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Sectoral Impact of Bank Credit in Malaysia: ARDL Modelling Approach

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ABSTRACT

This study investigates the sectoral impact of bank credit on economic output by analysing the long- and short-run effects of bank credit on the output of five major economic sectors in Malaysia. The sectors are the agriculture, manufacturing, mining and quarrying, construction and services. It employed quarterly data from 1997Q1 to 2014Q4 and adopted the ARDL and ECM approaches. The results revealed that bank credit has uneven impact on the economic sectors, with significant effects, particularly in the short run on the mining and quarrying, and manufacturing sectors, but no effect on the agriculture sector. In contrast, bank credit is found to have larger long-run impact on output of the construction and services sectors compared to the short run. Hence, the results suggest the importance of considering the sectoral-specific characteristics in extending bank financing to ensure the effectiveness of financing in supporting the growth of the sector. As for the agriculture sector, concessionary financing is needed since it is shown that the sector is not adequately being served by the banking system.

Keywords: Financial Systems, ARDL, Bank Credit, Economic Sectors, Malaysia

INTRODUCTION

A stable and developed financial system is extremely important to enable it to play an effective role of allocating financial resources to the deserving economic units. Financial development involves improvement in the functions of the financial system including mobilising and pooling of

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savings, producing information needed to aid in investment decisions, monitoring of investments, facilitating trading and exchanging of goods and services, as well as diversifying and managing of risks. These specific functions of the financial system may influence the savings and investment decisions, affecting their efficiencies, and hence, contributing to better economic growth (Levine, 2004).

Bank credit is a significant source of funds to the economy, particularly the private sector enterprises and constitutes a substantial portion of the total financing to private sector, especially in developing countries. For instance, prior to the Asian financial crisis 1997/1998, the Malaysian financial system was characterised by the dominance of the banking sector and a less-developed capital market. Consequently, the private sector firms relied heavily on bank loans as their source of financing. In the post-crisis period, as a result of a series of financial restructuring programs, the Malaysian financial system became diversified and saw the emergence of deep and liquid debt market, which accounts for an increasing share of total corporate financing (Bank Negara Malaysia [BNM], 2011). This has resulted in a decline in bank credit as a source of corporate finance. The real economic sectors are expected to respond differently to this evolving trend in the financial system, especially in effort to reduce the dominance of the banking sector in financing the economy.

The aggregate approach in the finance-growth literature has limited ability to provide a deeper understanding of the nexus between the financial and real sectors. On the contrary, the micro-based approach (industry and firm level analyses) explores the several potential channels through which finance influences growth. This could capture more specific aspects of the finance-growth relationship. Allen and Ndikumana (2000) highlighted that given the fact that it is difficult to observe the efficiency of new investments in the data on private credit, the true effects of finance on output can then be revealed by industry-specific information. Through this, possible impact patterns and degree of interaction between the financial sector and various segments of the real sector can be identified. The present study seeks to bridge this gap in the literature by undertaking empirical investigation on the differential impacts of bank credit on specific sectors of the Malaysian economy, namely, the agriculture, mining and quarrying, manufacturing, construction and service sectors.

LITERATURE REVIEW

In the specific context of Malaysia, Ang and Mckibbin (2007) explored the relationships between financial liberalisation, financial development and economic growth by utilising time series data over the 1960 to 2001 period. The results from the co-integration and causality tests suggested that financial liberalisation stimulated the development of the financial sector, and financial deepness and economic growth were found to have positive relationship. Similarly, Majid (2008) investigated the

relationships between financial development and economic growth in Malaysia in the post-1997 crisis period, i.e., from 1998 to 2006. By employing the ARDL approach and Granger causality test, the study revealed that there is a long-run relationship between financial depth and economic growth. By using a variety of financial development indicators, Dufrenot, Mignon, and Peguin-Feisolle (2010) revisited the evidence of co-integration between financial sector and the real economy in 80 countries. The results showed that financial development positively determined economic growth in industrialised countries in the 1980-2006 period. However, in developing countries, the effect of finance on economic growth was found to be negative. The negative results for the developing countries might be due to the blind implementation of financial liberalisation policies in the presence of managed exchange rate regimes, unstable prices and fiscal deficits.

The aggregate approach adopted in the above studies made a strong assumption regarding the impacts of financial development on the real economy; that financial development affects all sectors in the economy uniformly. This generalisation has important flaws since different economic sectors have unique financial requirements, thus responding differently towards sources of finance. This highlights that there is a need for industry level studies on finance and growth. Fafchamps and Schündeln (2013) tested whether firm expansion was affected by local financial development in Moroccan manufacturing enterprises from 1998 to 2003 and found that the availability of locally-sourced financing from the banking sector was strongly associated with faster growth for small and medium-size firms in potentially expanding sectors. Further evidence indicated that pre-existing firms needed credit to mobilise investment funds with the objective of reducing labour costs, indicating that financial intermediation led to adoption of capital intensive techniques of production by firms.

The extent to which financial development enhances output growth in a firm or specific industry would very much depend on the level of dependence on external finance as against internal finance, as well as how much the costs of borrowing are reduced by financial development. Taking this into account, Rajan and Zingales (1998) examined whether industries that need external financing most develop faster in countries whose financial markets are more developed. Using data in 43 countries from 1980-1990, the study found evidence supporting this proposition in a large sample of countries. Financial development is shown to reduce costs of external finance and consequently improves investment, capital accumulation, and hence, results in higher economic growth.

At the micro-level, firm-specific characteristics such as size may have significant influence on the need for external financing. Guiso, Sapienza, and Zingales (2004) classified firms by size and investigated the effects of differences in local financial development in the integrated financial market of Italy. The evidence

suggests that the development of domestic financial sector has different significance for large and small firms. In other words, the small firms depend more on local financial development than the larger ones which can raise funds in international financial markets through their subsidiaries. However, size factor does not capture the industry characteristics of firms as small and large firms cut across different industries. In the context of the manufacturing industry, Neusser and Kugler (1998) investigated whether the development of the financial sector was essential for economic growth in the OECD countries from 1970-1991. They found that financial sector GDP was cointegrated for many OECD countries, not so much with manufacturing GDP, but mostly with manufacturing total factor productivity. This reflects the levels of development and efficiency of financial intermediaries in the region.

Gupta (2011) investigated the differences in the effects of financial development on the output of industries in different states (15 states) and industry grouping (22 industries) in India covering the period from 1992-2002. The study discovered that when the financial sector was deep, industries tended to use more of contract labour. This diminishes the adverse consequences of industrial disputes and hence raises output. However, financial deepening is unable to directly benefit industries crucially in need of external finance. In this manner, improved financial depth only eases the working capital needs of businesses, as against their investment needs. This result implies that although financial development increases output, it does not lead to capital accumulation, and thus, financial development cannot ensure long-term growth. The study, however, used limited measure of financial development (industrial dependence on external finance).

In summary, there appeared to be a high level of aggregation (of countries, measures of financial development and real sector output) in finance-growth literature. In Malaysia, studies investigated the effect of financial development on real output growth largely concentrated on the aggregate output growth rather than sector-specific analysis. The neglect of this important issue in the existing literature created an empirical gap and has weakened the policy implications from such studies. Hence, this study was conducted with aim to fill this gap by empirically investigating the differential impact of financial development on sectoral output in Malaysia.

MATERIALS AND METHODS

Variables Description and Data Sources

Sectoral output, as a dependent variable, is represented by the GDP share contributed by each of the five economic sectors in Malaysia, namely, agriculture, mining and quarrying, manufacturing, construction and service, respectively. Bank credit is measured by the amount of loans/financing provided by commercial banks and Islamic banks to the five economic sectors, as outlined above. In addition, gross fixed capital formation, trade openness and average lending rate are added as control variables. Bank credit facilitates firms'

accumulation of physical capital, which serves as the basis for further production and growth. Trade openness, measured by the sum of exports and imports, allows firms to acquire necessary inputs as well as access foreign markets. The cost of borrowing is proxied by the average lending rate, indicating the interest rate environment which affects the firms' decision to borrow from the banking sector or explore other sources of funding. This study employs quarterly data covering the period 1997Q1 to 2014Q4. The data were obtained from the International Monetary Fund's *International Financial Statistics* and Bank Negara Malaysia's *Monthly Statistical Bulletin*.

Estimation Techniques

This study adopts the bounds testing approach to cointegration based on Autoregressive Distributed Lag (ARDL) model framework, as proposed by Pesaran, Shin, and Smith (2001). An important feature of the ARDL approach compared to other cointegration approaches such as that of Engel and Granger (1987) and Johansen and Juselius (1990) is that the ARDL does not impose restriction on the integration order of the variables being all *I(1)*. Consequently, the ARDL can be applied regardless of whether the variables are all *I(0)*, *I(1)* or mutually cointegrated (Pesaran et al., 2001). Even in the presence of endogenous regressors, the ARDL technique addresses the problem associated with omitted variables and autocorrelations, in addition to providing unbiased and efficient estimates, as well as valid t-statistics (Narayan, 2004; Odhiambo, 2010). The ARDL approach involves the estimation of a restricted error correction (EC) version of the ARDL model. For this research, the model involving sectoral output, bank credit and other control variables is presented in Equation (1) below.

$$\Delta \ln(SGDP)_t = \alpha_0 + \alpha_1 \ln SGDP)_{t-1} + \alpha_2 \ln(SBCR)_{t-1} + \alpha_3 \ln(GCF)_{t-1} + \alpha_4 \ln \ln(OPN)_{t-1} + \alpha_5 ALR_{t-1} + \sum_{i=1}^{p} \beta_1 \Delta \ln(SGDP)_{t-i} + \sum_{i=0}^{p} \beta_2 \Delta \ln(SBCR)_{t-i} + \sum_{i=0}^{p} \beta_3 \Delta \ln(GCF)_{t-i} + \sum_{i=0}^{p} \beta_4 \Delta \ln(OPN)_{t-i} + \sum_{i=0}^{p} \beta_5 \Delta(ALR)_{t-i} + \mu_t \quad [1]$$

SGDP is the vector of sectoral GDP; with AGR, MNQ, MNF, CTR and SVG representing GDP for the agriculture, mining and quarrying, manufacturing, construction and service sectors, respectively. SBCR is the vector of sectoral bank loans/financing to the five sectors represented by AGC, MNC, MFC, CTC and SVC in that order. On the other hand, GCF, OPN and ALR represent fixed capital formation, trade openness and average lending rate, while *p* is the optimal lag length and μ_t is the error term. All the variables are in natural logarithm, except for ALR, which is a rate. F-test is conducted to detect if the variables are cointegrated that is if they have long-run relationship.

The null hypothesis is H_0: $\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = 0$, which is tested against the alternative hypothesis H1: $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq \alpha_5 \neq 0$.

However, the asymptotic distribution of F-static is not standard for bound test, therefore, the computed F-statistic is assessed based on the critical values provided by Narayan (2004). These are two sets; the lower bound critical values, which assume all the variables to be *I(0)* and the upper bounds values, which assume all the variables to *I(1)*. Accordingly, the decision rule is as follows. If the computed F-statistic is less than the lower critical bound, then H_0 cannot be rejected, hence we conclude that there is no cointegration. On the other hand, when the calculated F-statistic is greater than the upper critical bound, H_0 is rejected and we conclude that there is cointegration among the variables. However, if instead, the calculated F-statistic value is in between the two critical bounds, then the result is inconclusive. Upon establishing long run relationship among the variables, now a long-run model is estimated as given by Equation (2) below.

$$\ln(SGDP)_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \ln(SGDP)_{t-i} + \sum_{i=0}^{p} \beta_2 \ln(SBCR)_{t-i} + \sum_{i=0}^{p} \beta_3 \ln(GCF)_{t-i} + \sum_{i=0}^{p} \beta_4 \ln(OPN)_{t-i} + \sum_{i=0}^{p} \beta_5 ALR_{t-i} + \nu_t \quad [2]$$

In order to get the short-run coefficients, an error correction model (ECM) is estimated. The ARDL specification of the ECM is represented in Equation (3) below.

$$\Delta \ln(SGDP)_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta \ln(SGDP)_{t-i} + \sum_{i=0}^{p} \beta_2 \Delta \ln(SBCR)_{t-i} + \sum_{i=0}^{p} \beta_3 \Delta \ln(GCF)_{t-i} + \sum_{i=0}^{p} \beta_4 \Delta \ln(OPN)_{t-i} + \sum_{i=0}^{p} \beta_5 \Delta(ALR)_{t-i} + \varphi ECT_{t-1} + \eta_t \quad [3]$$

ECT is the error-correction term. However, cointegration only implies causality but does not show its direction. According to Engle and Granger (1987), if cointegration is confirmed among variables, causality relationship can be investigated within a dynamic error correction framework, as contained in Equation (3) above. The short-run causality is captured in the specific coefficients of the lagged terms, while the error correction term contains information of the long run causality. Hence, if the coefficient of each lag independent variable is significant, it signifies short-term causation and a negative and statistically significant error correction term signifies long-run causality (Adebola, Yusoff, & Dahalan, 2011). For the purpose of selecting optimal lag length, the SBC criterion is adopted. Because it always selects

parsimonious model, this means it chooses the smallest possible lag length. It also has lower prediction error than the AIC criterion (Jalil & Ma, 2008).

In order to ensure the goodness of fit of the models and to enable the results be relevant for policy recommendation, some diagnostic tests are conducted. In this regard, serial correlation, normality, functional form and heteroscedasticity tests are performed. Similarly, as suggested by Pesaran and Pesaran (1997), the cumulative sum of recursive residuals (CUSUM) and the cumulative sum square of recursive residuals (CUSUMSQ) tests are executed to test for structural stability of the parameter estimates.

RESULTS AND DISCUSSION

The analysis commenced with unit root tests, in which case the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests are performed. Table 1 revealed that all the variables have unit root at their levels, which means they are not stationary. The only exceptions are in the cases of manufacturing GDP (MNF) and gross fixed capital formation (GCF), which are found to have no unit root at their levels, and hence, are stationary at level or integrated of order zero, i.e. *I(0)*. After taking the first difference, the unit root in the remaining variables disappeared and they became stationary. Therefore, they are integrated of order one, *I(1)*. The mixed order of

Table 1
Results of Unit Root Tests

	ADF Test		PP test		
Variables	Level	First Difference	Level	First Difference	Stationarity Status
LAGR	-3.05	-8.92***	-3.02	-10.41***	I(1)
LMNQ	-2.79	-6.49***	-1.99	-6.46***	I(1)
LMNF	-4.18***	-6.16***	-3.60**	-9.62***	I(0)
LCTR	-2.55	-2.62*	-1.88	-9.14***	I(1)
LSVG	-1.32	-10.73***	-1.62	-10.73***	I(1)
LAGC	-1.91	-6.85***	-1.96	-6.85***	I(1)
LMNC	-0.98	-8.05***	-0.98	-8.06***	I(1)
LMFC	-1.60	-6.89***	-1.82	-6.86***	I(1)
LCTC	-0.43	-7.20***	-0.94	-7.22***	I(1)
LSVC	-2.87	-2.79*	-1.64	-10.02***	I(1)
LGCF	-4.45***	-5.10***	-2.60	-8.20***	I(0)
LOPN	-3.03	-4.75***	-3.75**	-14.59***	I(1)
ALR	-2.94	-5.64***	-1.93	-4.55***	I(1)

Notes. Lag lengths are selected based on Schwarz Bayesian Criterion. The test statistics us compared with critical values from Mckinnon (1996); ***, ** and * denote significance at 1%, 5% and 10% respectively.

integration of the variables provides a strong justification for the adoption of the ARDL method in this study.

Upon verifying the stationary status of the variables, the cointegration test is then conducted using the bounds testing approach. The results are presented in Table 2. The findings show that in all the models involving the five sectors, and the calculated F-statistics are greater than the 1% upper critical bound value. This means that long-run relationship exists between output in the five sectors on one hand and the bank loans/financing they received, after controlling for capital formation, trade openness and cost of borrowing.

Having established that long-run relationships exist among the variables, the next step is to estimate these relationships and their short-run dynamics. As shown in Tables 3 and 4, bank credits were found to have no effect on output of the agriculture sector, both in the short- and long runs. The failure of bank loans to have significant impacts on the agricultural sector might be attributed to the very little share of bank loans that the sector received. For instance, in the first quarter of 2015, the primary agriculture received only 3.3% of the total loan disbursed by the banking sector (Ministry of Finance Malaysia, [MOF], 2015). On the other hand, bank credit has positive and significant effects on the mining and quarrying sectors in the short run, while this effect has become insignificant in the long run. These findings suggest that the mining sector in Malaysia is responding accordingly to the shifting trend of the financial system, where bank loan is losing its dominance as a source of corporate credit. The long-term nature of the projects in the mining sector makes it requires longer term sources of funding, which the banking sector is usually not disposed to provide. Therefore, the increasing prominence of the corporate debt market in the Malaysian financial system is better serving the financing needs of the mining sector in the long run.

Table 2
Results of Bounds F-Test for Long-Run Relationship

Computed F-Statistics	Agriculture	12.39
	Mining	12.17
	Manufcturing	6.21
	Construction	11.55
	Service	5.65
Critical Bounds (n = 72; k = 4)		
Levels of Significance	I(0)	I(1)
1%	3.69	4.84
5%	2.73	3.72
10%	2.31	3.23

Note. The critical values are based on Narayan (2004), case II restricted intercept and no trend.

However, bank credit was found to have significant positive influence on the manufacturing sector output in both the short run and long run. Nonetheless, the effect is greater in the short run than in the long run (0.59>0.24). This shows that the manufacturing sector in Malaysia is also adjusting to the dynamics of the financial system in terms of its financing needs, as the results show that bank credit could better serve the short-term financing needs of the sector, as against its long-term financing needs. Hence, the sector is exploring other

sources of long-term financing such as the bond market. Currently, the manufacturing sector is still receiving a significant portion of total bank credit of around 19.0% of the total loan disbursed by the banking sector in the first quarter of 2015 (MOF, 2015).

As for the construction sector, bank credit has greater effects on this sector's output in the long run than in the short run (0.90>0.24). This result highlights the nature of the construction sector, which relies more on mortgage loans that are more suitable to be provided by the banking sector. These loans are usually of medium- and long-term nature and are offered to the household sector to enable families acquire houses. This largely explains the high level of household credit in Malaysia, which increased tremendously from 34.4% of the total outstanding loans to 54.5% over the decade, i.e. from 2000 to 2010 (BNM, 2011). The changing trend in the Malaysian financial setting has not substantially affect the attachment of the construction sector to the banking sector, with regard to the provision of funds.

Similarly, the service sector of Malaysia enjoyed greater and significant influence from bank credit in the long run than in the short run (0.20>0.07). This sector is the largest contributor to Malaysia's GDP, accounting for 53.5% in 2014 (BNM, 2015). The wholesale, retail, restaurants and hotels, as well as the transport, storage and communication segments of the service sector, received modest share of bank loan amounting to 19.9% of the total disbursed loan in the first quarter of 2015 (MOF,

Table 3
ARDL Estimate of Long-Run Relationship

Regressors	Agriculture	Mining	Manufacturing	Construction	Service
LAGC	-0.14				
LMNC		-0.04			
LMFC			0.24**		
LCTC				0.90***	
LSVC					0.20**
LGCF	-0.42	-1.34	-0.33***	0.74***	-0.04
LOPN	-0.34	4.25***	0.70***	-1.34***	0.73***
ALR	0.11***	-0.13**	0.02*	-0.12***	0.03***
Intercept	17.44***	-28.36***	1.84	9.03***	-0.53
Diagnostic Tests Statistics					
Serial Correlation	2.52 [0.64]	2.62 [0.62]	5.23 [0.26]	6.21 [0.18]	1.54 [0.82]
Functional Form	0.02 [0.90]	0.18 [0.67]	2.42 [0.12]	0.16 [0.69]	0.16 [0.69]
Normality	2.40 [0.30]	1.56 [0.46]	1.51 [0.47]	1.43 [0.49]	6.88 [0.03]
Heteroscedasticity	4.40 [0.04]	1.33 [0.25]	0.45[0.50]	0.02 [0.88]	0.10 [0.75]

Note. ARDLs (1,0,0,1,0); (1,1,0,2,0); (1,1,3,0,2); (4,0,0,1,1) and (1,0,0,4,0) for the five sectors respectively, selected based on the SBC criterion.
***, ** and * represent statistical significance at 1%, 5% and 10% respectively, p-values in [ ].

2015). The greater effect of bank credit on output in the service sector can be explained by its conglomeration of many sub-sectors of varying characteristics and funding needs. For instance, the electricity, gas and water segment may need long term financing that can be provided by the bond market, while the wholesale, retail, restaurants and hotels, transportation, storage and communication, as well as education, health and other segments may require short- to medium-term financing that the banking sector can readily provide. Thus, even with the increasing dominance of corporate debt market in the Malaysia's financial system, enterprises in the service sector are still exploring bank loan as a source of finance. These enterprises are mostly small and medium scale, which lack the capacity to patronise the bond market. Hence, they have no option other than to patronise the banks. Thus, the response of the service sector to the changing dynamics in the financial system is a bit ambiguous. While firms in

Table 4
Results of ARDL Short-Run Estimates and ECM

Regressors	Agriculture	Mining	Manufacturing	Construction	Service
ΔLAGC	-0.06				
ΔLMNC		0.20**			
ΔLMFC			0.59***		
ΔLCTC				0.24***	
ΔLSVC					0.07**
ΔLGCF	-0.19	-0.23	-0.07	0.20**	-0.01
ΔLGCF(-1)			0.25***		
ΔLGCF(-2)			0.18***		
ΔLOPN	1.11***	0.85***	0.51***	0.09	0.28***
ΔLOPN(-1)		0.68***			-0.11**
ΔLOPN(-2)					-0.15***
ΔLOPN(-3)					-0.22***
ΔALR	0.05***	-0.02**	0.01	0.003	0.01**
ΔALR(-1)			0.02***		
Intercept	7.88***	-4.88**	1.35	2.45***	-0.17
ECM(-1)	-0.45***	-0.17***	-0.73***	-0.27***	-0.33***
Joint Significance and Diagnostic Test Statistics					
R-Squared	0.61	0.58	0.82	0.77	0.67
R-Bar-Squared	0.56	0.52	0.78	0.73	0.61
F-Stat.	15.41	13.63	27.44	24.28	12.62
SE-Regression	0.07	0.08	0.02	0.04	0.02
DW-Statistic	1.73	1.70	1.77	1.74	1.96

Note. ARDLs (1,0,0,1,0); (1,1,0,2,0); (1,1,3,0,2); (4,0,0,1,1) and (1,0,0,4,0) for the five sectors, respectively, selected based on the SBC criterion.
***, ** and * represent statistical significance at 1%, 5% and 10%, respectively.

the electricity, gas and water segments may find the bond market more suitable to their financing needs, those in the other segments are by their nature constrained to bank loans.

Among the other control variables, trade openness turnout as the most significant in influencing output growth in the five sectors. This is consistent with the structure of the Malaysian economy, in which export of goods and services is one of the major engines of growth. Jointly, all the independent variables largely explain the variations in the independent variables, which range from 58% for the mining and quarrying sector to 82% for the manufacturing sector (Table 4). In all the sectors, adjustment from the short run to the long run is taking place as suggested by the negative and statistically significant one-lagged error correction terms. It further shows that a substantial portion of the deviations, from the equilibrium path, is adjusted in one quarter, varying from 17% in the mining and quarrying sector to 73% in the manufacturing sector. The results of the diagnostic tests are contained at the bottom of Table 3. This shows that all the models in the five sectors are correctly specified and there is no serial correlation among their residuals. Moreover, the residuals are also normally distributed and homoscedastic. Overall, the estimated coefficients are stable over the sample period, as indicated by the results of the cumulative sum of recursive residuals (CUSUM) and the cumulative sum squares of recursive residuals (CUSUMSQ), as shown in Appendix A.

CONCLUSION

Amid the gradually declining trend of bank credit as a source of corporate finance in the Malaysian financial system, this study attempted to investigate the effects of bank credit on the output growth in the five real economic sectors of Malaysia. The study employed the quarterly data covering 1997Q1 to 2014Q4 and used the ARDL and ECM approaches. The empirical evidences showed that the agriculture sector is not being influenced much by bank credit, both in the short and long runs. On the other hand, the mining and quarrying and manufacturing sectors are depending less and less on bank credit as a source of finance in the long run, implying that the two sectors are adjusting their sources of finance, in line with the dynamic financial system. Contrarily, the construction and service sectors are relying more on bank credit for their long-term financial needs. For the construction sector, its unique financing need (mortgage loan) is better provided by the banking sector, while in the case of the service sector, the scale of the enterprises (small and medium) constrains them to depend on bank loan even in the long run.

Overall, the study concludes that the various economic sectors in Malaysia are being influenced differently by bank credit and they are also responding in divergent ways to the changing dynamics of the financial system. Several important policy implications can be drawn from this study. The results suggest the importance of considering the sectoral-specific

characteristics in extending bank financing to ensure the effectiveness of the financing in supporting the growth of the sector. Meanwhile, as for the agriculture sector, there seems to be a need for concessionary finance to this sector, which is not adequately being served by the banking system. In this regard, other sources of financing could be explored such as the bond and stock markets.

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APPENDIX

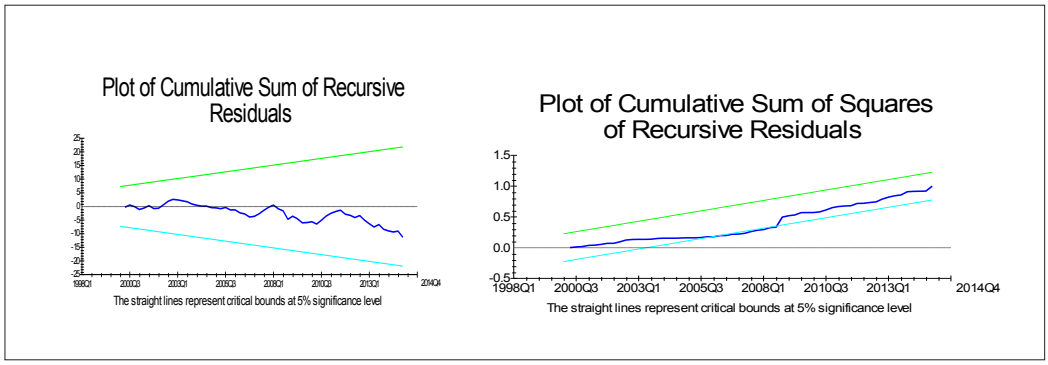

Figure 1. CUSUM and CUSUMSQ plots for the agriculture sector

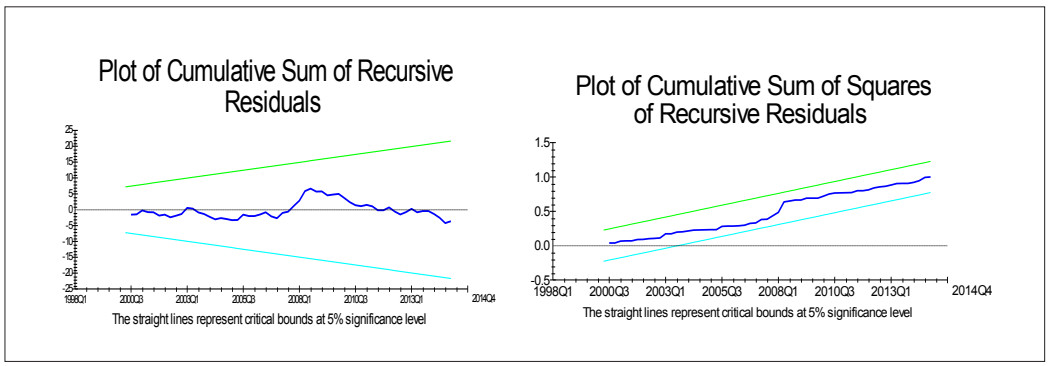

Figure 2. CUSUM and CUSUMSQ plots for the mining and quarrying sector

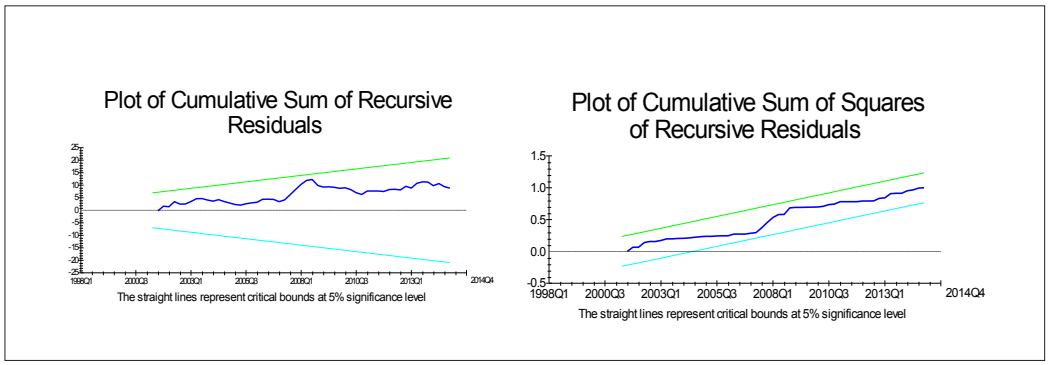

Figure 3. CUSUM and CUSUMSQ plots for the manufacturing sector

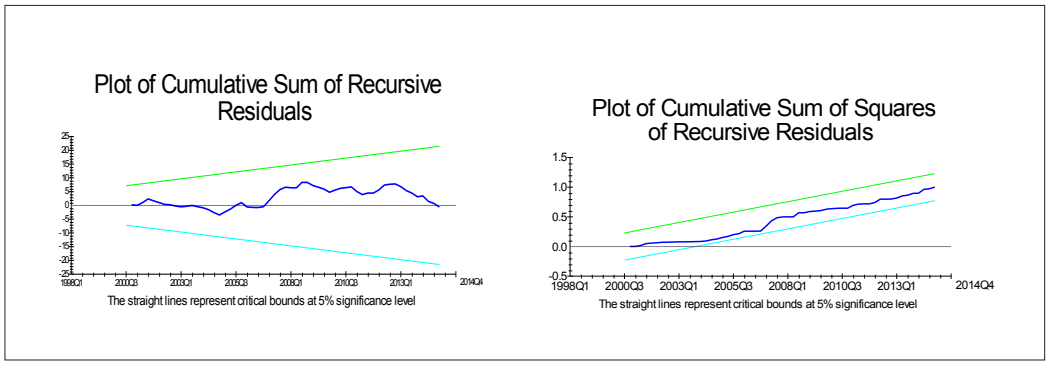

Figure 4. CUSUM and CUSUMSQ plots for the construction sector

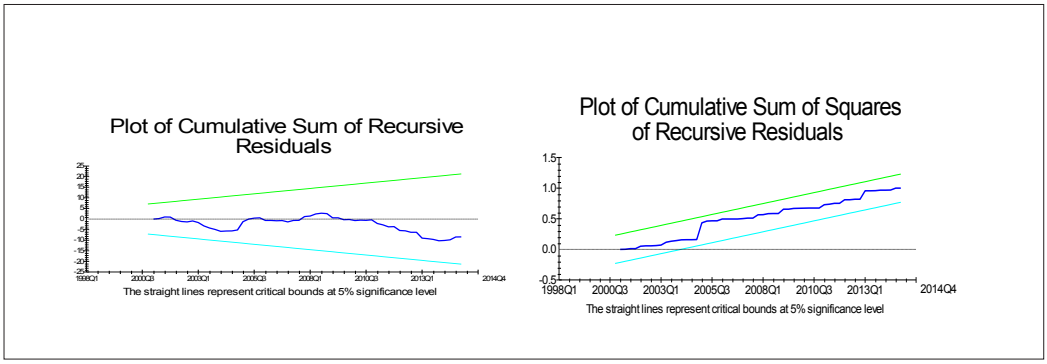

Figure 5. CUSUM and CUSUMSQ plots for the service sector