SECTORAL IMPACT OF BANK LOANS AND LABOR: LESSONS FROM MALAYSIA'S POST-CRISIS YEARS

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Abstract : *This paper studies the relationship between bank loans and output of manufacturing and services sectors in Malaysia's post-East Asian-crisis years. It is hypothesized that credit tightening and labor market instability that often characterize an economic meltdown can compromise a country's output in the short run, at the very least. Our study which employed quarterly data between 1997 to 2016 showed that bank loans to manufacturing and services sector did indeed have a long-run and short-run impact on output of the said sectors. Hence, banking sector reforms that the government undertook immediately after the crisis to increase liquidity did prove to be critical in helping companies quickly recover lost ground as well as speed up the adoption of technology and innovation. By setting up complementary asset management companies, Danaharta Nasional Berhad and Pengurusan Danamodal Nasional Berhad in 1998, the government was able to remove banks'distraction with NPL and help improve their capital adequacy as well gave ailing companies opportunities to restructure their loans and continue with operations. Policy-wise this shows the crucial role of credit support in economic recovery strategies. On the other hand, labor played a much smaller role in determining manufacturing sector's output compared to the services sector. This is consistent with changes in the labour market demand and supply that took place after the crisis years; including the employment of foreign labour and the improvement of local's educational attainment). However, employment has a long-run relationship and short-run causality only with respect to the services sector, as local labor shift towards jobs in the services sector.*

Keywords: *East Asian currency crisis, financial sector reform, manufacturing sector, services sector, bank loans*

Introduction

The economic success of "newly industrialised economies" within the East Asian region prior to the 1998 East Asian currency crisis generated a wide range of studies attempting to identify sources of their remarkable growth. One strand within these analyses has focused on the critical role of external financing in the transformation and development of the manufacturing sector. Another significant trend focused on the role of human capital, particularly in terms of

education and training to match the new structure of the economy. However, significantly less research has been done on the role of external financing and labor in manufacturing growth during and after the currency crisis. Malaysia, in particular has recovered well from the crisis and its aftermath, with much of that recovery attributable to robust local and international demand for manufacturing sector's output and the unique set of policy interventions adopted. Today, the economy of Malaysia is the fourth largest in Southeast Asia, after the much more populous Indonesia and Thailand, and just behind Singapore. Malaysia is also the third richest in Southeast Asia by GDP per capita values, after the city-states of Singapore and Brunei and remains as one of the most competitive in the world, ranking 23rd in the Ease of Doing Business Index for 2015.

Malaysia's manufacturing sector accounts for 20.1% of the country's GDP and 27.5% of its labour force in 2016, down from 28.7% of GDP and 31.8% of its labour force in 1998 just before the crisis. Services sector has registered the strongest growth trend as the post-crisis economy struggle to redefine itself in post-industrial knowledge economy, in which the engine of growth is more towards knowledge-intensive services, such as finance, engineering, design, marketing, logistics, and consultancy, contributing 55.7% in 2016 compared to 42.8% of the GDP in 1998. The sector employs 60% of Malaysia's 2016 labour force compared to only 49.6% in 1998 (Malaysia, 2016).

The East Asian currency crisis the 1997 crisis was largely unanticipated, and its causes have been fiercely debated (see Radelet et al, 1998). The magnitude and suddenness of the capital reversal caused a major meltdown that very quickly spilled over to the real sector. Figure 1 shows the GDP quarterly growth trend highlighting the onset and immediate effect of the crisis on Malaysia.
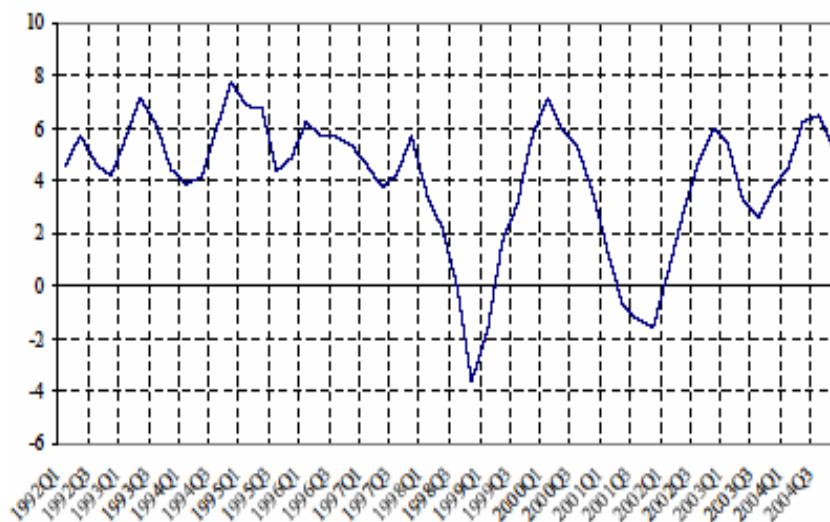

Figure 1: GDP quarter-to-quarter growth rate, annualized (1992Q1 to 2004Q4)

Source: Ito and Hashimoto, 2007, p. 3.

Structural weakness and overexposure in the banking system prior to the crisis took its toll on the country's economy as banks' non-performing loans increased dramatically and new loans are all but frozen. The government recognized that ample liquidity in the banking system was necessary to support credit growth needed for debt repayments, adding fixed capital formation and working capital of the private sector. In the long run, financing plays an important part in supporting firms to innovate, scale-up and adopt efficient production processes. However,

during a crisis it is often observed that financial institutions are incapable or hesitant to offer financing.

By September 1998, several policy measures, such as an exchange rate system pegged to the U.S. dollar, capital controls, and a fiscal stimulus package, were launched by the Malaysian authorities. These measures were successful to some extent in protecting Malaysian industries from exchange rate fluctuations and in lowering of interest rates. The authorities also pursued fundamental reforms in the financial and corporate sectors, including a bank consolidation program and an upgrading of prudential regulation and supervision to bring back stability and confidence to the economy. Asset management companies are established to acquire nonperforming loans (NPL) from financial institutions with the objective of recovering maximum money from their resolution or disposal. Danaharta Nasional Berhad (Danaharta) has taken over approximately 3,000 accounts with more than RM 5 million in nonperforming loans. This greatly removes the banks' distraction with NPL and help rehabilitate the banks who would otherwise be in financial trouble. At the same time, the 'soft approach' used by Danaharta to maximize return from the NPLs helped ailing companies by giving them a chance to restructure their NPLs, rather than have the creditors (such as the banks) petition for winding up to recover their loan. This way they could become performing again and the company would be able to resume its business. Additionally the company borrower could use Danaharta's published loan restructuring principles to help the parties in the restructuring of viable loans (Neyer et al., 2005). Another special vehicle set up by the Malaysian authorities was Danamodal Nasional Berhad. It was established to achieve two objectives. First to recapitalize the domestic banking institutions by providing interim financing and secondly to help facilitate the consolidation and rationalization of banks, particularly through mergers. This eventually resulted in a stronger banking system in which there is fewer players, each with larger market shares. These pragmatic strategies to recapitalise and restructure the banking system has brought the much needed stability to the banking sector and brought back external financing that was direly needed by companies at the time. In a nutshell, the Malaysian companies were relatively able to acquire loans and get back on their feet at a relatively fast speed. The reform was considered basically completed by 2002, i.e. just four years after the crisis. (Ito and Hashimoto, 2007).

Figures 2 and 3 show rather strong and frequent fluctuations in bank loan approvals to the manufacturing sector performance over the years after the crisis. The bank credit to the sector as we can see is highly affected by the state of the economic crisis in 1998 and 2009. It was until the 8th Malaysian plan which commenced in 2001 that the bank loans grew at a slower pace during which Malaysia's manufacturing sector was already well into its development as a high technology sector (Ha, 2012). Real output of the manufacturing sector has nearly always maintained a stable upward trajectory, except again in 1998 and 2009. However, by just comparing the visual graphs, it is difficult to come to a conclusion about the relationship between the two variables without performing a time series analysis.
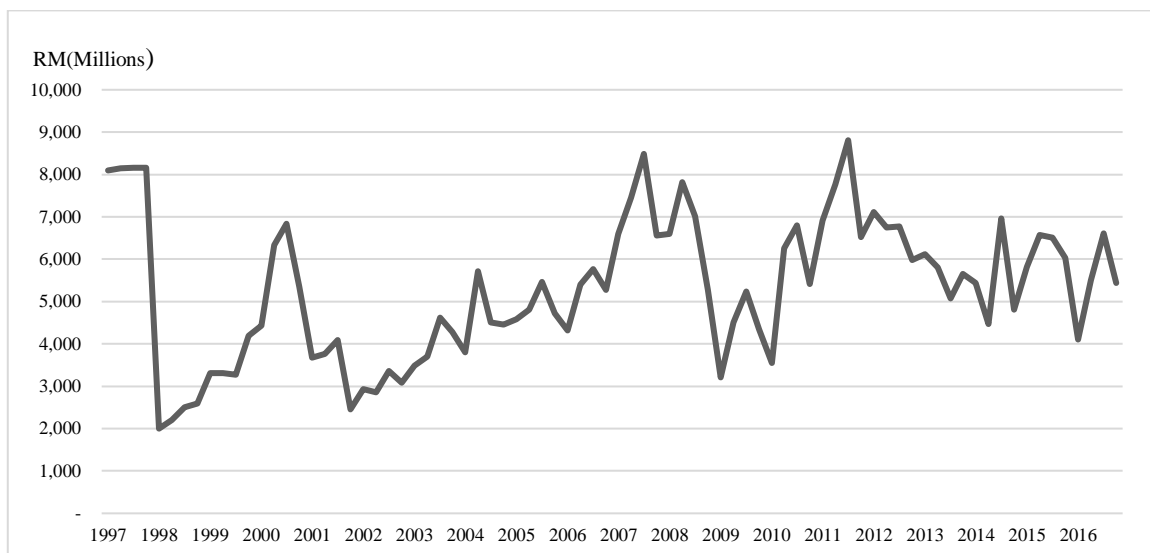
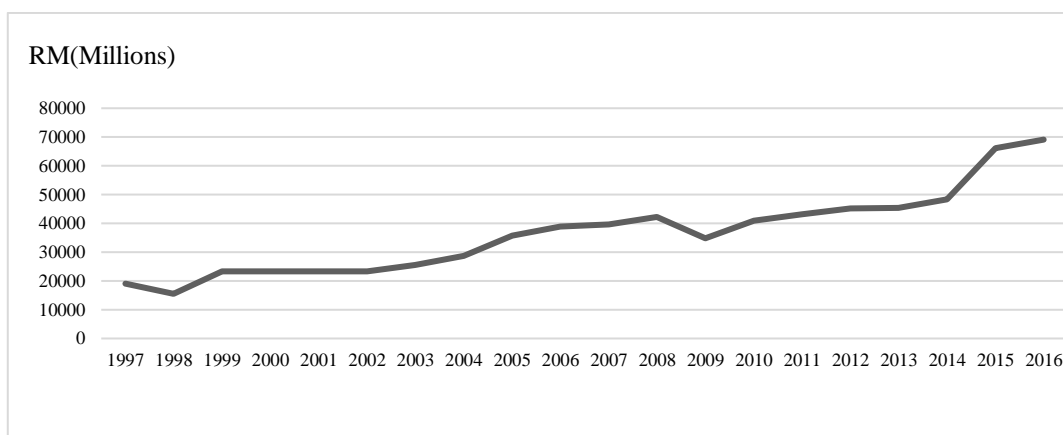**Figure 2: Bank Loans Approved to the Manufacturing Sector**

Figure 3: Gross Domestic Product of Manufacturing Sector

On the other hand, the services sector growth of output increased consistently notwithstanding the 1998 and 2008 crisis (Figure 4). By the fourth quarter of 2016, the sector's GDP grew at 5.5% and accounts for 54.6% of total GDP. In general, the sector's growth was mainly led by financial services group, the wholesale and retail trade as well as food & beverage and accommodation subsectors. The strong growth of retail segment also benefited from sales campaigns such as Buy Malaysian Products Campaign, Price Reduction Campaign, and *Kempen Jom Beli Barang Raya@Putrajaya* which lead to Malaysia globally recognised as the 9th from 30 emerging economies in the 2014 Global Retail Development Index by A.T. Kearney (2015). This positive trend occurred despite the relatively volatility in bank loan approvals for services sector (Figure 5). Similarly to manufacturing sector, the bank credit to the services sector was highly affected by the crises in 1998 and 2007. The latter event caused the total banking system loans to decrease by 6.3 percent amounting to RM10 billion. (Malaysia, 2006).
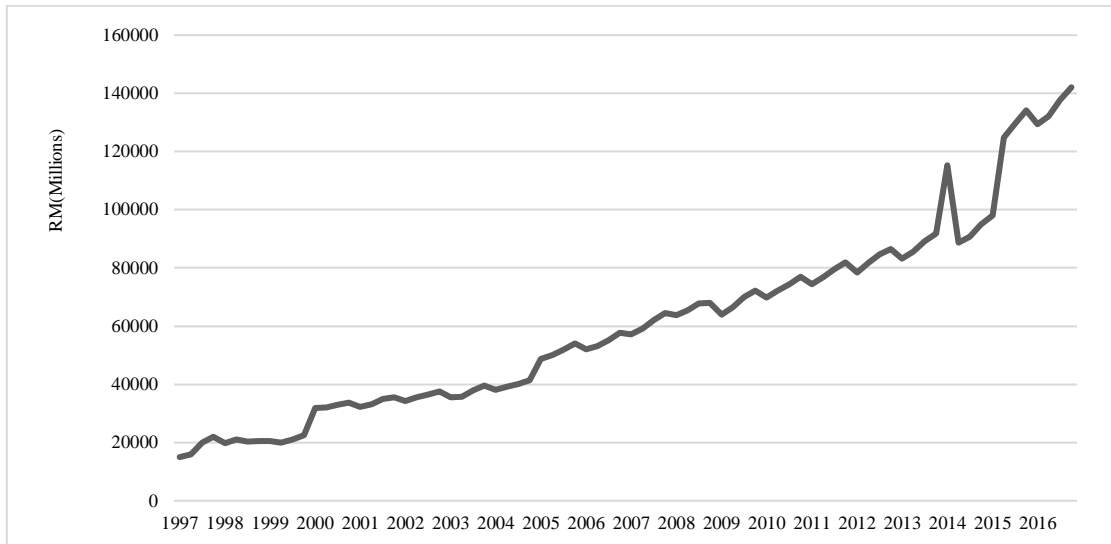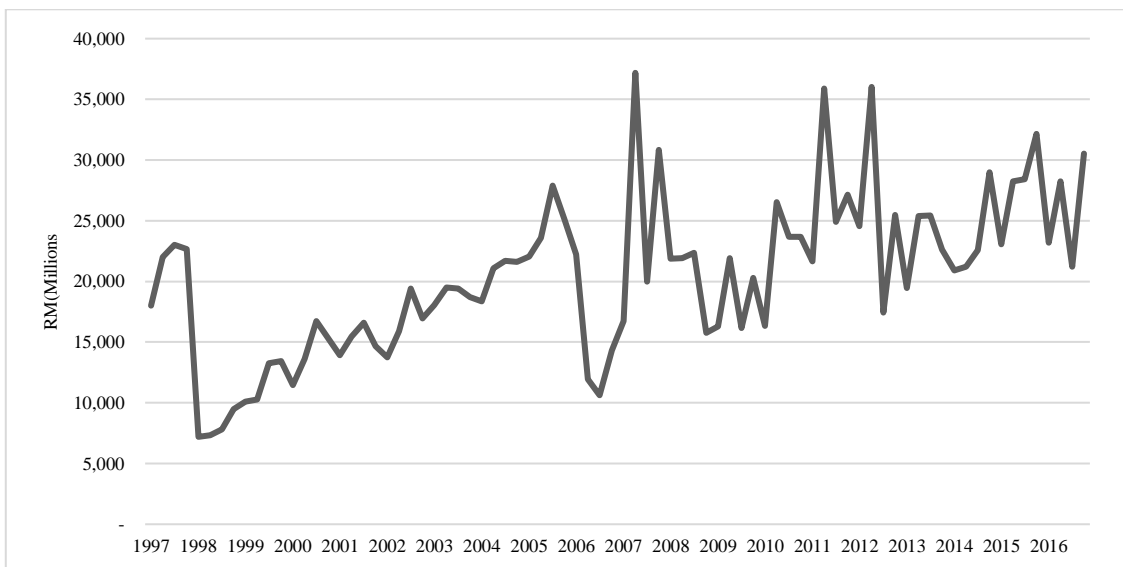
Figure 4: GDP of Service Sector

Figure 5: Bank Loans to Services Sector

This study also looks at the effect of labour on sectoral output during these years. Despite having a steadily increasing GDP growth, the manufacturing sector appeared to experience higher volatility in terms of labour compared with other sectors (Figure 6). For example, in 2006 the manufacturing sector faced high retrenchments especially companies in the E&E industry (which made up 27% of the sector). Nonetheless, growth of people employed in the services sector from 1997 to 2016 has been positive and largely consistent (Figure 7).
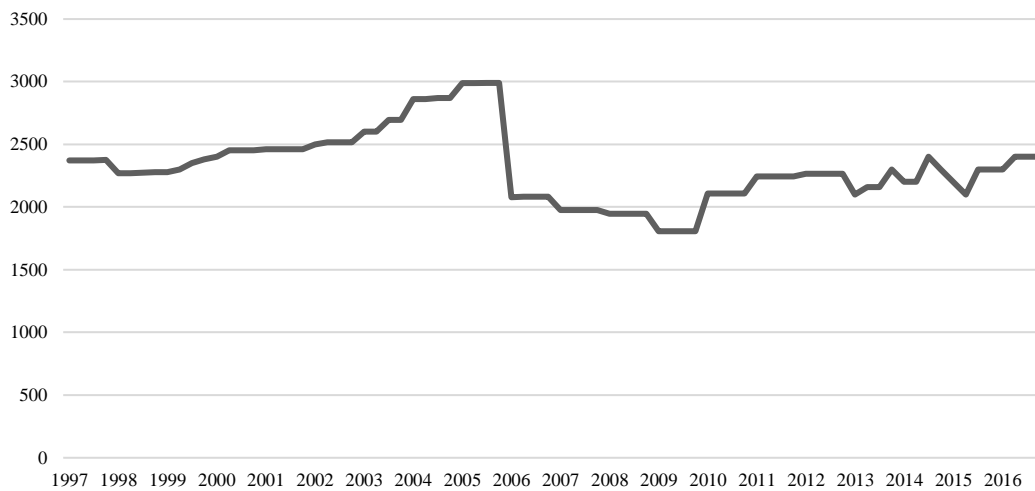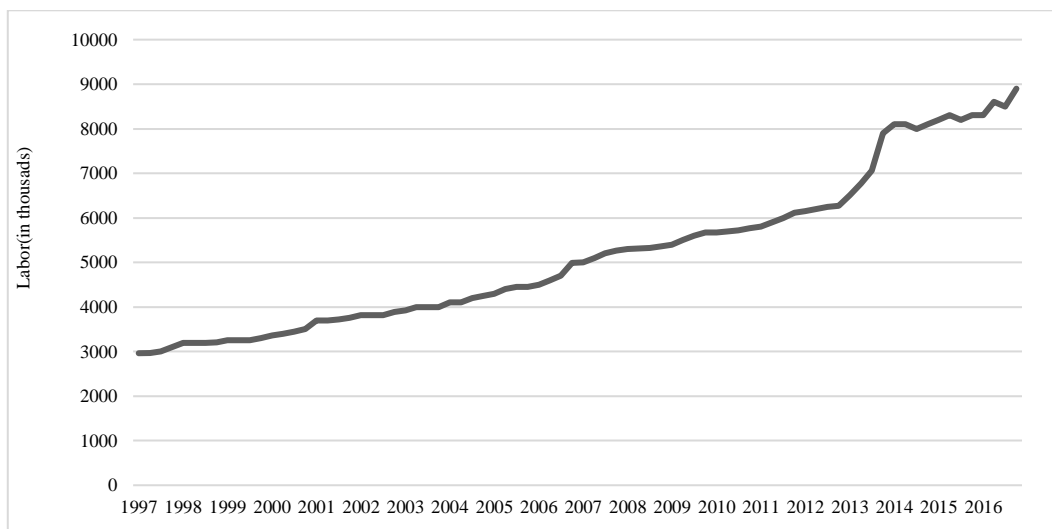
Figure 6: Labour in the Manufacturing Sector.

Figure 7: Labour in Services Sector

The objective of this article is to provide an updated assessment of bank loan's role in helping the manufacturing and services sector recover and expand after the 1998 crisis and thereafter. It examines the effects of bank loans as well as the effects of labour employment to the output of the two sectors. It contributes to a body of literature which considers the contribution of external financing in specific economic sectors, but focus on the role of financial policy interventions in response to crisis events.

Literature Review

In theory, banks play a role as a financial intermediary between depositors looking for returns to their savings and borrowers looking for external funding for their consumption or production activities. Banks are also important for their role in credit transmission channel where government's monetary policy are executed and affect the real economy. Following a crisis, certain banks face balance sheet constraints, such as lower liquidity, rising bad debts or fall in capital holdings, and hence may choose to restrain lending. An expansionary monetary policy must by launched to counter this narrowing of the credit channel (Driscoll, 2004; De Bondt et al., 2010; Cappiello et al., 2010). By employing methods such as lowering the interest rates,

recapitalizing banks, restructuring of assets, this may induce banks to alter their supply of loans to present and potential borrowers i.e. to keep the credit channel reasonably healthy).

In terms of the relationship between bank loans and output in Malaysia, a number of studies stand out. Abubakar and Kassim, (2016) investigated the sectoral impact of bank credit on economic output by analysing the long- and short-run effects of bank credit on the output of major economic sectors in Malaysia namely agriculture, manufacturing, mining and quarrying, construction and services. It employed quarterly data from 1997Q1 to 2014Q4 and adopted both the Autoregressive Distributed Lag (ARDL) and Error Correction Model (ECM) approaches. Their study showed that bank credit has significant effect on in the short run for 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. Mahadevan, R. (2002), suggested that government intervention in the labor market is necessary to increase the quality of the labor for economic growth. The author further elaborated that with input growth comprised of skilled labor and capital deepening, the gains from technological progress as well as technical efficiency leads to sustainable growth in the long run. The author estimated the production function by using panel data comprising 28 manufacturing industries over the period of 1981–1996 by using growth accounting approach that takes into account technological progress and technical efficiency. According to Yusop, et.al. (2005), employment along with real wage has a positive linkage to the productivity in the electronic and electrical sub-sector of Malaysia in the short-run. According to Yusoff et al., (2015), labor employment as well as capital accumulation are important determinants of output in the manufacturing industry. They estimate the model using the instrumental variable technique and the results suggested that the output, and capital are all important determinants of labor employment in the manufacturing industries in Malaysia.

These results are in line with international studies such as from Andersson et al., (2016), where loans from banking institutions have a significant effect in the short run for the manufacturing sector and positive impact on the GDP growth of agriculture and services sector. Their empirical study estimated the economic growth determinants of agriculture manufacturing and services sector by lending from different banking institutions such as policy banks (PBs), state-owned commercial banks (SOCBs), joint stock commercial banks (JSCBs), and rural credit cooperatives (RCCs) covering the period 1997 to 2008.

The positive influence of financing to the manufacturing industry is also supported by Du (2011), whereby increase in the proportion of initial long-term loans has advanced economic growth in his sample of 28 provinces and cities of China during 1994-2005, indicating that increase in the supply of medium and long-term loans supports economic growth. Emadi-Coffin et al., (1994) also revealed that fund availability affects the output of a sector whereby in their study revealed that a credit starvation policy implemented by the first-socialist government in Czechoslovakia to deter overspending on non-profitable firms caused a decline in output of manufacturing industry in 1994.

However, there are studies that show a negative and/or insignificant impact to the output of a sector. Ern (2015) observed that availability of credit has an insignificant negative relationship with manufacturing sector growth. Their study employed a Vector Error Correction Model (VECM) to analyse the impact of specific macroeconomic variables on manufacturing sector growth in Malaysia and Granger causality test to establish causality between them over a time period of 32 years from 1979 to 2010.

Method

In order to achieve the objectives of this study, this study will compare the empirical effects of bank loans and employment to the output of manufacturing and services sector separately with quarterly statistics between 1997 and 2016. Data on output of manufacturing and services sectors are obtained from the annual Malaysian Economic Report. Meanwhile, quarterly data on loans and employment of manufacturing and services sector is obtained from Bank Negara Quarterly Bulletin, Department of Statistics Malaysia and Malaysian Economic Report.
The model is specified as follows,

For manufacturing sector,
$$Y_m = c + \beta_0 + \beta_1 K_m + \beta_2 L_m + \varepsilon_m \qquad (1)$$
For services sector,
$$Y_s = c + \beta_0 + \beta_1 K_s + \beta_2 L_s + \varepsilon_s \qquad (2)$$

The variables include Y, as the GDP or real output that is adjusted to the 2005 constant price, K is the approved bank loans and L is the number of persons employed of the respective sectors. The bank loan variable and employment variable is expected to be positively affect the output of the two sectors. Empirical techniques involved are the unit root tests, co-integration test, Vector Error-Correction model (VECM), and the Granger causality test.

Results and Discussion

The results of Augmented Dickey-Fuller and Phillip & Perron tests are presented in Table 1 and Table 2 for manufacturing and services sector respectively. All series are integrated of order one [1(1)] and therefore non-stationary. This allows us to proceed with tests for co-integration among the variables.

Table 1: Results for Unit Root Test for Manufacturing Industry

Variable	Level		First Difference	
	ADF	PP	ADF	PP
Output	-2.335883	-2.363564	-10.20908	-10.16773
Loan	-1.304086	-4.285353	-6.158238	-10.18629
Employment	-1.985650	-2.033166	-8.964062	-8.964062

Source: Author's calculations

Table 2: Results for Unit Root Test for Services Industry

Variable	Level		First Difference	
	ADF	PP	ADF	PP
Output	1.134934	-1.731415	-7.592740	-13.36217
Loan	-0.523215	-2.736212	-15.85755	-26.50122
Employment	-1.093008	-4.316760	-6.828801	-9.149400

Source: Author's calculations

The multivariate Johansen co-integration procedure is employed to examine the existence of long-run relationships among the variables in the model (Table 3 and Table 4). Both the adjusted trace and maximum Eigen statistics are significant at 5 percent level. Therefore, the hypothesis of no co-integration at r = 0 is rejected at 5 percent level. This means that there is a

unique long-run relationship among output, loans and labour for both manufacturing and services sector.

Table 3: Johansen's Test for the Number of Cointegrating Vectors for Manufacturing Industry

Test Statistics				
	Maximal Eigenvalue		Trace	
Null	Statistic	5% critical value	Statistic	5% critical value
r = 0*	24.31331	29.79707	30.44192	29.79707
r ≤1	5.843473	15.49471	6.128612	15.49471
r ≤2	0.285139	3.841466	6.128612	3.841466

Note: * significant at 5% level.

Source: Author's calculations

Table 4: Johansen's Test for the Number of Cointegrating Vectors for Services Industry

Test Statistics				
	Maximal Eigenvalue		Trace	
Null	Statistic	5% critical value	Statistic	5% critical value
r = 0*	20.50111	21.13162	37.58875	29.79707
r ≤1	12.24244	14.26460	17.08764	15.49471
r ≤2	4.845200	3.841466	4.845200	3.841466

Note: * significant at 5% level

Source: Author's calculations

Following this, the dynamic behaviour of the output (GDP) is examined by estimating the vector error correction model (VECM) (Table 5 and 6). Bank loans appear to be an important determinant for the output of manufacturing and services sector. However, labour is only significant determinant of output to services sector. The VECM model results shows a long run causality running from independent variable to dependent variable for both manufacturing and services sector.

Table 5: VECM Results for Manufacturing Sector

Lags	ECM	D(GDP)	D(LOANS)	D(LABOR)	C
1	0.210158 [3.52275]**	-0.251254 [-1.40394]	-0.031476 [-0.47066]**	-0.014762 [-1.29853]	1910.799 [3.65337]**
2		-0.345142 [-1.92065]	-0.221641 [-3.30060]*	-0.001800 [-0.15772]	
3		-0.239056 [-1.28716]	-0.128545 [-1.85216]	-0.007021 [-0.59513]	
4		-0.395342 [-2.13663]*	-0.218269 [-3.15675]*	-0.035323 [-3.00532]	
5		-0.451008 [-2.77285]**	-0.100077 [-1.64653]**	0.002674 [0.25883]	
6		-0.244001 [-1.26323]	-0.193190 [-2.67649]	-0.025722 [-2.09639]	
7		-0.048938 [-0.42112]	-0.029567 [-0.68086]	0.003411 [0.46210]	
8		0.088782 [0.61879]	0.085735 [1.59907]	0.001027 [0.11271]	
9		-0.058822 [-0.39874]	0.016386 [0.29724]	-0.004392 [-0.46866]	

Notes: The values in parenthesis are the t-statistics,*Significant at 5% level,**significant at 1% level

Source: Author's Calculations

Table 6: VECM Results for Services Sector

Lags	ECM	D(GDP)	D(LOANS)	D(LABOR)	C
1	-0.157725 [-5.08768]**	-0.324009 [-2.73865]**	-0.417039 [-3.34245]**	-0.003256 [-0.90624]**	4094.388 [5.12124]**
2		0.011901 [0.12001]	0.002837 [0.02713]**	-0.000496 [-0.16467]**	
3		-0.117587 [-1.23844]	0.057101 [0.57025]	-0.000634 [-0.21999]**	
4		-0.345575 [-3.82541]**	-0.156056 [-1.63804]*	0.003976 [1.44908]	
5		-0.070360 [-0.73190]	-0.359260 [-3.54358]**	0.002276 [0.77945]	

Notes: The values in parenthesis are the t-statistics,*Significant at 5% level, **significant at 1% level

Source: Author's Calculations

To check for causality, we will apply the pair wise Granger Causality test. This test is testing the causality between 2 variables, whether unidirectional, bidirectional or no relationship in short run. The Granger Causality test results as shown in Table 7 and 8 suggest that we can reject the null hypothesis (prob<0.05) where bank loans do not cause GDP, concluding that bank loan indeed Granger cause output for both Malaysia's manufacturing and services sector. Meanwhile, labor Granger cause output of only the services sector. The results also show that there is short-run causality between the respective independent variable and dependent variables for the two sectors.

Table 7: Granger causality results for Manufacturing Sector

Wald Statistics	D(GDP)	D(LOANS)	D(LABOR)
D(GDP)	-	20.28542 (0.0162)*	3.370506 (0.9478)
D(LOANS)	23.36546 (0.0054)	-	6.905252 (0.6470)
D(LABOR)	12.48385 (0.1874)	6.692138 (0.6691)	-

Source: Author's Calculations

Table 8. Granger causality results for Services Sector

Wald Statistics	D(GDP)	D(LOANS)	D(LABOR)
D(GDP)	-	19.27230 (0.0017)*	35.94608 (0.0000)*
D(LOANS)	18.63722 (0.0022)	-	20.07796 (0.0012)
D(LABOR)	4.467791 (0.4842)	4.602515 (0.4663)	-

Source: Author's Calculations

The empirical results in general suggested that bank loans significantly positively affect the output for Malaysian manufacturing and services sector, both in the short and long run. The results are in line with existing literature which mainly supports the positive impact of bank loans on sectoral growth. Between 1997 and 2016, Malaysia has faced many externalities in the global front. One of the effects of the 1998 currency crisis, a number of large multinational corporations (MNCs), particularly in the electrical and electronics industry, undertook restructuring and consolidation of their operations and management which meant lower output and labour utilisation for the sector. The combined outcome of economic collapse and property market crash was a massive increase in non-performing loans in the banking system, from about 2 percent in mid-1997 to nearly 12 percent in July 1998 (see Athukorala, 2010).

Policy response at the time was mainly to provide breathing space for vigorous pursuance of monetary and fiscal expansion. Malaysia is known for its fight to overcome its recession through implementation of capital controls. However, in reality this is not the only strategy taken by the government. The government embarked on a series of economic restructuring programmes to stabilize and attract domestic and foreign investment in the country, including the establishment of Danamodal Nasional Berhad and Pengurusan Danaharta Nasional Berhad, two special purpose vehicles to spearhead the recapitalization and restructuring of domestic banking institutions. This in turn allowed the banks to quickly recapitalise and continue to provide financing to the private sector. A re-energised financial sector promotes confidence which in turn greatly assisted in revitalizing the real economy. The implementation of the Economic Transformation Programme (ETP) since 2010 has played a catalytic role in reviving investment activity in Malaysia. This is reflected in the higher inflows of foreign direct investments which averaged RM37.4 billion between 2012 and 2016 particularly in the services and manufacturing sectors. The expansion of the Mass Rapid Transit (MRT) services projects under the transport and storage sub-sector, strong demand for internet and digital services in the information and communication sub-sector both are new sources of demand in the economy in the post-crisis period.

Our study revealed that labor is only positively significant to the output of the services sector. The labor in the services sector has a long-run and short-run impact on the output of the sector. Going forward, the services sector is set to be the primary driver of the economic growth as the country promote knowledge-intensive services activities along with other services subsectors such as wholesale and retail trade, financial services and communications. Malaysia launched a Services Sector Blueprint in 2015 to systematically develop and transform the sector to be more knowledge-intensive and innovation-led. The services sector is expected to grow at 6.8% per annum and contribute 56.5% to the GDP in 2020, and provide 9.3 million jobs. (Malaysian Industries Development Authority, 2009). At the moment, it is already the biggest employer with 8.4 million jobs or 60.9% of total employment, particularly in the wholesale and retail trade, accommodation and food and beverage, and education sub-sectors (Malaysia, 2016).

However, in the manufacturing sector, the empirical results showed that labor is insignificant to the output of the industry. This result may due to a number of factors. Firstly, retrenchments in the manufacturing industries is the highest compared to other economic sectors over the years. Even recently in 2016, the manufacturing sector experienced the highest retrenchments among all sectors registering 17,342 people or 46 percent of total retrenchments; mainly due to business closures, downsizing and restructuring of companies. (MOF, 2016). Secondly, for new jobs created or replaced, companies tend to employ foreign workers. Out of the total 1.9 million registered foreign workers as of the third quarter of 2016, manufacturing took the largest share (34.7%), followed by construction (19.6%) and plantation (15.7%) sectors (MOF, 2016). Thirdly, Malaysia has also embarked on steps to enhance total factor productivity growth, a shift from the country's past obssession with foreign direct investment. Movement away from labor-intensive manufacturing practices and the availability of greater training and educational opportunities have both caused local labor force to favour the services sector over other sectors in the economy.

Conclusion

This paper studies the impact of bank loans and labour on output of manufacturing and services sectors in the post East Asian crisis years. It is hypothesized that credit tightening and labor market instability that often characterize an economic crisis can compromise a country's output in the short run, at the very least. Our study employed quarterly data covering 1997 to 2016 and used the Johansen co-integration, VECM and Granger causality approaches. The empirical results showed that bank loans to manufacturing and services sector have a long-run and short-run impact to the output of the respective sector. However, employment has a long-run relationship and short-run causality only with respect to the services sector.

The findings on sectoral impact of bank credit in Malaysia showed great promise for policy-makers. In essence, growth in manufacturing and services immediately and in the long run is significantly dependent on capital availability. As the sector struggle to overcome various challenges brought about the 1998 economic crisis, bank re-capitalization and consolidation policies implemented by the government helped companies to recover lost ground as well as speed up the adoption of technology and innovation fairly quickly. On the other hand, labor played a much smaller role to the manufacturing sector compared to the services sector. This is consistent with changes that took place in the labour market demand and supply; including the employement of foreign labour and the improvement of local's educational attainment.

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