Financial Liberalization, Innovation and the Response of Malaysian Commercial Banks' Portfolios to Monetary Shocks

Noor Azlan Ghazali

ABSTRACT

Several recent theoretical papers have shown that banking institutions posses a special role in the transmission mechanism of monetary policy. The reactions of banks toward changes in monetary conditions, particularly their portfolio allocations, determine the ultimate impact of monetary policy on real activities. In addition, several findings also indicate the changing behaviour of commercial banks in recent years due to the development of financial markets and liberalization process which begin since early eighties. This paper examines this issue for the Malaysian banking industry. Without exception, liberalization and innovation that occur in the Malaysian financial industry since early eighties also affect the way banks respond to changes in monetary policy. It is shown that banks resort to competitive funds and securities liquidation in their attempt to shield the lending capacity. This is made possible by the recent development in the banking industry. It is argued that the central bank loses to some extent, its direct influence on banks portfolio allocations, thus, reducing the effectiveness of monetary policy. Studying the transmission mechanism of monetary policy, therefore requires special attention to the behaviour of banking firms.

ABSTRAK

Sehilangan kajian teoretikal kebelakangan ini menunjukkan bahawa institusi perbankan memainkan peranan yang penting di dalam transmisi polisi monetari. Tindakbalas bank terhadap perubahan di dalam polisi monetari, terutamanya peruntukan portfolio mereka mempengaruhi kesan muktamad polisi monetari ke atas aktiviti benar. Di samping itu beberapa kajian menunjukkan perubahan tingkahlaku bank akibat dari pembangunan di dalam pasaran kewangan dan juga proses liberalisasi yang bermula sejak awal lapan puluhan. Kajian ini meneliti perihal berkaitan bagi industri perbankan di Malaysia. Keputusan menunjukkan bahawa sistem perbankan di Malaysia juga tidak terkecuali dari kesan yang sama. Proses liberalisasi dan inovasi kewangan mempengaruhi tindakbalas bank terhadap perubahan di dalam polisi monetari. Bank didapati cuba melindung portfolio pinjaman mereka dengan cara mencairkan portfolio

pelaburan ataupun mempertingkatkan pinjaman luar. Kesemuanya ini berkemungkinan hasil dari pembangunan sistem kewangan sejak awal lapan puluhan yang berlaku di Malaysia. Oleh yang demikian, keupayaan bank pusat untuk mempengaruhi perletakan portfolio institusi bank adalah berkurangan dan ini seterusnya mengurangkan keberkesanan polisi monetari. Penentuan saluran transmisi polisi monetari seharusnya memberi perhatian yang khusus ke atas tingkahlaku firma perbankan.

INTRODUCTION

The role of banking firms in transmitting the effect of monetary policy on real economic activity has received significant attention by researchers in recent years. Traditional models of monetary equilibrium despite being able to generate the shortrun non-neutrality of money fail to incorporate an active role for banking firms in the transmission process (Grossman and Weiss (1983), Rotemberg (1984), Christiano and Eichenbaum (1992), and Fuerst (1992)). No special role is assigned to banking firms except on their liability side (i.e. demand deposits) which comprises the money supply. Since monetary authority has direct control over the amount of demand deposits that can be issued, banks posses no special role in the transmission process. This is parallel to Fama (1980) who argues that banks are passive economic agents which have no effect on the general equilibrium of the economy and that their activities fall under the Modigliani-Miller (1958) theorem on the irrelevance of the pure financing decision.

Recent models by Fuerst (1994) and Labadie (1995) assigned a more active role for banks in the transmission process. It is shown that the effectiveness of monetary policy relies greatly on how banks respond to monetary injections. In addition, the process of deregulation and financial innovation which began in the early 1980's, necessitate new explanations to the workings of monetary policy as they blur the definition of money, create new assets which are close substitutes to money, and seriously affect the roles of commercial banks in the economy (see Edward (1995) and Edward and Mishkin (1995)). The changing role of banks brought by deregulation and innovation could affect the effectiveness of monetary policy.

In contrast to Fama (1980), Bhattacharya and Thakor (1993: 14), in reviewing contemporary banking theory, state that "...intermediation is a response to the inability of market mediated mechanisms to efficiently resolve informational problems... welfare of transacting parties should improve when they use banks". Thus, from the perspective of banking theory, banks are special and play an important role in influencing the efficiency of the economy. The transmission mechanism of monetary policy can be better analyzed by studying banks' reactions to changes in monetary policy. In this

study, this is accomplished by analyzing the response of bank balance sheets to changes in monetary conditions. The following sections are categorized as follows. The second section discusses recent findings on issues related to the subject. The data and method of empirical tests are explained in the third section. This is followed by the discussion on the findings in the fourth section. The paper ends with a brief summary and implications.

BANKS' REACTIONS TO MONETARY POLICY

Various studies have been performed in analyzing the impact of monetary policy on the components of bank balance sheets. Most of the existing findings relate the status of the influence to the process of financial liberalization and innovation that occur in recent years. Thornton (1994) identifies the weakening relationship between reserves and loans following the Monetary Control Act of 1980. He performs regression analysis between loans and reserves for two sub-periods, 1959-1979 and 1980-1993. Loans and reserves are positively and significantly associated for the pre-1980 period, but the significant link disappears after 1980. Financial innovation and deregulation are argued to be the main factors behind this weakening relationship. Morris and Sellon (1995) evaluate the link of bank lending with reserves availability. Little evidence are found to support the view that bank lending is constrained by the availability of reserves. Studies investigating the transmission mechanism of monetary policy indicate the critical role of bank lending in transmitting changes in monetary policy (see Bernanke and Blinder (1988), Bernanke and Gertler (1995), and Kasyhap and Stein (1994, 1995)). To the extent that bank lending is the channel through which monetary policy is transmitted into the economy, deregulation therefore reduces the effectiveness of monetary policy.

The progress of liquidity management, especially the availability of purchased funds (e.g. certificates of deposits (CDs), inter-bank borrowing, Euro-CDs, repurchase agreements (REPOs)) and the buying/selling of liquid securities, could also reduce monetary influence on bank balance sheets. In achieving their profit objectives banks may choose to shield their loan portfolios by adjusting other components of the balance sheets such as increasing their purchased funds which can be attracted at a competitive rates. Romer and Romer (1990) argue that banks resorted to CDs financing when monetary policy is contracted. They note that the spread between interest rates on CDs and commercial paper increases as tight monetary policy occurs. This suggests banks attempt to insulate their loan portfolios from declining by issuing new CDs. It is also possible that banks refuse to cut their lending as money supply is contracted but instead liquidate their holdings of liquid securities which form the secondary reserves for banks. These securities liquidation strategies are cost effective when compared to liquidation of the

illiquid loans. Returns from loans are maximized if bank holds them until maturity (Murton 1989). Market inefficiency in valuing bank loans due to the informational asymmetry problems has discouraged banks from relying on loan liquidation as a solution to liquidity problems. As discussed in Keeton (1993), contraction in reserves might not lead to a reduction in bank loans but instead may increase the issuance of non-deposit liabilities and/or liquidation of securities held. This tendency to revert to purchased funds and/or liquidation of securities impede the effects of monetary contraction. The direct influence of monetary authority on the amount of loans issued by commercial banks is weakened if banks attempt to insulate their loan portfolios from being affected by changes in monetary policy. Changes in institutional features affect the way banks response to monetary policy.

Tracing the reactions of banks toward changes in monetary policy can be performed by examining the dynamic of balance sheets components following monetary injection or contraction. Bernanke and Blinder (1992) and Gertler and Gilchrist (1993) show that bank deposits and securities drop as policy is tightened. Only after some lag do bank loans start to decline. A more extensive analysis of the impact of monetary policy on bank portfolios, similar to that of Bernanke and Blinder is performed by McMillin (1996). An eight variable VAR model is estimated in analyzing the response of bank portfolios to monetary shocks proxied by the federal funds rate and non-borrowed reserves (NBR). A similar pattern to Bernanke and Blinder is identified, regardless of the monetary indicators used. In a similar framework, Kashyap and Stein (1995) analyze the response of banks varying in size to monetary shocks based on bank profit maximizing behavior. It is shown that small banks loans decline more significantly than those of the large banks whenever tight money policy is implemented. On the other hand, small banks' securities holdings respond significantly less than large banks' to monetary tightening. Thus, differences in bank response may also be due to market imperfection which affect banks' ability to shield their loan portfolio.

The existing findings generally support the view that liberalization and innovation have reduced the influence of monetary authority on banks portfolio allocations. Banks' reactions to monetary policy particularly their loan portfolios are not direct and their attempt to shield the lending activity is evidenced by the adjustments in other components of bank balance sheets. This weakens the direct influence of monetary authority on bank balance sheets. Thus, monetary authority loses its directinfluence on the banking sector as deregulation and innovation take place. These findings are largely based on the experience in the United States. However, financial liberalization and innovation are taking place in almost all nations. In the case of Malaysia, financial liberalization starts in early eighties. Today, Malaysian commercial banks have wider choices as alternatives to attract funds. The development of public and private debt markets and establishment of National Mortgage

Corporation (Cagamas Bhd.) introduce additional flexibilities for banks in managing their liquidity positions. In addition, the establishment of derivatives markets such as the Kuala Lumpur Options and Financial Futures Exchange (KLOFFE) and the Malaysian Monetary Exchange (MME) also offer new hedging opportunities for commercial banks that might affect the reactions of commercial banks to changes in monetary policy. Thus, the weakening influence of monetary authority on the portfolios of commercial banks could also prevail in Malaysia. This study attempts to evaluate these issues in the Malaysian banking industry.

DATA AND METHODOLOGY

Data for Malaysian commercial banks balance sheets is extracted from the monthly bulletin issued by the central bank of Malaysia (Bank Negara Malaysia) and macroeconomics variables are down loaded from the IFS CD-ROM compiled by International Monetary Funds (IMF). The data set begins from 1971:I to 1994:IV, which spans a period of twenty four years. In addition to the whole period analysis, the focus is given for the period of 1980:I to 1994:IV as this reflects the liberalization years in Malaysian banking industry. Quarterly observations of the following time series are used in the empirical analysis; money supply (M1), Consumer Price Index, Industrial Productions Index, demand deposits held by commercial banks, securities holding of commercial banks, loans issued by commercial banks, and purchased funds held by commercial banks (fixed deposits, bankers acceptance, CDs, and inter-bank borrowing).

Previous studies employ several measures such as monetary aggregates, short term rates, non-borrowed reserves to represent monetary indicator (see King and Plosser (1984), Bernanke and Blinder (1992), Friedmand and Kuttner (1992), Eichenbaum (1992) and Strongin (1995) for discussion on the use of monetary aggregates, short term rates, and non-borrowed reserve as monetary indicator). A group of researchers apply a dating procedure to measure monetary policy (see Romer and Romer (1990), Boschen and Mills (1992), and Morris and Sellon (1995)). This method identify changes in monetary policy through a date that signifies Feds policy. Changes in monetary aggregate is used to represent monetary innovations in this study. In the case of Malaysia, interest rates determination was liberalized in the eighties. Prior to that interest rates were administered by the central bank. Thus, precluding us from using them as monetary indicators. Data on non-borrowed reserves is not widely available. The consumer price index and industrial production index are included in the model to capture the aggregate demand factors. Thus, changes in monetary policy can affect bank balance sheet either directly on indirectly through its influence on aggregate demand. The goal of the analysis

is to examine the response of banks' portfolios to changes in monetary policy. Particular emphasis is given to the pattern of responses of the loans, securities, and purchased funds held by commercial banks. Liberalization and innovations are hypothesized to delay bank loans response to monetary tightening as banks shield their loan portfolios through liquidation of securities and by attracting a more competitive sources of funds.

The empirical analysis conducted in this study is based on a vector autoregressions (VAR) methodology introduced by Sims (1980). This method allows relaxation of structural specifications and lets the data specify the dynamic structure of the model itself. It involves simultaneous estimations of a system of variables which affect each other in an autoregressive pattern. A VAR is basically an extension of a univariate autoregressive process that allows a vector of variables to be included in the model. A vector of m variables $X_t = (x_{1t}, x_{2t}, ..., x_{mt})'$ can be represented in a VAR system as follows:

$$
\begin{bmatrix} x_{1t} \\ x_{2t} \\ \cdot \\ x_{mt} \end{bmatrix} = \begin{bmatrix} A_{10} \\ A_{20} \\ \cdot \\ A_{m0} \end{bmatrix} + \begin{bmatrix} A_{11}(L) \\ A_{21}(L) \\ \cdot \\ A_{m1}(L) \end{bmatrix} \begin{bmatrix} A_{12}(L) \\ A_{22}(L) \\ \cdot \\ A_{m2}(L) \end{bmatrix} \cdot \begin{bmatrix} A_{1m}(L) \\ A_{2m}(L) \\ \cdot \\ A_{mm}(L) \end{bmatrix} \begin{bmatrix} x_{1t-1} \\ x_{2t-1} \\ \cdot \\ x_{mt-1} \end{bmatrix} \begin{bmatrix} v_{1t} \\ v_{2t} \\ \cdot \\ v_{mt} \end{bmatrix} \quad (1)
$$

where A_{i0} represents the intercept terms and $A_{ij}(L)$ is the polynomials in the lag operator L. The reduced form error v_t has mean zero, $E[v_t] = 0$, and the covariance matrix $\Sigma_v = E[v_t v_t']$ for all t. Furthermore, v_t and v_s are uncorrelated for $t \neq s$. The estimation procedure is simplified by the autoregressive specification. Throughout the analysis we used four quarter lag for all variables which is sufficient to capture the short and long run effect of monetary shocks. Since all of the right-hand-side variables are pre-determined and the same for each equation, ordinary least square (OLS) yields a consistent and asymptotically efficient estimator. Seemingly unrelated regression (SUR) does not add to the efficiency of the estimation because of the identical regressors.

Two forms of analysis are performed for this study, i.e. impulse response functions analysis and variance decompositions analysis. The dynamic responses among the variables in the system toward each other are presented by the impulse response functions analysis. The impulse response functions depict the response of a variable towards one standard error innovation in one of the variable in the system. This analysis involves shocking one of the equation's disturbance terms and tracing the sign and magnitude of the system's response to the shocks over a period of time. The variance decomposition analysis identifies the sources of shocks that contribute to the forecast error variance of each of the variables in the system. This is achieved by decomposing the n-step ahead forecast error variance into each one of the shocks in the system. The estimations are also performed for different categories of loans varying in maturity

(short term (less than 1 year), medium term (1 to 4 years), and long term loans (greater than 4 years)). This provides us more information on the sensitivity of bank loans according to its maturity structure.

RESULTS AND DISCUSSIONS

The dynamic patterns that describe the inter-relationship between monetary variable and bank balance sheets components (loans, securities, and purchased funds) are depicted in Figure 1. The impulse response functions show the response of bank balance sheets components following monetary contraction. The responses for the whole period (1971:I-1994:IV) are shown in the first column of Figure 1. Total bank lending declines immediately following monetary contraction. The decline persists throughout the horizon reported which is twelve quarters. There is minimal evidence to support banks shielding their loan portfolios. The slight decline in securities in the first three quarters provides some support for banks trying to shield their loans. However, the shielding effort is not significant as it fails to prevent decline in bank lending. There is no indication that banks resort to competitive funds as the purchased liabilities also decline parallel with the amount of loans issued. This indicates that banks react in parallel fashion to changes in monetary policy. Banks can therefore be considered passive in their strategies with regard to monetary policy. The inability of commercial banks to shield their loan portfolios when the whole period data is used is expected as it incorporates the 1970s during which the financial markets are still very much regulated and less developed with limited financial products available. This also suggests the greater influence of central bank on banks' portfolio allocation. The impulses using disaggregated loan portfolios of different maturities are shown in the second, third and fourth rows of Figure 1. In general, the pattern identified earlier remains. However, decline in loans is slightly delayed for the medium and long term loans. For the whole period analysis, greater shielding effort is traced for longer term loans. In addition to the liquidation of securities banks also attempt to prevent the decline in their longer term loans by attracting purchased liabilities. This is especially true for loans maturing greater than 4 years. In contrast, short term loans decline immediately following monetary tightening. Thus, banks are selective in deciding which category of loan to protect. However, as shown by the impulses, banks are not able to totally prevent the decline in these loan portfolios. In the end, all categories of loans are negatively affected by monetary contraction engineered by the central bank.

Responses of bank portfolios during the liberalization years (1980:I-1994:IV) are plotted in column two of Figure 1. A different pattern of responses are traced for this period. Focusing first on total loans, during the

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(short term (less than 1 year), medium- term (1 to 4 years), and long term loans (more than 4 years)). This provides us more information on the sensitivity of bank loans according to maturities. Thus more relevant information has relevance... *(illegible obscured text)*

RESULTS AND DISCUSSION

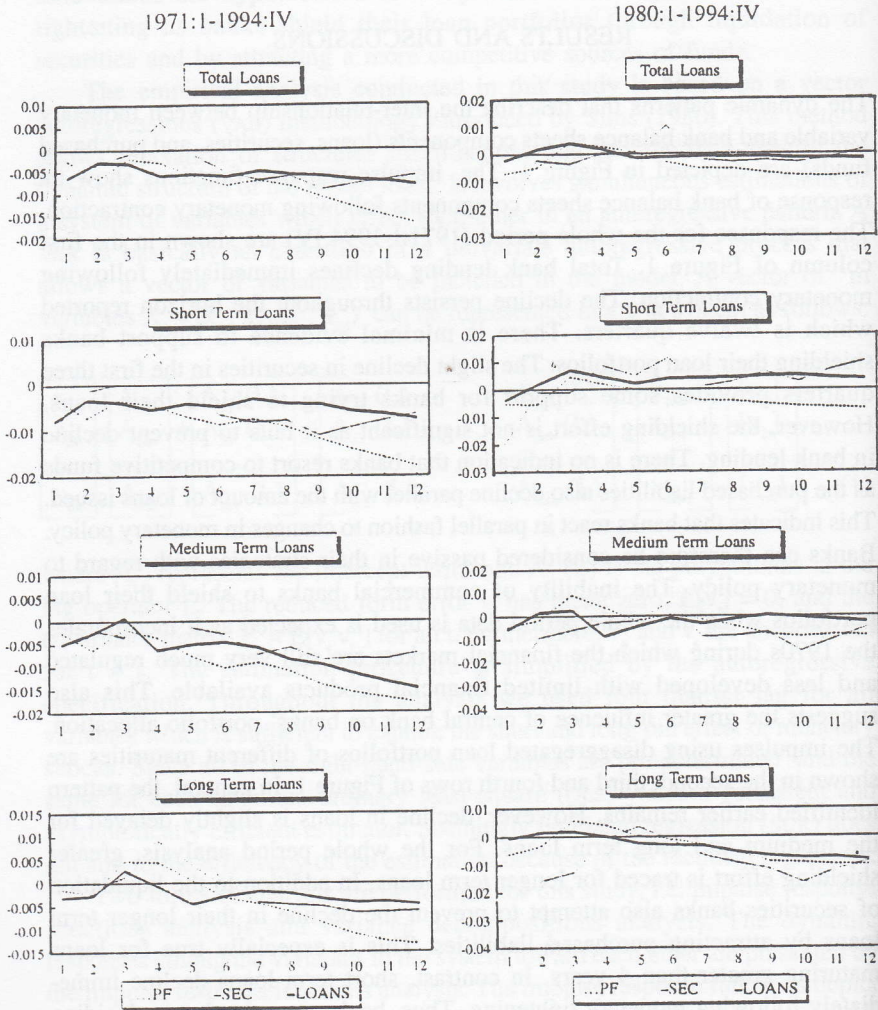*(text largely obscured/illegible in upper region)*

FIGURE 1.   The response of banks balance sheets components
to monetary contractions

liberalization years, the effect of monetary contraction on bank lending is reduced and the decline is delayed after about a year. It is now obvious that other components of bank balance sheets adjusted to offset the negative impact of monetary contraction on bank lending capacity. As shown, liquidation of securities now takes place for a longer period (approximately one year) and in a larger scale as compared to the whole period responses. In addition, banks also now resort to competitive funds in supporting their lending capacity. Purchased funds increase following monetary contraction and its dynamic is parallel to the pattern of loans. This is a significant evidence supporting banks shielding their loan portfolios. The response of banks portfolios to monetary contraction changes in recent years that witnessed financial market liberalization and innovation. Liberalization, innovation of banking products and development of financial markets expand the alternatives available to banks in responding to monetary policy. These also indicate the lower ability of the central bank to directly influence banks portfolios, thus, reducing the effectiveness of monetary policy.

The disaggregated loan analysis provide additional information on bank responses. Contrasting response is dictated for short term loans. Short term loans are now almost totally insulated from monetary contraction. The decline in medium term loans is also reduced. Comparing with the whole period, the tendency for bank to shield their short term loans increase significantly. However, the patterns of impulses for the long term loans show less evidence of bank protecting this category of loans as compared to the earlier case. In general, in all categories of loans banks attempt to offset decline in bank lending is supported by longer and larger liquidation of securities and also increase in purchase funds. The process of financial liberalization and innovation have change the response of banks portfolios to monetary condition. Decline in loans is delayed or prevented by adjustment in other components of bank balance sheets particularly liquidation of securities and by attracting new funds at a competitive rate.

Table 1 and 2 provide the variance decompositions analysis for the VAR system used to derive the above impulses. The focus of the analysis is to examine the percentage of variances of a particular balance sheets components which is explained by innovations in money and other balance sheets components (purchased funds and securities). Financial liberalization and innovation as claimed earlier reduce monetary influence on bank lending but increase the influence of other balance sheets components. This is supported by the first panel in Table 1. The percentage of variance of the total loans which is due to money variable reduces when the data set is limited to post-1980. When the whole period data is used money explains about 4 to 9 per cents of variance in loans but when only the post-1980 data is used the percentage declines to a range of 1 to 5 per cent. On the other hand, the percentage explained by other balance sheets components increased dramati-

TABLE 1. Variance decompositions analysis

a. Total loans: Percentage of variance due to money, purchased funds and securities

| | 1971:I-1994:IV | | | | | 1980:I-1994:IV | | | |
| | | Purchased | | | | | Purchased | | |
Qtrs.	Money	Funds	Securities	Sum	Qtrs.	Money	Funds	Securities	Sum
1	9.19	2.01	1.98	3.98	1	3.59	1.94	2.16	4.09
2	5.48	1.34	1.06	2.40	2	3.02	1.67	1.24	2.90
3	3.95	1.67	0.66	2.34	3	5.36	2.41	0.82	3.23
4	4.31	1.44	0.45	1.90	4	4.15	4.68	0.62	5.30
5	4.37	1.66	1.29	2.96	5	3.43	6.28	1.39	7.67
6	4.47	1.98	2.96	4.94	6	2.88	7.89	3.38	11.27
7	4.22	2.28	5.39	7.67	7	2.37	13.16	4.85	8.00
8	4.17	2.62	8.58	11.20	8	2.00	20.10	6.16	26.25
9	4.20	3.03	11.77	14.80	9	1.74	26.23	7.43	33.66
10	4.42	3.49	14.92	18.41	10	1.60	31.83	8.42	40.26
11	4.69	3.93	17.64	21.58	11	1.47	36.78	9.70	46.48
12	5.13	4.27	19.99	24.26	12	1.36	41.16	10.91	52.07

b. Purchased funds and securities: Percentage of variance due to money

| | 1971:I-1994:IV | | | 1980:I-1994:IV | |
| | Purchased | | | | Purchased | |
Qtrs.	Funds	Securities	Qtrs.	Funds	Securities
1	0.66	1.78	1	8.50	14.02
2	2.61	1.25	2	8.14	10.18
3	2.06	0.92	3	8.71	7.57
4	1.82	1.09	4	8.50	6.86
5	2.30	1.02	5	7.55	5.97
6	3.21	1.14	6	7.69	6.15
7	3.62	1.38	7	8.91	5.81
8	4.26	1.54	8	10.30	5.56
9	5.45	1.92	9	12.72	5.09
10	7.04	2.20	10	15.77	4.85
11	8.96	2.40	11	18.01	4.64
12	11.11	2.53	12	18.78	4.48

cally particularly the purchased funds after a one year period. In sum, the percentage explained by purchased funds and securities increases from a range of 2 to 20 per cent prior to the liberalization to 3 to 52 per cent during the liberalization period. The process of liberalization and innovation also allow banks to shield their loans by adjusting other components of balance sheets.

TABLE 2. Variance decompositions analysis: Disaggregated loans

a. Short term loans: Percentage of variance due to money, purchased funds and securities

	1971:I-1994:IV					1980:I-1994:IV			
Qtrs.	Money	Purchased Funds	Securities	Sum	Qtrs.	Money	Purchased Funds	Securities	Sum
1	9.96	0.51	2.02	2.53	1	5.21	0.29	2.43	2.72
2	6.24	0.31	1.09	1.40	2	3.31	6.53	1.24	7.77
3	4.58	1.16	0.67	1.83	3	7.15	7.22	0.78	8.00
4	4.28	1.11	0.58	1.69	4	6.08	10.34	0.53	10.87
5	3.88	2.20	0.87	3.07	5	4.69	11.20	1.30	12.50
6	3.76	3.96	1.83	5.80	6	4.33	11.84	3.61	15.46
7	3.41	5.88	3.68	9.56	7	4.08	14.60	5.66	20.25
8	3.23	8.01	6.62	14.64	8	3.88	18.00	7.71	25.71
9	3.13	9.86	9.87	19.73	9	3.80	20.85	9.40	20.25
10	3.28	11.43	13.27	24.70	10	3.77	22.95	10.73	33.67
11	3.53	12.69	16.17	28.86	11	3.57	24.81	12.10	36.91
12	3.98	13.46	18.68	32.13	12	3.34	26.70	13.34	40.03

b. Medium term loans: Percentage of variance due to money, purchased funds and securities

	1971: I-1994:IV					1980:I-1994:IV			
Qtrs.	Money	Purchased Funds	Securities	Sum	Qtrs.	Money	Purchased Funds	Securities	Sum
1	1.38	1.02	0.00	1.02	1	4.45	0.13	1.52	1.65
2	0.84	0.68	0.26	0.95	2	1.61	1.53	0.65	2.18
3	0.63	1.61	1.22	2.83	3	1.25	1.01	0.62	1.63
4	1.07	2.11	5.88	7.99	4	2.63	1.04	1.07	2.12
5	1.14	2.11	9.18	11.29	5	2.34	3.12	4.22	7.35
6	1.14	1.77	11.85	13.62	6	1.96	4.97	6.78	11.75
7	1.23	1.50	13.10	14.59	7	1.84	7.05	6.61	13.66
8	1.56	1.30	14.11	15.41	8	1.62	9.62	6.63	16.25
9	1.93	1.15	14.57	15.71	9	1.42	11.09	6.11	17.20
10	2.47	1.03	14.99	16.02	10	1.23	11.84	5.43	17.27
11	3.11	0.93	15.23	16.16	11	1.06	12.33	5.21	17.54
12	3.82	0.85	15.46	16.31	12	0.95	12.53	5.42	17.95

c. Long term loans: Percentage of variance due to money, purchased funds and securities

| | 1971:I-1994:IV | | | | | 1980:I-1994:IV | | | |
| | | Purchased | | | | | Purchased | | |
Qtrs.	Money	Funds	Securities	Sum	Qtrs.	Money	Funds	Securities	Sum
1	1.37	5.31	0.03	5.34	1	0.18	9.37	1.20	10.57
2	1.67	7.21	0.03	7.24	2	0.77	11.93	0.75	12.68
3	1.90	9.35	0.21	9.56	3	1.11	8.01	0.68	8.70
4	1.47	13.31	0.48	13.79	4	0.85	6.17	1.16	7.33
5	2.15	13.88	1.29	15.17	5	1.56	5.08	1.15	6.22
6	1.95	14.75	2.74	17.48	6	2.51	4.55	1.00	5.55
7	1.68	15.78	4.24	20.02	7	3.41	4.13	0.98	5.12
8	1.55	16.04	5.13	21.17	8	5.84	4.47	0.94	5.41
9	1.58	16.14	6.11	22.25	9	9.11	4.93	1.23	6.16
10	1.71	16.34	6.92	23.26	10	12.41	5.48	1.60	7.09
11	1.81	16.64	7.73	24.38	11	14.76	6.38	2.33	8.71
12	2.00	16.75	8.38	25.13	12	17.20	7.45	3.40	10.85

Thus, the securities and purchased funds will be more sensitive to monetary condition in recent years. This is also shown in Table 1. The percentage of securities and purchased funds explained by money have increased in the post-1980 period. This is shown by the second panel of Table 1. Table 2 shows the percentage of loans of different maturity which is explained by money and other balance sheets components. In general, the percentage explains by monetary variables are small and remain about the same for both period. However, the percentages explain by securities and purchased funds has increase quite significantly for the short term and medium term loans. This is consistent with the pattern of impulse response functions discussed earlier which support greater shielding effort for the shorter term loans. The result also indicate less effort made by banks to protect their long term loans in the post-1980. This is also parallel to the responses identified earlier. The changing priority in loan shielding by the commercial banks could be due to the increase importance of shorter term loans or changing banking strategies. This issue need to be investigated further.

The above findings generally support the view that financial market liberalization and innovation changes the way banks response to monetary policy. As indicated by the impulse response functions bank lending does not react instantaneously to monetary contraction during the liberalization years. Banks adjust other components of their balance sheets to offset the negative effect of monetary contraction on bank loans. This therefore, weaken the influence of central bank on banks portfolio allocation. With respect to the current trend of financial globalization this weakening influence on the bank

balance sheet highlights the importance of external factors in the conduct of monetary policy. Experience in early nineties in which sudden surged in external borrowings by Malaysian commercial banks exert upward pressure on domestic prices. Commercial banks funding opportunities are no longer restricted by political borders. Liberalization and innovation widened the funding base and therefore domestic banking activities could deviate from goals of domestic monetary authority.

CONCLUSION

Recent models of monetary equilibrium suggest the importance of bank in transmitting the effect of monetary policy. Understanding the response of banks toward changes in monetary policy is a critical element in studying the effectiveness of monetary policy. Traditional passive role of banking firm is now replaced by an active role which allows banking decisions to influence the efficacy of monetary policy. In addition to their profit objectives, financial market liberalization and innovation have change the conduct of banking firms in recent years. This study investigates the response of Malaysian commercial banks portfolios to monetary shocks. Comparison of responses of the whole period (1971:1-1994:IV) with the responses during the liberalization years (1980:I-1994:IV) shows that bank lending are no longer directly influence by the monetary changes. Bank internal strategies are pursued to offset the negative effect of monetary contraction on bank lending. This is achieved by liquidation of securities and also attracting purchased funds at a competitive rates. This reduces the direct influence of the central bank on banking operations and therefore weakens the effectiveness of monetary policy. Banking decisions, particularly portfolio allocations, affect the final outcome of changes in monetary policy. Therefore, banking decisions must be properly modeled in the general equilibrium framework that identifies the effects of monetary policy on the economy. The findings imply that monetary authority has lost some of its direct control over the banking system as liberalization and innovation have taken place. Thus, Fuerst's (1994: 375) call for more banking theory in monetary theory is strongly agreed with.

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Jabatan Kewangan
Fakulti Pengurusan Perniagaan
Universiti Kebangsaan Malaysia
43600 UKM Bangi
Selangor Darul Ehsan