theory states that internal financing is mostly the preferred choice, because it does not involve external investors, and is derived from their own profit (Myers & Majluf, 1984). However, this might pose underinvestment challenges when the firm experiences shortfall of cash. Underinvestment is a situation when a firm's shareholders prefer higher risk and profit investments with volatile cash flows, instead of low risk investments with steady cash flows. As the investment of firms' growth increases, the underinvestment cost increases.

7) Signaling Theory

The dividend signaling theory states that the increase in a company's dividend payout generally predicts positive future performance of the company's stock while, increasing the stock prices, while conversely, reductions signal a potential negative future performance by the company, decreasing the dividends.

8) Relationship with Profitability

The Signaling Theory states that companies paying highest dividend levels are more profitable than that paying lesser dividends. However, exceptional cases include the extensiveness of the dividends as a predictor of future earnings. A company with a strong and long history of dividend increases annually is signaling to the market that its board and management is has high future profits potential. A company's board will never increase dividends, unless there is certainty that the cost can be sustained. Examples of stocks with promising histories for investors with demonstrated increasing dividends are the FedEx Corporation, National Fuel Gas, and more.

III. METHODOLOGY

To run the regression analysis for this model estimation, secondary data has been extracted from the individual financial statements and annual report of year 2010-2017, including the China economic crisis period 2015-2016, of each of the 6 commercial and Islamic banks studied, Public Bank, Maybank, AmBank, CIMB Islamic Bank, Bank Islam Malaysia and OCBC Al-Amin

For reliability purposes, secondary data has been collected. In this study, the sample country Malaysia was selected, to investigate the relationship of bank size, profitability, investment growth and signaling theory with the banks' derivative usage in increasing bank efficiency.

The six banks' time-series data was collected across the annual period from 2010 to 2017, a total of 8 observations, for the dependent variables, total asset derivatives (RM) and each independent variable, total assets, foreign direct investment (FDI) inflow, interest income, earnings per share, total debt and capital intensity.

		DV	IV					
Bank	Year	Total Asset Derivatives	FDI Inflow	Earnings/Share	Total Assets	Total Debt	Interest Income	Capital Intensity
Commercial Banks								
Public Bank Berhad	2010	322,596,000	29,200,000,000	0.872	186,409,862,000	174,107,111,000	7,145,714,000	8.8941
Public Bank Berhad	2011	492,536,000	37,300,000,000	0.985	205,433,044,000	191,805,569,000	8,529,106,000	8.9435
Public Bank Berhad	2012	364,344,000	28,500,000,000	1.07	228,575,968,000	211,560,785,000	9,465,598,000	10.4647
Public Bank Berhad	2013	350,729,000	38,200,000,000	1.161	252,839,439,000	234,017,384,000	10,368,420,000	11.3624
Public Bank Berhad	2014	691,014,000	35,600,000,000	1.237	286,667,566,000	260,724,405,000	11,602,472,000	10.4316
Public Bank Berhad	2015	677,630,000	39,400,000,000	1.311	292,272,391,000	264,327,204,000	12,964,990,000	10.6306
Public Bank Berhad	2016	628,145,000	47,000,000,000	1.348	303,809,743,000	274,036,241,000	13,537,566,000	11.1783
Public Bank Berhad	2017	240,215,000	41,000,000,000	1.417	313,664,765,000	281,023,585,000	13,566,413,000	11.5047
Maybank	2010	1,281,682,000	29,200,000,000	0.539	248,392,266,000	223,135,442,000	8,555,239,000	7.6403
Maybank	2011	1,949,344,000	37,300,000,000	0.614	411,254,417,000	265,662,129,000	9,194,938,000	7.3555
Maybank	2012	2,812,148,000	28,500,000,000	0.727	342,556,673,000	305,661,366,000	11,194,494,000	8.4324
Maybank	2013	3,760,133,000	38,200,000,000	0.758	397,779,032,000	357,279,260,000	11,744,776,000	8.3085
Maybank	2014	4,533,709,000	35,600,000,000	0.742	640,299,960,000	406,386,653,000	13,123,548,000	9.1051
Maybank	2015	8,334,598,000	39,400,000,000	0.720	708,344,500,000	440,772,570,000	14,751,535,000	10.0235
Maybank	2016	8,320,918,000	47,000,000,000	0.678	735,956,250,000	439,087,978,000	15,076,353,000	11.3225
Maybank	2017	6,865,221,000	41,000,000,000	0.720	765,301,766,000	447,414,273,000	16,099,945,000	12.3460
Ambank	2010	343,643,000	29,200,000,000	0.3471	7,271,914,000	232,575,000	27,807,000	19.0055
Ambank	2011	398,797,000	37,300,000,000	0.447	8,741,143,000	885,178,000	32,459,000	1,284.9728
Ambank	2012	380,129,000	28,500,000,000	0.4964	7,924,405,000	885,178,000	2,676,000	359.4991
Ambank	2013	383,257,000	38,200,000,000	0.5452	9,656,759,000	247,692,000	7,410,000	2,569.8674
Ambank	2014	528,810,000	35,600,000,000	0.5929	9,983,950,000	1,958,626,000	8,789,000	834.2908
Ambank	2015	1,437,537,000	39,400,000,000	0.6383	9,676,441,000	1,246,873,000	4,655,000	2,468.0914
Ambank	2016	5,884,001,000	47,000,000,000	0.4333	9,659,565,000	1,243,259,000	8,240,000	1,612.6817
Ambank	2017	1,166,422,000	41,000,000,000	0.4406	10,490,134,000	1,964,629,000	3,043,000	686.2611
Islamic Banks								
Bank Islam Malaysia Berhad	2010	80,108,000	29,200,000,000	0.2144	30,399,948,000	27,872,980,000	1,838,645,000	7.4487
Bank Islam Malaysia Berhad	2011	15,877,000	37,300,000,000	0.1581	32,205,637,000	29,420,330,000	1,396,016,000	5.4055
Bank Islam Malaysia Berhad	2012	16,736,000	28,500,000,000	0.1886	37,450,798,000	34,351,183,000	1,652,656,000	5.7864
Bank Islam Malaysia Berhad	2013	29,118,000	38,200,000,000	0.2144	42,836,531,000	39,507,157,000	1,851,289,000	6.9267
Bank Islam Malaysia Berhad	2014	62,541,000	35,600,000,000	0.2216	45,829,287,000	42,098,659,000	2,032,085,000	7.1096
Bank Islam Malaysia Berhad	2015	119,259,000	39,400,000,000	0.2171	49,767,067,000	45,734,014,000	2,203,683,000	7.2727
Bank Islam Malaysia Berhad	2016	124,572,000	47,000,000,000	0.2229	55,683,301,000	51,297,346,000	2,342,204,000	8.8835
Bank Islam Malaysia Berhad	2017	68,319,000	41,000,000,000	0.2327	57,750,240,000	52,790,734,000	2,324,187,000	10.4151
CIMB Islamic	2010	150,688,000	29,200,000,000	0.4851	36,038,393,000	34,699,726,000	1,391,815,000	340.0048
CIMB Islamic	2011	147,608,000	37,300,000,000	0.3739	43,097,758,000	41,169,208,000	1,621,433,000	197.4247
CIMB Islamic	2012	168,360,000	28,500,000,000	0.4011	51,225,040,000	48,881,596,000	1,913,804,000	183.6226
CIMB Islamic	2013	246,800,000	38,200,000,000	0.3656	49,423,178,000	46,752,276,000	1,990,460,000	190.5122
CIMB Islamic	2014	263,865,000	35,600,000,000	0.3913	49,863,771,000	46,652,327,000	2,059,159,000	100.1150
CIMB Islamic	2015	476,278,000	39,400,000,000	0.404	54,559,147,000	50,953,064,000	2,279,738,000	83.4549
CIMB Islamic	2016	870,650,000	47,000,000,000	0.5432	66,646,856,000	62,496,716,000	2,348,382,000	126.0657
CIMB Islamic	2017	634,306,000	41,000,000,000	0.6406	85,277,423,000	80,481,708,000	2,935,552,000	224.7012
OCBC Al Amin	2010	7,640,000	29,200,000,000	0.339	4,305,378,000	4,010,874,000	180,304,000	15.7070
OCBC Al Amin	2011	13,450,000	37,300,000,000	0.236	5,710,136,000	5,391,405,000	231,686,000	22.5356
OCBC Al Amin	2012	5,592,000	28,500,000,000	0.469	6,959,277,000	6,487,526,000	336,934,000	22.8893
OCBC Al Amin	2013	44,000	38,200,000,000	0.9014	10,125,684,000	9,530,517,000	449,068,000	34.0266
OCBC Al Amin	2014	4,102,000	35,600,000,000	0.4793	13,668,391,000	12,879,627,000	638,511,000	49.1193
OCBC Al Amin	2015	620,000	39,400,000,000	0.783	14,611,135,000	13,625,154,000	775,891,000	25.8781
OCBC Al Amin	2016	75,000	47,000,000,000	0.8162	15,254,630,000	14,123,735,000	712,695,000	28.7382
OCBC Al Amin	2017	362,000	41,000,000,000	0.1036	15,873,344,000	14,537,456,000	609,611,000	47.2714

Table 2: Secondary time-series data collected from 6 Banks in Malaysia

1) Regression Model

Regression analysis refers to a statistical tool in determining the relationship among ≥ 2 variables. Regression models are probabilistic models, where we can use the collected data to confirm the variables' relationship. There are several types of regression models. However, the regression model chosen used in this research is the multiple linear regression model.

2) Multivariable Linear Regression ***Model***

Most of the time, one independent variable is not enough to explain the dependent variable. Hence, a multivariable linear regression model is used to study the effect of multiple independent variables on the dependent variable

3) Building the Regression Model

The first step to build regression model is to identify the equation's general function. In this study, Total Asset Derivatives, the dependent variable is a function of 6 other Independent Variables: Total assets, foreign direct investment (FDI) inflow, interest income, earnings per share, total debt and capital intensity.

4) The Estimation Model is in the Cobb-Douglas Functional Form

General Function: ASSETDER=f (TASSET, INTINC, FDIINF, DEBT, EARN, CAPINT). Next, the model's specific function is then derived further below. Specific Function: As this is a multivariable linear regression model, therefore β0, e and are the constant and stochastic error term respectively.

Table 3: The estimation model is in the Cobb-Douglas functional form

ASSETDER	=	β0+ β1 TASSET	+ β2 INTINC	+ β3FDIINF	+ β4DEBT	+ β5EARN + β6CAPINT + ε

Abbreviations used to run the EViews test:

TASSET	=	Total Assets
INTINC	=	Interest Income
FDIINF	=	FDI Inflow
DEBT	=	Total Debt/ Liabilities
EARN	=	Earnings Per Share
CAPINT	=	Capital Intensity

5) Ordinary Least Squares (OLS)

In this study, Ordinary Least Squares (OLS) is used to carry out the regression analysis, by minimizing all squared deviations sums of the vertical distance between residuals and the estimated regression line, to ensure a line is fitted through observed variables points. Hence, a best fit line is one which makes sure all squared deviations from the data are at the minimum.

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6) Coefficient of Multiple Determination, R^2

The coefficient of multiple determination, R^2 is used to reflect the fraction of variations of Y, explained by the regression line. R^2 ranges from 0 to 1. The closer the estimated values of the regression model are to the observed values, the closer the coefficient of determination is to 1, the more accurate the regression model is.

7) Adjusted Coefficient of Multiple Determination, Adjusted R^2

The adjusted R only includes the number of explanatory variables in the model, solving the downside of the R^2. Therefore, adjusted R^2 is high only if the independent variables involved have a significant effect on the model. It is a better alternative test the regression model's significance, as it can measure how close the observed data are fitted to the regression line. Adjusted R^2 represents the dependent variable variation's percentage explained by the regression model.

8) Hypothesis Testing

After determining the overall fit of the model, the independent variables' significance towards the dependent variable should be tested. Hence, hypothesis testing decides whether to reject or do not reject a given hypothesis at a determined confidence level.

Step 1: **Set up the Null and Alternative Hypothesis, H_0 and H_1**
Step 2: **Select a Level of Significance= 10%** **Degree of Freedom** **= N- (k+1)** **= N- k - 1** **Determine the critical t-value, t_{α} from the t-table, according to the 2-tailed test column**
Step 3: **Run regression** **Obtain the estimated t-value, t** $t_k = \frac{(\hat{\beta}_k - \beta_{H_0})}{SE(\hat{\beta}_k)}$
Step 4: **Decision Rule:**
Step 5: **Apply Decision Rule: Compare t with t**
If H_0 is not rejected, the variable is insignificant.

Table 4: Hypothesis Testing Steps

5.8 p -Value

p-Value is another alternative to t-test. A p-value for a t-value refers to the probability of observing a t-score which is larger if the null hypothesis is true. To reject a null hypothesis, a low p-value is required.

The p-Value's decision rule is: Reject H0 if p-value < level of significance.

Figure 4: Hypothesis testing

IV. RESULTS AND DISCUSSION

1) Result on Estimated Model Fit

The more insignificant variables added into the model, the difference between R^2 and Adjusted R^2 increases.

		Public Bank Berhad	Maybank	Ambank	Bank Islam Malaysia Berhad	CIMB Islamic	OCBC Al Amin
	R-squared	0.998175	0.998175	0.918870	0.999716	0.982308	0.947699
	Adjusted R-squared	0.987227	0.989756	0.432008	0.998013	0.876513	0.633893
TASSET	t-Statistic	-9.86081	-3.637615	-1.371503	0.035162	1.991495	-0.07983
	p-Value	0.0643	0.1708	0.4011	0.9766	0.2963	0.9493
		<0.10- Significant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant
		-	-	-	+	+	-
INTINC	t-Statistic	9.129868	7.16421	-1.150052	39.32543	0.429484	0.048249
	p-Value	0.0695	0.0883	0.4556	0.0162	0.7417	0.9693
		<0.10- Significant	<0.10- Significant	>0.10- Insignificant	<0.10- Significant	>0.10- Insignificant	>0.10- Insignificant
		+	+	-	+	+	+
DEBT	t-Statistic	11.58477	-2.591326	0.668252	-0.671753	-2.035566	0.077618
	p-Value	0.0548	0.2345	0.6250	0.6234	0.2907	0.9507
		<0.10- Significant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant
		+	-	+	-	-	+
FDIINF	t-Statistic	-1.395094	4.13124	0.303828	5.655075	-0.955814	0.659075
	p-Value	0.3959	0.1512	0.8122	0.1114	0.5144	0.629
		>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant
		-	+	+	+	-	+
EARN	t-Statistic	-5.815763	-6.721004	-0.354370	-11.26711	0.30174	0.564708
	p-Value	0.1084	0.094	0.783700	0.0564	0.8134	0.6727
		>0.10- Insignificant	<0.10- Significant	>0.10- Insignificant	<0.10- Significant	>0.10- Insignificant	>0.10- Insignificant
		-	-	-	-	+	+
CAPINT	t-Statistic	-10.11562	-5.14201	0.440432	-5.615929	-1.540404	-0.414257
	p-Value	0.0627	0.1223	0.7359	0.1122	0.3666	0.75
		<0.10- Significant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant	>0.10- Insignificant
		-	-	+	-	-	-

Figure 5: EViews estimation results

Table 4: Fit of estimated model

Bank	*Estimated Model Fit*
Public Bank Berhad	Adjusted R^2 Value= 0.99 The Variation in independent variables explains 99% variation in the dependent variable. Therefore, 99% deviation from the mean has been explained by the model. Difference between R^2 and Adjusted R^2 is <0.01. Hence, the independent variables in the model are mostly significant in this case.
Maybank	Adjusted R^2 Value= 0.99 The Variation in independent variables explains 99% variation in the dependent variable. Therefore, 99% deviation from the mean has been explained by the model. Difference between R^2 and Adjusted R^2 is <0.01. Hence, the independent variables in the model are mostly significant in this case.

AmBank	Adjusted R^2 Value= 0.43 The Variation in independent variables explains 43% variation in the dependent variable. Therefore, only 43%deviation from the mean has been explained by the model. Difference between R^2 and Adjusted R^2 is <0.01. Hence, the independent variables in the model are mostly insignificant.
Bank Islam Malaysia Berhad	Adjusted R^2 Value= 0.99 The Variation in independent variables explains 99% variation in the dependent variable. Therefore, 99% deviation from the mean has been explained by the model. Difference between R^2 and Adjusted R^2 is <0.01. Hence, the independent variables in the model are mostly significant.
CIMB Islamic	Adjusted R^2 Value= 0.88 The Variation in independent variables explains 88% of the variation in the dependent variable. Therefore, 88% deviation from the mean has been explained by the model. Difference between R^2 and Adjusted R^2 is 0.12. Hence, some of the independent variables in the model are significant.
OCBC Al-Amin	Adjusted R^2 Value= 0.63 The Variation in independent variables explains 63% variation in the dependent variable. Therefore, 63% deviation from the mean has been explained by the model. Difference between R^2 and Adjusted R^2 is <0.37. Hence, many independent variables in the model are insignificant.

2) Discussion

Derivatives are important in helping companies to manage risk of the interest rates, currency exchange rates, and equity markets. For example, a company owing huge amounts of debt and the interest rate will be locked in its debt at a fixed rate, this company might opt for a derivative contract allowing it to swap interest rates with those companies that are seeking to switch from a fixed to a variable rate. Derivatives can also be used for speculative purposes to earn profits.

Most of the estimation results have shown a negative relationship between bank size and total asset derivatives. Even some research states that bank size has a positive relationship with the banks profitability, however it is not significant enough to influence the profitability for the banks, in comparison with the other variables tested. Hence, this variable was only significant in the estimation results for Public Bank Berhad.

The negative relationship between bank size and total asset derivatives can be due to the higher financial distress costs which are higher for smaller banks, as research has shown that smaller banks are more prone to higher bankruptcy, so they increase derivative assets to hedge the financial distress costs' risks. Besides, smaller banks might face higher transaction costs and information asymmetries, hence external finance raising will be more costly, and hedging is a better alternative.

Bank with the highest number of total assets is Maybank, followed by Public Bank, CIMB Islamic, Bank Islam and OCBC Al Amin. This makes sense, because Maybank actually owns 393 branches, followed by Public Bank

with 259 branches, AmBank with 175 branches, Bank Islam with 4 branches and the others subsequently. Hence, the biggest ownership of assets allows Maybank to cushion its' performance and profitability, and weather through the China economic crisis 2015-2016. Hence, banks can think of ways to consolidate and expand their sizes, for example through mergers and acquisitions which have been done by the larger banks such as Maybank.

V. CONCLUSION

Based on the overall estimation results, it was discovered that some of the independent variables are significant to explain the dependent variables, while some are not as discussed, due to the several limitations of the study. Derivatives is still a newer concept in some banks, and its usage is slowly maturing the banking and even non-financial industry. This research has provided more awareness and insights on derivative assets/corporate hedging practices among banks in Malaysia. It also provides insights and comparisons between commercial and Islamic banks, to decide on the determinants affecting the respective banks' overall performance and efficiency. According to findings of this research, efficiency of commercial banks is influenced by more independent variables, while Islamic banks are only influenced by lesser independent variables, due to the nature of its Islamic practices, which prohibits certain practices. However, despite the differences in the types of banks' explanatory models, the importance of derivatives in hedging risk exposures for the banks is undeniable. This study has provided a better understanding on the relationship between the independent variables: total assets, foreign direct investment (FDI) inflow, interest income, earnings per share, total debt and capital intensity in affecting the total asset derivatives of the banks in Malaysia.

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