CHAPTER II

LITERATURE REVIEW

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.1   Introduction

In this chapter, I will present a brief review of the current literature that relates to the
ιpic of the Granger-causality between monetary policy and the sectoral production. The
ιmmary of the empirical findings of the previous studies conducted are presented in Tables 2.1
2.5. Table 2.1 summarizes the empirical evidence review on the relationship between monetary
ɔlicy and aggregate output on most of the industrial countries, while Table 2.2 summarizes the
ιview on the relation between credit variables and aggregate output. Follow by Table 2.3 and
.4 summarize the empirical review on the relationship between monetary policy and sectoral
roduction, and selected empirical studies in Malaysia respectively. Finally, Table 2.5
ιmmarizes the review on the empirical studies by using Granger-causality procedure. Generally,
ιere are substantial literatures on this topic for developed countries. However, evidences are
uite limited for developing countries, in particular, the Asian developing countries.

.2 Reviews on the Relationship between Monetary Policy and Aggregate Output

Table 2.1 summarizes the empirical evidence review on the relationship between ıonetary policy and aggregate output for industrial countries. Bernake and Gertler (1995) ˈgued that the credit channel emphasis on the effect of monetary policy on the supply of loans y the banking system in affecting output via the bank reserve and deposits. The reading ɪpported the view that the relationships between money supply and output, credit and output ave been widely conducted because of the belief that money supply and credit aggregate ɪanges have played an important role on real economic activity in United States.

Early studies by Sims (1972) found that the rational causality is unidirectional from ɪoney to income agrees with the postwar U.S. quarterly data, whereas the hypothesis that ɪusality is unidirectional from income to money is rejected. It follows the practice of making ɪusal interpretations of distributed lag regressions of income on money are not valid by the ɪistence of "feedback" from income to money. Since the seminal work of Sims (1980), VAR ɪodels have become an increasing popular tool for empirical studies of the monetary ɪnsmission mechanism.[2.1]. VARs have proved to be a convenient method of summarizing the ynamic relationships among variables. Since once estimated, they can be used to simulate the ɪsponse over time of any variable in the set to either an "own" disturbance or a disturbance to ɪy other variable in the system.

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[1] See Watson (1994) as well as Reifschneider, Stockton and Wilcox (1997) for a comprehensive discussion on the use of VARs and the role of econometric models in the conduct of monetary policy.

Most of the literature on VARs has dealt with how to identify the monetary shock ppropriately, but Cochrane (1995) pointed out that the VAR literature does not discuss the fact 1at a VAR system estimated the policy shocks only in the case where a shock is followed by the ustomary further policy actions. In other words the effect of shock may be minor, but the ubsequent policy changes in response to the shock and its effect on output might amplify the 1itial shock.

Peterson (1996) describes that money is broadly defined to include M2 plus large enomination time deposits and deposits in saving institutions. Splitting M2+ into two omponent, M1 and remainder, MD, each was found to bear a stable relationship to GDP over he 1929- 1994 period. An economic test of the causality question reveals that runs from money o economic activity. Peterson concluded that there is evidence attesting to the short-run non-eutrality of money on unemployment, and to the stabilizing influence of the private sector on he economy.

Bagliano and Favero (1998) also studied the information from financial markets and /AR measures of monetary policy. The exogenous measures of monetary policy shock, directly lerived from financial market information, are used in close (US) and open (US-Germany) conomy VAR models. The empirical analysis confirms the main features of the monetary policy ransmission mechanism in Germany, explicitly addressing the issues between the Germany)olicy interest rate and the US dollar-Dmark exchange rate. Similarly, Arcangelis and Giorgio 1999) examined the monetary policy shocks and transmission in Italy using the VAR Model.

Monadjemi (1999) examined the money-income relationship in Australia and the United

ates during the period of the 1960s – 1990s as well as the 1960s – 1970 respectively. The

npirical findings of the study, based on variance decomposition and impulse response functions

iow a weak long-run relationship between money and income. This result indicated that the

mporary short-run changes in the relationship between money and income. However, over a

ing period of time, money has a neutral effect on output

Laidler (1999) examined the relationships among the quantity theory and policy regimes

ised on money –growth and inflation targeting are briefly discussed as a prelude to an

cposition of alternative views of money's role in the transmission mechanism of monetary

olicy. It is further suggested that, notwithstanding the effect of institutional change in the

anadian financial system on the stability of relationships involving the quantity of money, the

:tive view implies the desirability of the Bank of Canada's paying more systematic attention

ian it now does to the behavior of monetary aggregates, particularly narrow ones, in the design

1d implementation of monetary policy.

However, Freeman and Kydland (1998), "Monetary Aggregates and Output" explain how

ie observed correlation of money and output fluctuations may come about through

idogenously determined fluctuations in the money multiplier. The model is calibrated to meet

ing run features of the U.S. economy (including monetary features) and then subjected to

iocks to the Solow residual following features with U.S. data. Freeman and Kydland

emonstrated that they are consistent with an economy in which money has no such causal

ifluence. Similar with Karras (1996) has found that money effect on the output is neutral in

uropean countries.

3   The Relationship between Credit Variables and Aggregate   Output

Table 2.2 summarizes the review on the relation between credit variables and aggregate

tput. Bernanke (1986) used the contemporaneous structural vector autoregression approach

VAR) and imposed covariance restrictions to gain identification. The credit variable used by

:rnanke is the sum of the commercial bank loans extended by the intermediaries. The results

owed that both money and credit convey the same information about the determination of

ices, and therefore support a two-target monetary policy framework based on both money and

:dit.

Another study by Bernanke and Blinder (1988) which employed an extended version of

e IS-LM model and incorporated the sum of borrowing by households and business sectors as a

:dit variable, found that the money shocks became much more important as compared to the

:dit-demand shocks in the 1980's. However there is no strong evidence to reject the role of

:dit demand, and thus warrant a symmetric on money and credit. In their model, Bernanke and

inder (1988) have assumed imperfect substitutability between money, bonds and loans, thus

lowing both the borrowers and lenders to choose between bonds and loans according to the

terest rates on the two credit instruments (i.e. interest rates on loans and interest rates on bonds).

Further investigation by Bernanke and Blinder (1992) obtained similar evidence to their rlier study in 1988. By using innovation in 3-month Treasury Bill rate to capture exogenous ifts in monetary policy, they found that the decline in bank loans following a monetary policy htening represents the credit channel. As a consequence, the loan supply is restricted via a nking lending channel. Thus, they interpret this latter evidence as consistent with the credit w. Three conclusions have been drawn from this study. First, the fund rate is a good indicator monetary policy even for the period after 1979. Second, nominal interest rates are good recasters of real variable. Finally, monetary policy works in part by affecting the composition bank assets i.e. tight monetary policy affects the supply of bank loans.

Romer and Romer (1990) employ six 'episodes'[2.2] of restrictive monetary policy, which e Federal Reserve appears to have deliberately used in an attempt to reduce the inflation rate iring an economic slowdown. They argued that the purpose of using these 'episodes' as dicator of monetary policy is to overcome the difficulty of the legitimate policy proxy to truly present the Fed's actions[2.3]. The estimates of the forecast errors on both money supply and ink loans show that the effect of loans' forecast is smaller than the forecast errors of money ipply, therefore indicating that the money channel transmits more information to the real sector an the credit channel does.

The series of the episodes were summarized in Table 2.2.
Most studies in the USA used the federal funds rate as a monetary policy indicator. See, for example. Bernanke and Blinder (1992) and other studies summarized in Table 2.2.

Kashyap et. al (1993) focus on the types of debt finance may omit valuable information ch as a shift in financing patterns after a change in monetary policy. This is the main criticism the study by Kashyap, since they used commercial paper as the only form of nonblank. In fact, ler sources of nonblank finance such as the issuance of the longer debt, trade credit and loans m finance companies can also be classified as non-bank debt. Kashyap has concluded that the anges in credit are at least as important as any other variable in explaining movements in tput prices and interest rate.

However, the study by Gertler and Gilchrist (1995) reconfirmed the evidence found by mer and Romer (1990). Gertler and Gilchirst argued that bank credit was more likely to be iven by demand factors than by monetary policy because the decline in bank credit growth lags hind the decline in money growth. The result indicated that credit market imperfections helped opagate the impact of monetary policy. Similarly criticism was made by Cecchetti (1995) on e Wash and wolcox (1995) paper.

4 The Relationship between Monetary Policy and Sectoral Production

Table 2.3 summarizes the empirical evidence review on the relationship between onetary policy and sectoral production (disaggregate). Gauger and Ender (1989) found that the gregate versus disaggregate results are matter of fact a contrast. While tests with aggregate vel data supported the Natural Rate Hypothesis (NRH)[2.4], disaggregate test indicated that ticipated money growth does have significant real output effects. Thus, there are no significant t impacts from anticipated money growth when one aggregates across offsetting real impacts.

Recently, Oliner and Rudebuseh (1996) supported the existence of a broad credit channel id its operation among small firms. These results showed that a tightening of monetary policy fects small firms more than large firms. Therefore, the main implication from these studies is at using disaggregated forms of credit and different types of borrowers offers new evidence on e presence of a credit channel.

Ganley and Salmon (1997) compared the response of output to a monetary shock in nine ajor sectors[2.5] and subsectors of the U.K. economy. For that purpose, they estimated for each dustrial sector a separate vector error-correction model involving the interest rate, aggregate DP, the GDP deflator and sectoral output. Among the nine major sectors, they found that nstruction, distribution and transportation, and manufacturing exhibited the largest output

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The Natural Rate Hypothesis (NRH) implies that unanticipated, but not anticipated, money stock changes can effect real economic activity. Recently, the NRH has been given a strong theoretical foundation by the New Classical Macroeconomics.
Mining, utilities, manufacturing, financial services, government services, distribution, transport and communication, agriculture, and construction.

sponses to a monetary shock. Government services, financial services, and utilities responded

latively little to the shock. The mining sector's response is somewhat erratic and ambiguous,

id the agricultural sector's response is insignificant. Over all the subsectors, those industries

osely linked to the construction sector reacted substantially fairly quickly (within a year), those

iked to consumer's durable and semi-durable goods, such as motor vehicles, reacted

bstantially with a lag (within 2 years), and those linked to food show only a modest response.

ictors that are closely linked to industrial demand, such as machinery and chemical, reacted

bstantially with a slight lag, and they reached their maximum decline with a significant delay

ver 2 years).

Hayo and Uhlenbrock (1999) used the monthly data to study the impulse responses of 28

dustries in the manufacturing and mining sector in Germany to monetary shocks[2.6] . They

vestigated the possible asymmetric effects of monetary policy transmission on the industries of

e manufacturing and mining sector. These studies employed the VAR method of estimation.

ie result found that almost half of the industries show an output reaction that is significantly

fferent from that of the aggregate manufacturing and mining sector.

Goodhart and Hofmann (2000) analyzed the role of financial variables in the conduct of

onetary policy. These studies estimated a small structural model for 17 developed countries

iing quarterly data spanning 1973 – 1998. The results indicated that the effect of other financial

iriables, especially property and share prices, on the output gap is highly significant. It appears

at in almost all of the countries in this data set, it is necessary to control the effect of other

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Hoya and Uhlenbrock's paper also examines regional differences.

lancial variables on the output gap in order to find a significant effect for monetary policy in ost of the developed countries.

Another study by Malone (2000) investigates the money supply shock asymmetry using saggregated output data in USA. A two-step estimation procedure is employed. The results dicated symmetry for the hypothesis test use shocks to the M2 money supply. These results irror those of Gauger (1988) who found little support for the significant of unanticipated oney shocks at the diasgggregate level.

Lastly, Fares and Srour (2001) relies on simple vector autoregressions to investigate the onetary transmission mechanism in broad sectors of the Canadian economy. Two types of saggregation were used, one at the level of final expenditures, and the other at the level of oduction. They found that a monetary contraction affects exports relatively quickly and it fects investment much more substantially than the consumption of goods, while it does not em to affect services. Not surprisingly, durables respond much more substantially than semi-arables to a monetary contraction, while non-durables do not respond significantly. At the level f production, following a monetary contraction, construction reaches the trough of the cycle rst, although, cumulatively, manufacturing reacts twice as strongly. The response of the service ctor is significant, but it lags manufacturing.

5 Selected Empirical Studies in Malaysia

Table 2.4 summarizes the empirical evidence review on selected empirical studies in alaysia. Scholnick (1991a, 1991b) and Tan (1995)[2.7] tested a disequilibrium model of lending :e determination using the Malaysian data. Both studies employed the Stiglitz and Weiss's 981) base-line model. Using the error-correction-mechanism (ECM) specification, Scholnick' dy showed that the lending rate did not fully clear the loan market. This indicated that the esence of the credit rationing was due to the slow adjustment of the loan rate. Similar evidence s also been portrayed by Tan (1995) loan rate appears to respond only legibly to loan supply :tor, while not a single loan demand factor appears to have influenced it. In spite of financial)eralization, one way concludes that equilibrium credit rationing could prevail in the Malaysia lancial system.

Lastly, Dimec (2000) found that the myriad of studies has succeeded I the establishing e empirical importance of the asymmetric effects of monetary policy on output and price. The sults also showed that monetary tightening has a larger impact on small and medium size dustries (SMIs) than it does on large manufacturing firms (LMFs).

Scholnick (1991a, 1991b) and Tan (1995) estimated their model using the error-correction mechanism (VECM).

.6 Empirical Studies by using Granger-Causality Procedures

Table 2.5 summarizes the empirical evidence review on the empirical studies by using ranger-causality procedures. A study on the United States data has been empirically tested by hristiano and Ljungqvist (1987). They found that the bivariate Granger-causality test on money id output are statistically significant when data are measured in log levels, but not when they e measured in first differences of the log. The Bootstrap simulation experiments indicate that, ost probably, the first difference results reflected lack of power, whereas the level results flected Granger-causality that is actually in the data. The reason for the lack of power in the rst difference F-statistic is that first differencing the data appears to entail a specification error. hristiano and Ljungqvist concluded that money does Granger-cause output in the bivariate lation, but they removed the potential embarrassment for models that assign an important role money in business fluctuations.

Hoya (2000) used the existence of a broad data base of 14 EU-countries included Canada, ie US and Japan. Hoya found that very few general conclusions can be sustained. Based on the ranger causality test results, a number of country groups are obtained using cluster analysis, hich is characterized by a similar behavior with respect to the money-output relation.

Recently, Azali and Habibullah (2000) analyze the response of the sectoral output[2.8] to
1ancial variables variation using Malaysia and Singapore quarterly data. They employed a
ctoral augmented VAR model based on Toda and Yamamoto (1995) work as was estimated.
zali and Habibullah showed that significant changes in sectoral output differences are found
nong the channels of monetary transmission via financial variables. They concluded that in the
.se of Malaysia, money channel dominated other channels in leading the agricultural output,
here credit and stock prices channel were favorable for the manufacturing and services output.
1e results also showed that the stock market activity is stronger in Singapore in affecting the
ctoral output compared to Malaysia counterpart.

.7 Conclusion

Generally, throughout the literature review, we face difficulty in concluding that the
ranger-causality on the sectoral production due to the existing mixed results except the Azali
1d Habibullah (2000)[2.9].

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[1] Manufacturing, services and agricultural sectors.
[1] See Azali and Habibullah (2000). The journal paper of "Sectoral impact of monetary policy in Malaysia and
Ingapore." *University Putra Malaysia, Faculty of Economy and Management, Working paper no. 7626.*

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Table2.1: Studies on the Relationship between Monetary Policy and Aggregate Output

Author (year)	Country/data frequency	Model/Method of estimation	Variable used	Finding
Ben.S. Bernanke & Mark Gertler (1995)	USA monthly data 1965:1 – 1993:12	VAR system	log of real GDP; log of the GDP deflator, log of an index of commodity prices and the federal funds rate; credit aggregates	The result supports that money supply and credit aggregate have played an important role on real economy activity.
Christopher A. Sims (1972, 1980)	USA data	VAR system	money; income; GNP; wage; price level	The result found that causality runs from money to output in the USA.
John H. Cochrane (1995)	UK data	Structural Model; Anticipated-unanticipated model;	M2; federal fund; consumption GDP deflator, commodity price index;	The anticipated monetary policy can have some effect results in much shorter and smaller output response estimates closer to the predicting of most monetary models.
Willis L. Peterson (1996)	USA annually data 1929- 1994	Reduce form model of U.S. labour market Granger-causality test	M2; M1 and remainder (MD); GDP	The results showed reveals that its runs from money to economic activity. The evidence attests to the short-run non-neutrality of money on aggregate output.
Fabio C. Bagliano & Corlo A. Favero (1998)	USA & Germany data	VAR model	GDP; money aggregate; price level; US dollar-D mark exchange rate;	The empirical analysis confirms the main features of the monetary policy transmission mechanism in US and Germany, explicitly addressing the issue of simultaneity between the German policy interest rate and US dollar- Dmark exchange rate.
Giuseppe De Arcangelis and Giorgio Di Giorgio (1999)	Italy monthly data 1989:6 - 1998:5	Structural Vector Auto-regression (SVAR)	real GDP; M0; M1; M2; 3-month T-bill rate	The result found that output effect of an exogenous monetary policy shock is due to the credit rather than to the interest rate (or exchange rate) channel.

Table 2.1: Studies on the Relationship between Monetary Policy and Aggregate Output (continued)

Author (year)	Country/data frequency	Model/Method of estimation	Variables used	Finding
Medhi S. Monadjemi (1999)	USA annually data 1960s - 1970s Australia annually data 1960s - 1990s	Dickey-Fuller and Philips-Perron's test; error correction model (ECM)	Level of output; price level nominal interest rate; nominal value of money stock	The result shows the importance of money in explaining variation of output only in Australia and not for the U.S.
David Laidler (1999)	Canada annually data 1960 - 1998	Quarterly Projection Model (QPM); Vector Correction Model (VECM)	level of real GDP; prices level; M1; M2;	This study indicates that the supply and demand for money is crucial not only to impact of monetary policy but also to the way other shocks impinge upon economy.
Scott Freem and Finn Kydland (1998)	USA data	Quantitative Analysis	real output; M1, Price level; nominal interest rate;	Money in the model has no causal effect on the decisions that affect real output
Georgios Karras (1996)	Sample of European countries	two-step OLS; Nonlinear least square (NLLS); Maximum Likelihood (ML)	real output; real interest rate; consumption; investment	Money effect on the output is neutral

Table 2.2 Studies on the Relationship between Credit Variables and Aggregate Output

Author (year)	Country/data frequency	Model/Method/Estimation	Variables	Findings
Ben S. Bernake (1986)	the USA; quarterly data 1953q:1 - 1978q:4	standard 3-variables VAR; X, P,C standard 4-variables VAR; X, P, M, C.	real GNP, X; price deflator, P; total nonfinancial debt (Credit), Consumption; M1;M2;M3;	The result shows that both money and credit convey the same information about the determination of prices, and therefore support a two-target monetary policy framework based on both money and credit.
Ben S. Bernanke &Alan S. Blinder (1988)	the USA, quarterly data 1974:qi - 1985: q4	Instrumental Variables; logarithmic partial adjustment model.	real GNP, y; GNP deflator, P; prime rate, p; 3-month treasury bill rate, r; credit aggregate	The results of estimation indicate that the money demand shocks became much, more important relative to credit-demand shocks in the 1980's. However there is no strong evidence to reject the role of credit-demand. Thus, warrant a symmetric treat on money band credit.
Ben S. Bernanke &Alan S. Blinder (1992)	the USA monthly data 1959:7 - 1989:12	Six different five-variable VAR's were tested all data were seasonally adjusted	log of CPI; log of M1 and M2; federal funds rate; 3-month TBR; 10-yars TBR non borrowed reserves of depository institutions	The result shows that the existence of long-run relationship between narrow money and inflation rate.
Karl Brunner & Allan H. Meltzer (1988)	the USA data	Multi-asset model	not mentioned explicitly in this this summary article. However, their model can be traced in (ed.) Stein, 1976, pp.69 - 103.	This study moved beyond the standard IS-LM framework by incorporating a credit market and introducing a general substitution process, loan rationing supplements interest rate rationing relative to price changes.

Table 2.2 : Studies on the Relationship between Credit Variables and aggregate output (continued)

Author (year)	Country/data frequency	Model/ Method of estimation	Variable used	Finding
Christaina D.Romer & David H. Romer (1990)	the USA monthly data 1941 - 1984	St. Louis Equation, OLS Instrumental Variables	Bank lending loans; M1; 3-month Treasury bill rate (TBR); Industrial production.	They found that the forecast errors of credit supply is smaller than forecast errors of money supply. This implies that the money channel transmits more information that the credit channel.
Anil K. Kashyap, Jeremy C. Stein, & David W. Wilcox (1993)	the USA quarterly data 1963:q1 - 1989:q4	structural model	Commercial paper and loans; investment & inventory data; TBR; business cycle indicators	Changes in credit are at least as important as any other variables in explaining movement in output prices and interest rate.
John McCallum (1991)	the USA quarterly data 1947:q3 - 1986:q4	Credit rationing model of Blinder (1987)	log of real GDP; M1; dummies to indicate various credit rationing of credit crunch periods	The result of estimation showed that the credit rationing mechanism exists and account for about half of the total contribution of monetary shocks to fluctuations in GDP.
Carl E. Walsh and James A.Wilcox (1995)	the USA monthly data 1955:1 - 1994:12	VAR Model	the log of coincident indicators; inflation; nominal federal funds rates; prime rates; and real bank loan.	The result consistent with the credit view- supply of bank loans less effect on bank lending than output. Loan shock was a factor in the boom in the late 1980s and the recession in the early 1990's.
Mark Gertler and simon Gilchrist (1995)	the USA quarterly data 1975:q1- 1991:q4	VAR model	log of real GNP; commercial loans securities; inflation rate; large time deposit	The result indicate that credit market imperfections help propagate the impact of monetary policy.

Table 2.3: Studies on the Relationship between Monetary Policy and Sectoral Production

Author (year)	Country/data frequency	Model/ Method of estimation	Variable used	Findings
Jean A. Gauger & Walter Enders (1989)	USA data	Two-step OLS;	log of real output; log of employment; log of real wages; labour and production index	The service sector was shown to be invariant to anticipated money stock disturbances. These results are in accord with traditional views on the effects of monetary policy.
Stephen D.Oliner & Gelnn D. Rudebush (1996)	quarter data of US manufacturing sector, 1975q:1 - 1991q:4	VAR model	the log of real GDP; inflation rate the nominal rate and federal funds rate; the log of financial variables (all the these variables in disaggregated form according to small and large firms)	The authors tested for the existence of a broad credit channel for monetary policy and found that monetary tightening affect small firms more than large firms. This evidence supports the existence supports the existence of a broad credit channel.
Joe Ganley & Chris Salmon (1997)	UK data	VAR system; Augmented Dickey-Fuller	Output of 24 sector of UK economy	The results indicate that the sensitivity of output to changes in monetary conditions differs markedly across industries.
Bernd Hayo & Birgit Uhlenbrock (1999)	Germany monthly data	VAR approach logit model for YIRF	data for manufacturing and mining; service sector, price level; monetary aggregate	Eight out of eleven industries exhibit a significant positive relative output reaction
Charles Goodhart & Boris Hofmann (2000)	17 developed countries quarterly data 1973 - 1998	model proposed by Rudebush and Svensson (1998)	Financial Variables; real GNP;	The result showed that property and the share prices have significant explanatory power for the output gap in most of the developed countries.

Table 2.3: Studies on the Relationship between Monetary Policy and Sectoral Production (continued)

Author (year)	Country/data frequency	Model/Method of estimation	Variable used	Finding
M. Stokes Malone (2000)	disaggregated output monthly data 1962:1 - 1999:11	Two-stages regression procedure	M2; Federal Reserve of industrial production; producer price index; federal funds rate	These results mirror those of Gauger (1988) who found little support for the significant of unanticipated money shocks at the disaggregate Level.
Jean Fares & Gabriel Srour (2001)	Canada quarterly data 1961 - 1999	VAR model	CPI; GDP deflator; disaggregate expenditure; disaggregate production	The response of the service sector is significant but its lags Manufacturing.

Table 2.4: Studies on the Selected Empirical Work in Malaysia

Author (year)	Country/data frequency	Model/ Method of estimation	Variable used	Finding
Barry Scholnick (1991a)	Malaysia monthly data 1985:1 - 1990:12	Stiglitz Weiss' credit rationing model (1981)	interbank rate; lending rate; deposit rate;	This study estimates a disequilibrium model of lending rate determination in Malaysia. The results of estimation support the evidence of disequilibrium in loan market
Eu Chye Tan (1995)	Malaysia quarterly data 1979q:1 - 1991q:4	Lending rate adjustment equation based on Stiglitz-Weiss Credit-rationing model (1981)	total loans and advances extended by commercial banks; lending rate; TBR: capital and reserves of commercial banks.	Loan rate appears to respond only eligibly for the loan supply factors, while not a single loan demand factor appears to have influenced it. spite of financial liberalization, equilibrium credit could prevail in Malaysia financial system.
Ilker Dimec (2000)	Malaysia data	Var Model	Industrial Production Index; monetary aggregate; SMI; LMI	Two conclusion were highlighted: First, a myriad of studies have succeeded in establishing the empirical importance of the asymmetric effects of monetary policy on output and price. Second, the results show that monetary tightening has larger impact on SMIs that it than does on LMFs.

Table 2.5: Studies Empirical Work by using Granger-causality Procedures

Author (year)	Country/data frequency	Model-Mefhod estimation	Variable	Finding
Lawrence J. Christiano & Lars Ljungqvist (1987)	USA data	Granger-causality test	Money aggregate; real GDP	The result showed that money does Granger-cause output in the bivariate relation.
Bernd Hayo (2000)	14 EU-Countries quarterly data (included Canada, the US and Japan)	Granger-causality test	Money aggregate; real GDP	The Granger-causality test results found that the number of country groups are obtained using cluster analysis, which are characterised by a similar behaviour with respect to the money-output relation.
M. Azaii & M.S. Habibullah (2000)	Malaysia and Singapore quarterly data 1987q:1 - 1996q:4	Toda Yamamoto (1995)	Financial variable. Manufacturing, service and agricultural sectors.	The results confirm that money is non-neutral and have forecasting power in sectoral output movements and in Malaysia and Singapore. Further more, the role of stock market activity is stronger in Singapore compared to Malaysia.