

The impact of special purpose vehicle (Cagamas MBS) issues on the Malaysian corporate bonds market issues: analytical econometric study during the period 2004-2018

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Summary: This study aims to clarify the effect of special purpose vehicle on the issues of the Malaysian corporate bond market during the period 2004-2018 by studying the relationship between Cagamas Mortgage Backed Securities issue and the issuance of the Malaysian corporate bond market, which is among the most important financial market in Malaysia, Through an econometric study using autoregressive distributed lag approach during the study period, The study found a long-term equilibrium relationship between the two study variables, in addition to the negative impact of the issues of special purpose vehicle on the Malaysian corporate bond market issuance, due to the weak investor confidence in the financial markets after the mortgage crisis.

Keywords: Special Purpose vehicle; Cagamas Mortgage Backed Securities issue; Malaysia corporate bond Market; cointegration ; Autoregressive Distributed Lag approach.

Jel Classification Codes : C22 ; G20 ; L85.

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I-Introduction :

The corporate bond market is one of the most important financial markets, which has witnessed remarkable development in both developed and emerging markets including the Malaysian market. Therefore, the Malaysian government has worked to develop and upgrade it, which led to the diversity of its traditional and Islamic tools, the multiplicity of its principles, and the increasing and diversification of risks to which interferences are exposed in it, which prompted financial institution to rely on another technology of financial engineering namely special purpose vehicle, in order to reduce the risks resulting from dealing with its tools, and increasing the volume of transaction and financial assets in circulation.

In this context, the special purpose vehicle has known a wide spread in various financial market in Malaysia. Mortgage Company Cagamas Mortgage Backed Securities is among the most important special purpose vehicle that has great importance in the secondary market for mortgage in Malaysia. due to its great impact on its performance.

In light of the above, this study examines the effect of special purpose vehicle issues on the issuance of the Malaysian corporate bond market, by answering the following question:

What is the effect of special purpose vehicle (Cagamas MBS) issues on the Malaysian corporate bond market issuance during the period 2004-2018?

The problematic of the Study is subdivided into the following questions:

- What is meant by special purpose vehicle?
- What are the motives for using special purpose vehicle? And what are their characteristics?

- What is the nature of the relationship between special purpose vehicle (Cagamas MBS) issues and the Malaysian corporate bond market issuance during the period 2004-2018?

Study hypotheses:

Based on the problematic of this Study and secondary questions, the following hypotheses can be formulated:

- Cagamas MBS special purpose vehicle issues greatly affected the issuance of Malaysia corporate bond market during the period 2004-2018;
- The existence of a long-term inverse and complementary relationship between Cagamas MBS special purpose vehicle issues and Malaysian corporate bond market issuance during 2004-2018.

The importance of the study:

The subject of the study derives its importance from the importance of companies with a special purpose in influencing and revitalizing the bond market, through the mobilization of various financial resources, and diversification of the investment tools presented therein, which are characterized by a high degree of liquidity, which activates their performance and facilitates the process of their circulation. The special purpose vehicle are also among the most important interferers in the securitization process, which witnessed a huge development in the financial markets, especially before the global financial crisis in 2008, so we must get to know these companies, and show the relationship between their issuances and the issuance of the bond market.

Previous studies:

Our study is an aspect of other topics that dealt with important and different axes of it, the following is a presentation of the most important:

- Sanaa Nizar (2016) studied the role of both Islamic misconduct and traditional banking securitization in activating the capital market, through an applied study For the state of the Malaysian market, the study concluded that banking securitization does not have a significant impact on the Malaysian financial index, and therefore it has no effective role in the Malaysian capital market, while Islamic bonds have a major role in activating the Malaysian capital market.¹
- A study by Ali Hilal Musharraf Al-Baqom (2015) demonstrated the role of the special purpose company in issuing Islamic Sukuk, which includes underwriting, trading, and liquidating assets, systems and instructions, And the extent of awareness among workers in Islamic financial institutions operating in the Kingdom of Bahrain of the concept of special-purpose companies. The most important results were the presence of a significant impact of the extent of awareness of workers in Islamic financial institutions in Bahrain of the concept of the company with a special purpose, and the presence of a significant impact of the role of special purpose vehicle on the operations of underwriting, trading and liquidating assets, in addition to a dispute between the jurists in the legal conditioning of the company Special purpose and its relationship to the company established.²
- Ali Rosalan and all (2013) demonstrated the importance of using of residential mortgage-backed securities (RMBS) by Cagamas to finance government staff housing in Malaysia has the ability to increase its net assets value even during global financial crisis 2007-2009, The findings show that the use of RMBS have demonstrated its remarkable ability to roll-over housing loans to the civil servants in Malaysia by securitizing its highly graded RMBSs as long-term Cagamas bonds. The findings support past studies on benefits of asset securitization and interestingly verifying that residential MBS provides highly rated long-term investment to bank institutions, insurance companies and fund managers and increases its net assets value of CMBS.³
- A study by Mei Feng Katz (2008) aimed to investigate the use, determinants, and earnings effects of special purpose vehicles (SPVs). Based on a proxy of SPV activity that can be applied to a broad cross-section of firms over time, the study find a two-and-a-half fold monotonic increase in the percentage of firms using at least one SPV during the eight-year period from 1997 through 2004. Tobit regressions of the determinants of SPV use show that SPV activity increases with financial reporting incentives and economic and tax motivations, but strong corporate governance tends to mitigate their use. In addition, the evidence is consistent with SPVs arranged for financial reporting purposes being associated with earnings management, whereas the same does not appear to be the case for SPVs set up mainly for economic, tax, and other reasons.⁴

In general, the literature shows that the effect of special purpose vehicle on the issue of the Malaysian corporate bond market vary depending on the period studied, the econometric methods used, and the country.

I-1. The conceptual framework for special purpose vehicle:

I-1.1. Definition of special purpose vehicle:

There are many definitions of special purpose vehicle:

- the special purpose vehicle as a separate subsidiary company set up to contain investments, while Price Waterhouse Coopers defined it as “an off-balance sheet vehicle (OBSV) comprised of a legal entity created by the sponsor or originator, typically a major investment bank or insurance company, to fulfill a temporary objective of a sponsoring firm.”⁵
- Special purpose vehicle is a legal entity created by a firm (known as the sponsor or originator) by transferring assets to the SPV, to carry out some specific purpose or circumscribed activity, or a series of such transactions. SPVs have no purpose other than the transaction(s) for which they were created, and they can make no substantive decisions; the rules governing them are set down in advance and carefully circumscribe their activities. Indeed, no one works at an SPV and it has no physical location.⁶
- a special purpose vehicle is a legally distinct entity with a limited life created to carry out a narrow pre-defined activity or series of transactions for a “sponsor” company.⁷
- the special purpose vehicle as business entities that exist for a narrow purpose, such as securitizing a portfolio of receivables or financing the acquisition of a building.⁸

I-1.2. Characteristics of special purpose vehicle:

The characteristics of special purpose vehicle are as follows:⁹

- **It is a fenced entity:** The SPE is a “Self- Fenced organization” or “Orphan Entity” with its ownership share settled on a trust, There are legal mechanisms to isolate assets, liabilities, and risks associated with the SPE, which are essential for most of the SPE activities, including: securitization, and project financing. Another key aspect is the “bankruptcy remoteness” principle, which isolates the SPE from the risk of bankruptcy arising from its originators.
- **It has limited and pre-defined purposes:** SPEs are instrumental in achieving specific objectives determining their lifetime. Once the SPE performs the predefined purposes, it ceases to exist; for example, it becomes another type of organization (this sometimes happens in PPP megaprojects). In legal terms, the SPEs have “Scope limitations” in accordance with their statutes and contractual provisions. Typically, in megaprojects, the “shareholders agreement” sets the predefined purposes.
- **It has a legal personality:** The SPE is a legally recognized entity . Depending on its jurisdiction, it can assume one of the possible legal forms: trusts, partnerships, limited liability partnerships, corporations, and limited liability companies . The legal personality is an essential status to enable the other distinctive features.
- SVPs are different from normal firms in terms of her actual operation, their specific objectives and the contracting environment in which the SVPs are established. These differences implicate the natures of their assets, liabilities, revenues and expenses.¹⁰

In addition to the previous characteristics, we mention the following: ¹¹

- They are thinly capitalized;
- They have no independent management or employees;
- Their administrative functions are performed by a trustee who follows prespecified rules with regard to the receipt and distribution of cash; there are no other decisions;
- Assets held by the SPV are serviced via a servicing arrangement;
- They are structured so that they cannot become bankrupt, as a practical matter.

I-1.3. Motivations for the Use of SPEs:

Among the motives for using special purpose vehicle are the following: ¹²

- **Funding and Liquidity:** in addition to risk management, another key motivation for originators to use special purpose vehicle is to access additional sources of funding and liquidity and to reduce funding costs. One of the key functions that special purpose vehicle serve is to allow the originating institution to transform less liquid, non-rated exposures into more liquid, rated securities. This transformation can provide the issuing institution enhanced liquidity through an expanded funding base and lower funding costs.

- **Pre-funding certain payments:** special purpose vehicle could be used to pre-fund certain payments resulting from demographic expectations or future commitments. This type of arrangement is often used to secure future acquisition of fixed assets or to provide for future expense in areas such as health, social protection and education resulting from dramatic demographic changes. The transferor invests the present value of the future commitment in special purpose vehicle. In exchange, the special purpose vehicle issues securities to the transferor with maturity structures that match the expected future commitment. The special purpose vehicle invests funds acquired from the transferor to yield a return. Such financial structuring would result in an implicit future commitment (liability) becoming explicit within the special purpose vehicle.
- **Facilitating market development:** securitization creates asset markets that are more complete by introducing new categories of financial assets that suit investors risk preferences and by increasing the potential for investors to achieve diversification of investments and benefits. In meeting the needs of different market segments, securitization transactions can generate gains for both transferors and investors. The purpose of securitization is often to ensure marketability of financial assets. Securities issued by the special purpose vehicle can be sold in the secondary market, thereby contributing to the liquidity in financial markets.
- **Gaining efficiency:** entities could enter into special purpose vehicle agreements to benefit from specialized knowledge and expertise not available within the transferor. This type of arrangement often prevails in governments which seek to benefit from the knowledge and expertise of the private sector in specific development projects. Specialization within the special purpose vehicle could lead to efficiency gains with regards to production, services, management and eventually yield on investment. special purpose vehicle created by governments for this purpose often take the form of a public-private partnership.¹³
- **Risk Management:** special purpose vehicles minimize the project risks that are assumed by it and to pass them through the contractual structure to stakeholders that are best able to assess and manage risks. The establishment of SPV for capital-intensive projects is prompted by its ability to spread risk and the expanded borrowing capacity for new investment. Special purpose vehicle also allow institutions to manage their liquidity by providing additional sources of funding.¹⁴

I-1.4. Legal Status of Special Purpose Vehicles:

Legally, a special purpose vehicle can be established in many forms. The differences between these legal structures of special purpose vehicles are explained below:¹⁵

- **Corporation:** a legal entity that is separate and distinct from its owners. It is created as an artificial person to carry on the business. The legal person status of the corporation gives the business perpetual life. Firms may prefer establishing a corporation due to its limited liabilities, since its liability for damages is limited to the assets of the corporation. Therefore, the shareholders and officers of the corporation are protected from any personal claims, unless they commit fraud.
- **Trust:** a trust is a legal form where a fiduciary form is created for some property. This means that there is a relationship between a sponsoring firm and a trustee. Since sponsoring firms want to benefit from certain assets without being the owner of the assets (for legal, regulatory, taxation, or other reasons), a trust legal formation of a special purpose vehicle may be a preferred legal-structure establishment for sponsoring firms, since they would benefit from the assets owned by the special purpose vehicle without legally owning them.
- **Partnership:** a partnership is a for-profit business association of two or more persons. In this type of special purpose vehicle, each partner contributes agreed-upon payments or assets for an agreed amount of shareholding or ownership.
- **Limited Liability Company:** a limited liability company is a form of partnership, in which the maximum amount a partner may lose or be charged in case of claims being made against the company or in the case of bankruptcy is limited to the amount invested by each partner. In other words, the owners of the company are legally responsible for its debts only to the extent of the amount of capital they invested.
- **Orphan Special Purpose Vehicles:** an orphan special purpose vehicle is neither owned nor controlled by the person for whom the special purpose vehicle is being established.

I-2. Introducing the company under study:

Cagamas MBS Berhad was incorporated on 8 June 2004 for the purpose of undertaking the purchase of mortgage assets and Islamic mortgage assets from the Government, and the issuance of

residential mortgage-backed securities and Islamic residential mortgage-backed securities to finance the purchases.¹⁶ (See table 1)

Cagamas Berhad incorporated a wholly-owned subsidiary, Cagamas MBS Berhad (CMBS), as a limited purpose entity to solely:¹⁷

- purchase the Government's staff housing loans;
- issue *Residential Mortgage Backed Securities* (RMBS).

I-3. The corporate bond market in Malaysia:

I-3.1 definition of The corporate bond market in Malaysia:

The corporate bond market in Malaysia is one of the most advanced in Asia. The so-called private debt securities (PDS) market is a large and diverse market supported by sophisticated reporting and settlement systems, it encompasses ringgit denominated issues from quasi-government entities, financial institutions and nonfinancial companies.¹⁸

I-3.2 Importance of a functioning corporate debt market:

The period of strong economic growth in the early 1990s created high demand for funds from the corporate sector. Therefore, the development of the corporate bond market was aimed at meeting the financing needs of the expanding Malaysian economy, particularly those of privatised infrastructure projects. Specifically, the PDS market was intended to provide an alternative means of financing to bank borrowings, and complement the more mature and sophisticated market in MGS and equities. The PDS market would also serve as a new avenue for savings in a wide range of financial assets, in the context of a high domestic saving rate.

It is a well-recognised fact that a diversified financing structure, comprising financial intermediaries from the equity, bond and banking markets, is needed for an economy to allocate resources in the most efficient manner. Such diversification also provides businesses the opportunity to address capital needs more effectively, and allows corporates to match their asset-liability profiles. A well-developed corporate bond market also plays a vital role in risk diversification of the financial system, and adopting a market mechanism in the allocation and pricing of credit would also ensure greater efficiency in the allocation of funds to borrowers.¹⁹ The table 2 shows the size of residential real estate assets in Malaysia during the period (2004-2018).

Through the table, we note that the volume of corporate bond issue witnessed a decrease during the year 2005, where its volume was estimated at RM17.34 billion, but during the period 2006-2008 the size of corporate bond issuance began to rise, in 2008 it reached 96.8, so that the size of the bond issuance is known Companies decreased during the years 2009, 2010 and 2011 due to the financial crisis of 2008, which led to weak investor confidence in the financial markets, then the issue size increased again during the 2011 – 2017.

II- Methods and Materials:

II -1. Sample and data:

The data employed in this study are annual data covering the period 2004-2018. The main types of data are taken from Cagamas annual reports, and securities commission malaysia annual reports .

II -2. Variables of the study:

The most important goal of this empirical study is to clarify the effect of special purpose vehicle issue on the issuance of the malaysian corporate bond market. Data includes the Malaysian corporate bond market issuance as dependent variable and special purpose vehicle issue as independent variable. Variables with their symbols are given in table (3).

II –3. Model design:

This study uses the autoregressive distributed lag (ARDL) approach, suggested by Pesaran and Shin (1995); Pesaran and Shin (1999) and extended by Pesaran and al (2001). Autoregressive Distributed Lag (ARDL) cointegration test is used due to a number of econometric advantages compared to other cointegration procedures, such as, the Granger (1981), Engle and Granger (1987), and Johansen and Juselius (1990). It allows the long and short-run parameters of the model in question to be estimated simultaneously yet evade the problems posed by non-stationary data. In addition, and according to Narayan (2004), the small sample properties of the bounds testing approach are far more superior to that of multivariate cointegration. Also, there is no need to determine the order of the integration among the variables in advance. Other approaches however, do require that variables have the same order of integration.

III -Results and discussion :

III -1. Order of Integration and Stationary of Serial:

Non-stationary in data time series can include the spurious correlation error into the econometric methodology. A chronological serial is stationary if not contain no trend and intercepts, so we must establish the order of variables integration, we say that variables are integrate in order p if her deference's in order p is stationary so we shall be checking are this variables got unit root or not. That means her deference's in order p is null growth. There are many tests permit to put on evidence the stationary of serial. In this study we use augmented Dickey-Fuller test (ADF), in order to ensure that the variables are not $I(2)$. The ADF and PP tests results for both level and first difference tests with their significance levels are presented in Table (4).

The results depicted in table (4) revealed that the variables are stationary in $I(1)$. On the based Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) Tests results, we select to use the ARDL technique to perform the long term and short-run analysis. The ARDL approach is preferable when variables have mixture of results at stationary in level $I(0)$ and stationary in $I(1)$. It is intimate that among the variables; no one is integrated of order two. Thus, our result is free of spurious regression.

III -2. ARDL Model Estimation:

In recent times, an emerging body of work led by Pesaran & Shin (1999) and further extended by Pesaran and al (2001), has introduced an alternative cointegration technique recognized as the Autoregressive Distributed Lag or ARDL bound test. The advantage of the ARDL model is flexible and provides both short- and long-run relationship. Table (5) provides if there is a short run relationship among variables or not.

The results of the model estimation show that special purpose vehicle issue affected negatively corporate bond market issuance in different lag, which is RMBS (-2), in addition to the constant, which mean that there is a short run from the independent variables to the dependent variable, because the performance of subprime MBS was positively correlated with the performance of the mortgage market and the value of subprime mortgages, but when the subprime mortgage market collapsed after the mortgage crisis of 2008 many investors and financial institutions like banks, which all invested in these securities, faced huge losses which resulted rollover effects to other credit risk-shifting products that were made of subprime mortgage loans, a detrimental impact on the Malaysian corporate bonds market issues.

The statistical tests of the regression equation indicate that the estimated model is good, as the coefficient of determination is equal to 0.66, meaning that the model interprets 66.01% of the changes in the rate of corporate bond market issuance. Furthermore, the results indicate that the relationship between the dependent variable and the explanatory variables is not false; the value of F-statistics has a significant value of 3.42.

III -3. Optimal Lag Length Selection:

Before estimating the ARDL model, we must determine the optimum degrees delays for the model. For this purpose, the Akaike Information Criterion (AIC) was used to select the number of lags required in the cointegration test. The lag length chosen are showed in figure (1). The lag order of model based on Akaike Information Criterion (AIC) is: ARDL(1, 2); The ARDL model can be specified as:

$$\Delta pds = C + \alpha_1 pds_{t-1} + \alpha_2 rmb_{t-1} + \beta_1 \Delta pds_{t-1} + \sum_{i=1}^2 \beta_{2i} \Delta rmb_{t-1} + \varepsilon_t$$

Where :

Δ : the first-difference operator.

β_1, β_2 : The coefficients of short-run relationship.

α_1, α_2 : The coefficients of long-run dynamic relationship.

Ln: the natural logarithm

ε_t : stochastic error term.

C: Intercept of the function.

t shows time.

III – 4. Bound Test for Cointegration:

To determine the existence of long run relationship among the variables of the study, the Pesaran, Shin & Smith (2001) Bound test procedure was used. Narayan (2004) tabulated two sets of critical values, the upper bound critical values refers to the I(1) series, meaning that there is cointegration among the variables and the lower bound critical values to the I(0) series, meaning that there is no cointegration relationship between variables. For some significance level, if the F-statistics falls outside the critical bound, a conclusive inference can be made without considering the order of integration of the explanatory variables. The bound test results were presented in Table (6).

The bound test results indicate that the F-statistic value is 13.76, which is more than the upper bound critical value at all levels of significance. The bounds test results support the presence of cointegration relationship among the variables running from the independent variables to dependent variable.

III -5. Cointegration of long run relationship:

The two popular cointegration tests in applied time series modeling are the Engel & Granger (1987) cointegration test and the Johansen & Juselius (1990) cointegration test. The Engel & Granger cointegration test is adopted in cases of single equation models, while, the Johansen & Juselius cointegration test is used for system equation models. The autoregressive distributed lag (ARDL) model is based on single equation modeling Pesaran & al (2001). For the purpose of our study we chose the Autoregressive Distributed Lag. The long-run regression results are presented in table (7).

As show the results in table (7), the error correction estimator is significant at 1%, which support the presence of long - run relationship between variables (ECT =-1.54), this means that when corporate bond market issuance deviate from his equilibrium value in the short period (t-1), it correct which was equivalent to 154 % of this deviation in the period (t). This ratio reflects the speed of return to the equilibrium position after the impact of any shock on the model as a result of the change in special purpose vehicle issue. Furthermore, the variable special purpose vehicle issue was statistically significant determinants of corporate bond market issuance. The long-term coefficients for the model show that special purpose vehicle issue have a very significant effect on corporate bond market issuance, as an decrease of special purpose vehicle issue by 1unit will increase corporate bond market issuance by 13.28 unit, because when the mortgage market collapsed after the mortgage crisis of 2008, many financial firms that created those SPVs were forced to repurchase the mortgage debt of their SPVs back on their balance sheets, which resulted in immediate losses. These write downs of mortgage debt results in the decrease of value on the bank's assets as well. When the value of these assets decreased the bank had less assets compared to its debt and equity holdings, which meant that the liabilities of the bank increased compared to its devalued assets. Banks have dividend and interest payments to its equity and debt holders and this will not change when the banks face huge losses from their devalued assets, represented by write downs of subprime mortgage loans. This problem put many financial firms in financial distress, This led to damaged investor confidence, declines in credit availability and affected solvency of many large institutions, which has a negative impact on the Malaysian corporate bonds market issues.

III -6. Diagnostic tests:

Now, we perform some diagnostic tests to ensure that the model is best fit and the stability of the model.

- **Serial Correlation LM Test:** the serial correlation problems in the data were examined through the Breusch Godfrey serial correlation LM test. The results of autocorrelation test are not significant at the 5 percent level (table 8). This means there exists no serial correlation problem.

- **Heteroskedasticity Test:** The Breusch Pagan-Godfrey test was applied to examine the problem of heteroskedasticity in the residuals. The examined results of heteroskedasticity indicate that no problem of heteroskedasticity exists in our data based on the calculated P-value of chi-square and fisher. (See table 9)

- **The test for normality:** The result of the test for normality in table figure 2 demonstrates that the error term is also proved to be normally distributed.

- **Test of parameters stability:** To make sure, that the data used in this study, does not contain any structural changes, we should use one of the appropriate tests CUSUM and CUSUM of squares, which developed in order to clarify the extent of stability and consistency of long-term parameters with short-term parameters. If the plot of CUSUM-SQ and CUSUM statistic stays within 5% significance level, then the estimated coefficients are said to be stable. A graphical presentation of this test for our ARDL model is provided in figures 3 and 4 .

The results in the graphs show that the curve CUSUM within critical limits is 5%, as well as for the curve CUSUM OF SQUARES located within the critical area, which explains that the model is stable at 5%.

IV -Conclusion:

This study clarified the effect of special purpose vehicle on the issuance of the Malaysian corporate bond market. We have applied ADF test to test stationarity of the variables. Further, the ARDL bounds testing approach to cointegration was employed to investigate the long and short-run relationships between the variables. The results are:

- The special purpose vehicle (Cagamas MBS) issues affect negatively the Malaysian corporate bonds market issues in different lag in addition to the constant, which mean that there is a short run from the special purpose vehicle (Cagamas MBS) issues to the Malaysian corporate bonds market issues. In addition, The F-statistic (3.42) is statistically significant at the 5% level. This means that the overall model is statistically significant in explaining the variations in the Malaysian corporate bonds market issues, as many phenomena do not immediately respond to their determinants, but rather are the result of historical accumulations.

- The coefficient of multiple determination which is 0.66 is high and indicates a high goodness of fit. It implies that the special purpose vehicle (Cagamas MBS) issues explain 66% of the total variations in Malaysian corporate bonds market issues in the short-run, *while the rest of the changes are due* to other factors not included in the model used. because the performance of subprime MBS was positively correlated with the performance of the mortgage market and the value of subprime mortgages.

- The bounds test for cointegration showed the existence of cointegration between the Malaysian corporate bonds market issues and the special purpose vehicle (Cagamas MBS) issues. Thus, there exists a long-run relationship between the Malaysian corporate bonds market issues and the special purpose vehicle (Cagamas MBS) issues, which means the two variables tend to move together towards to a steady state and any deviations because of shock the system will have tendency to restore back.

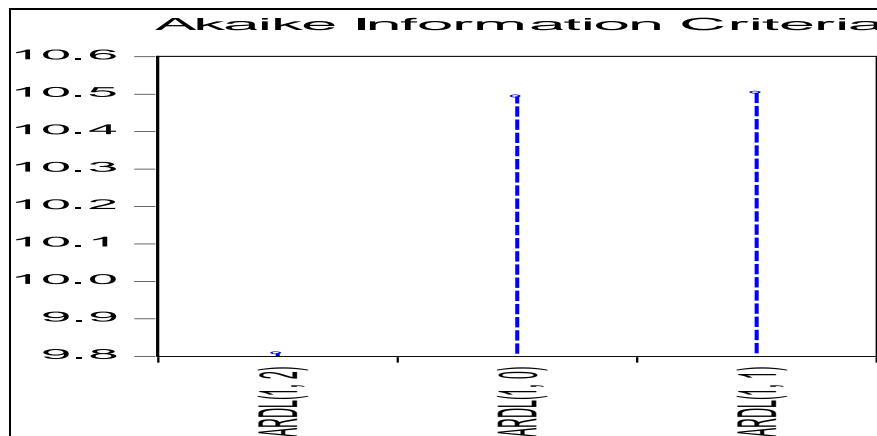
- The error correction estimator is significant at 1%, which support the presence of long - run relationship between variables (ECT =-1.54), This means that when the Malaysian corporate bonds market issues deviate from his equilibrium value in the short period, it correct which was equivalent to 154% of this deviation in the period (t). This ratio reflects the speed of return to the equilibrium position after the impact of any shock on the model as a result of the change in the special purpose vehicle (Cagamas MBS) issues.

- The special purpose vehicle issue RMBS was statistically significant determinants of corporate bond market issuance. The long-term coefficients for the model show that RMBS have a very significant effect on PDS, as an decrease of special purpose vehicle issue by 1unit will increase corporate bond market issuance by 13.28 unit due to the weak investor confidence in the financial markets after the mortgage crisis, because after the mortgage crisis of 2008 a series of bank insolvencies began the problem was that SPVs, which were mainly concerned with the

securitization of subprime mortgages, which were mortgages that lost their value during the financial crisis, which in the end resulted in financial distress and bankruptcy of several banks that were the creators of those SPVs. Many sub-prime borrowers could not meet their mortgage payments. The SPVs were therefore unable to pay the specified return to investors. The sponsoring banks had to announce losses and in many cases were forced to bail-out the bad debts accrued in affiliated SPVs. This led to damaged investor confidence, declines in credit availability and affected solvency of many large institutions, a detrimental impact on the Malaysian corporate bonds market issues.

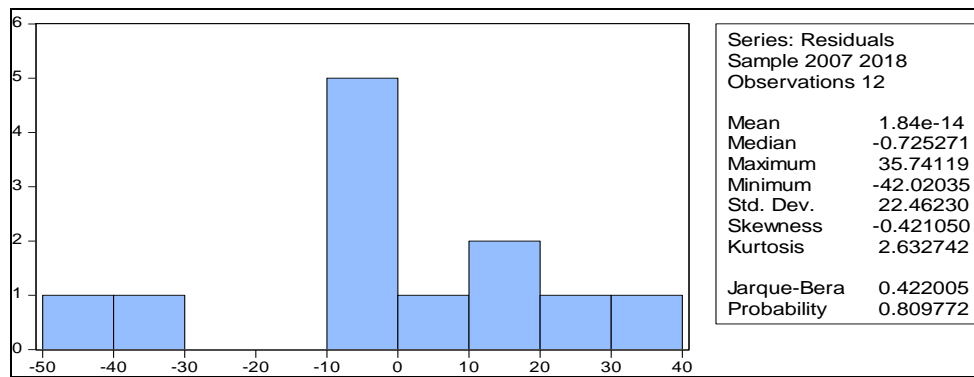
- Appendices:

Figure (1): Optimal Lag Length Selection



Source: Author using Eviews 09.

Figure (2): Histogram – normality test



Source: Author using Eviews 09.

Figure (3): The cumulative sum of recursive residual test

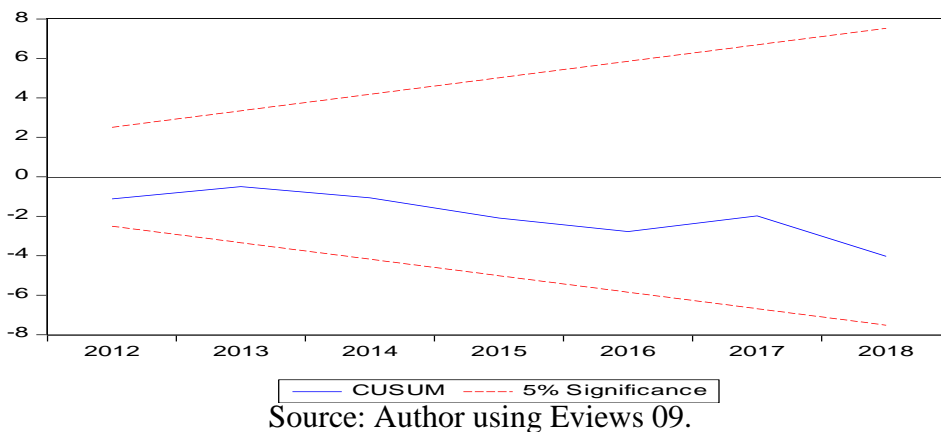


Figure (4): The cumulative sum squares of recursive residual test

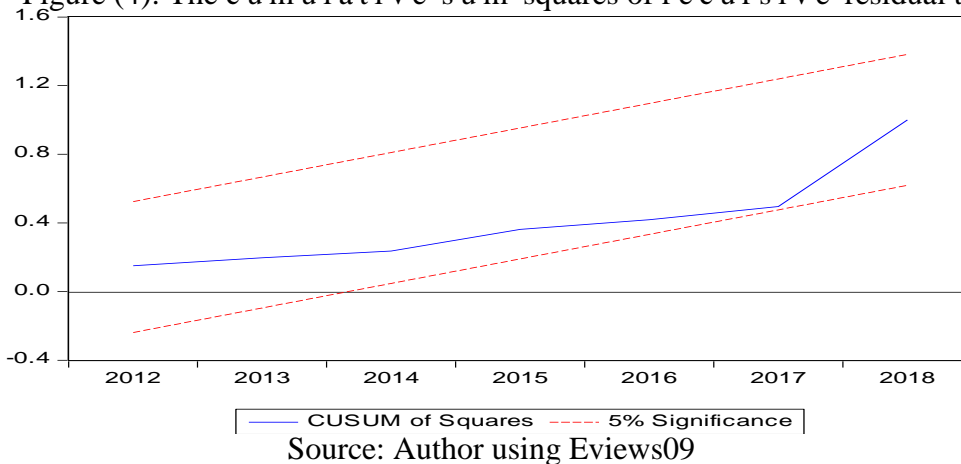


Table (1) : the issue size of Cagamas MBS in Malaysian market during the period 2004-2018

year	cagamas MBS issue
2004	1.555.0
2005	3.615.0
2006	3.615.0
2007	5.445.0
2008	5.220.0
2009	4.902.7
2010	4.135.4

2011	3.842.8
2012	3.195.3
2013	3.195.3
2014	2.464.5
2015	2.143.5
2016	2.143.5
2017	1.270.3
2018	1.270.3

Source :Cagamas, annual reports 2018, 2015, 2012 and 2011.

Table(2): The issue size of corporate bonds in Malaysian market

year	Issue size (billion)
2004	32.68
2005	17.34
2006	33.81
2007	37.50
2008	96.8
2009	23.54
2010	23.26
2011	30
2012	32.21
2013	48.45
2014	42.08
2015	70.13
2016	77.26
2017	93.76
2018	38.9

Source :securities commission malaysia, annual reports 2018, 2016, 2014, 2012, 2010,2008,2006 and 2004.

Table (3): Variables of study

Variables	symbol	type
the Malaysian corporate bond market issuance	(pds)	Dependent
special purpose vehicle issue	(RMBS)	Independent

Table (4): Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) Test Results

	At Level			1 st Difference		
	With Intercept	With Intercept	With	With Intercept	With Intercept	With
(pds)	-2.44 (0.06)	-3.69 (0.06)	-0.16 (0.6)	-4.43 (0.007)	-4.14 (0.03)	-4.87 (0.0002)
(RMBS)	-0.47 (0.86)	-2.62 (0.27)	-0.75 (0.36)	-3.24 (0.04)	-4.07 (0.03)	-3.28 (0.005)
	1%	-4.05	-4.99	-2.75	-4.20	-5.12
	5%	-3.11	-3.87	-1.97	-3.17	-3.93
	10%	-2.70	-3.38	-1.60	-2.72	-3.42

Source: Author computation using Eviews 09.

Table (5): ARDL Model Estimation

Dependent Variable: PDS				
Method: ARDL				
Dynamic regressors (2 lags, automatic): RMBS				
Fixed regressors: C				
Selected Model: ARDL(1, 2)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
PDS(-1)	-0.540579	0.293646	-1.840918	0.1082
RMBS	-1.805107	6.619895	-0.272679	0.7930
RMBS(-1)	7.738733	9.061955	0.853981	0.4214
RMBS(-2)	-26.39775	8.526581	-3.095936	0.0174
C	322.9102	68.30782	4.727280	0.0021
R-squared	0.661538	Mean dependent var	121.5792	
Adjusted R-squared	0.468132	S.D. dependent var	38.60997	
S.E. of regression	28.15799	Akaike info criterion	9.807876	
Sum squared resid	5550.106	Schwarz criterion	10.00992	
Log likelihood	-53.84726	Hannan-Quinn criter.	9.733072	
F-statistic	3.420451	Durbin-Watson stat	2.375524	

Source: Author computation using Eviews 09.

Table (6): ARDL bounds Test

ARDL Bounds Test		
Included observations: 12		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	k
F-statistic	13.76227	1
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	4.04	4.78
5%	4.94	5.73
2.5%	5.77	6.68
1%	6.84	7.84

Note: k is the number of regressor for dependent variable in ARDL model.

Source: Author computation using Eviews 09.

Table (7): ARDL Cointegrating and Long Run Form

ARDL Cointegrating And Long Run Form				
Dependent Variable: PDS				
Selected Model: ARDL(1, 2)				
Sample: 2005 2018				
Included observations: 12				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RMBS)	-1.805107	6.619895	-0.272679	0.7930
D(RMBS(-1))	26.397749	8.526581	3.095936	0.0174
CointEq(-1)	-1.540579	0.293646	-5.246376	0.0012
Cointeq = PDS - (-13.2834*RMBS + 209.6031)				
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
RMBS	-13.283398	3.037536	-4.373084	0.0033
C	209.603140	20.525255	10.211963	0.0000

Source: Author computation using Eviews 09.

Table (8): Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.538809	Prob. F(2,5)	0.6139
Obs*R-squared	2.127710	Prob. Chi-Square(2)	0.3451

Source: Author computation using Eviews 09.

Table (9): Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.364644	Prob. F(4,7)	0.8268
Obs*R-squared	2.069252	Prob. Chi-Square(4)	0.7230
Scaled explained SS	0.574823	Prob. Chi-Square(4)	0.9658

Source: Author computation using Eviews 09.

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