

Taking Stock: A Critical Review of Recent Research on Monetary Policy Transmission Mechanism

Zakaria Bahari

ABSTRACT

The classical and more recent literatures on the transmission of monetary policy on economic performance offer a wide range of issues. Among the issues are; the potential roles of financial intermediaries in economic growth, the transmission of monetary policy to real variables, and the choices of financial indicators. The last two issues, in providing financial services, the financial intermediaries contribute to the economic growth by transmitting monetary policy to real variables as well as becoming important financial indicators. Several studies find that the debt financing is important to firms, particularly for financing investment of new project and to expand the current business activities. The question arises on how the monetary policy affect the firm behaviour? We will show that there are two complementary ways of explaining about how firm might be influenced by the changes of monetary policy. First, the balance sheet channel is identified whereby the condition of firm's balance sheets is a source of output fluctuations. Second, the bank lending channel that stresses the ability of monetary policy to regulate the pool of funds available to the bank-dependent firms. This paper provides the investigation of those issue.

Keywords: monetary policy; debt; transmission mechanism; balance sheet channel; bank lending channel

INTRODUCTION

In general, the classical and more recent literatures on the transmission of monetary policy on economic performance offer a wide range of issues. Among the issues are; the potential roles of financial intermediaries in economic growth, the transmission of monetary policy to real variables,

and the choices of financial indicators. The first issue concentrates on the role of financial intermediaries to the economic development. The important role of financial intermediaries appears in allocating and managing of funds for the benefits of deficit units. However, other studies provide a clear evidence that the monetary policy and financial indicators play very crucial roles to economic growth.

The last two issues, in providing financial services, the financial intermediaries contribute to the economic growth by transmitting monetary policy to real variables as well as becoming important financial indicators. Here, the studies find that the debt financing is important to firms, particularly for financing investment of new project and to expand the current business activities. Aside from the efficiency of allocating fund, the effectiveness of financial intermediaries in providing debts financing to firm and in generating economic activities depends on many factors such as allocating fund, improvement of liquidity risk management, monitoring the project undertaken, mobilizing saving and facilitating exchange, but also the nature, the contain and enforcement of debt contracts. Additionally, the nature, contract and enforcement of debt contracts are also important factors to be considered. There are many aspects regarding the debt contracts which financial intermediaries have to take into account to ensure the return of debt and the firm pursuits the project.

From the above discussion, debt is thought to be able to affect the firm's activities. The question arises on how the monetary policy affect the firm behaviour? We find that there are two complementary ways of explaining about how firm might be influenced by the changes of monetary policy. First, the balance sheet channel is identified whereby the condition of firm's balance sheets is a source of output fluctuations. Second, the bank lending channel that stresses the ability of monetary policy to regulate the pool of funds available to the bank-dependent firms. This chapter provides the investigation of those issue.

The rest of the paper is structured as follows. In the next section, the discussion is directed to capture the issues in the transmission mechanism of monetary policy. Then, we will highlight several issues in debt financing such as monitoring, interest rate spread, loan restructuring, loan syndication, default rate, moral hazard and adverse selection, and pricing mechanism. The aim is to shed light on the benefits and costs to both lenders and firms. Finally, the focus is to get the answer for our question on how do the debt and monetary policy affect the firm's behaviour?

TRANSMISSION MECHANISM OF MONETARY POLICY

The traditional and more recent literatures on the transmission of monetary policy on economic performance have offered a wide range of issues. Among the issues are; the potential roles of financial intermediaries in economic growth, the transmission of monetary policy to real variables, and the choices of financial indicators. The first issue concentrates on the role of financial intermediaries to the economic development. The important of financial intermediaries appears in allocating and managing of funds to the benefits of deficit units. However, other studies believe that the monetary policy and financial indicators play crucial roles to economic growth. Therefore, in this section, the sequent of our discussion will be focused to highlight those issues.

ROLE OF FINANCIAL INTERMEDIARIES

Most of the discussions of the financial intermediary theory over the last decades generally focus of functional and institutional perspectives. Where a functional perspectives is based on the services provided by the financial system, particularly providing a way to transfer economic resources through time. While, an institutional perspective is the central focus on the activities of financial intermediaries such as banks and insurance companies that provide debt to finance the firms' project. However, the monetary authorities impose the different regulation and legislation, and accounting standards on intermediaries. In addition, the financial intermediaries also face risks, cost of transaction, and asymmetric information and capital structure. All these elements produce a different design of financial intermediaries. Hence, the discussion in this section is aimed to relate the financial intermediaries in channeling debt and/or equity to investors and consumers that, consequently, can increase the amount of aggregate output.

The earlier studies of the roles of financial intermediary are focus only on detailed arguments and evidence regarding a role of financial intermediation in generating long run growth, for example, a study by Gurley and Shaw (1955), Goldsmith (1969), and McKinnon (1973). They examine the ability of financial intermediaries to manage and allocate the debt to potential investors. Therefore by allocating financial assets from surplus spending units then transmit the borrowed funds to deficit units, financial intermediaries can improve the efficiency of trade, and help reduce liquidity problems. This improvement can be an important factor to generate economic activity.

However these studies did not establish the direction, timing, and relative strength of causality relationship. Then, King and Levine (1993a, 1993b) prove this relationship. They also develop a new idea to connecting between finance, entrepreneurship and growth. Both studies find that the role of financial intermediaries in influencing the decision of entrepreneur to invest in productive sector. By evaluating and providing the fund to the potential entrepreneur, financial intermediaries can allocate the resources effectively to generate economic growth. In evaluating the entrepreneur's project, financial intermediaries provide research, evaluation, and monitoring the project with more effectively less cost compared with individual investor. Hence they can avoid financial sector distortions and can lower the costs of investing in productive sector. Furthermore the financial intermediaries can improve the productivity of entrepreneur in four ways. These include; (1) to evaluate prospective entrepreneurs and choose the most promising projects, (2) to mobilize resources to finance promising projects, (3) to allow investors to diversity the risk associated with uncertain innovative activities, and (4) reveal the potential rewards to engaging in innovation, relative to continuing to make existing products with existing techniques. Thus, more develop financial intermediaries and stimulates economic growth by execrating rate of productive enhancement.

Other studies conducted by Levine and Zervos (1998) mention the role of financial intermediaries: to identify the profitable project activities, to exert corporate governance, mobilise resources, manage risk, and facilitate transaction. All these can pursuit economic activities. To measure the overall size of the banking sector as proxy for 'financial depth', they use bank credit. To capture the relationship between banking sector and economic growth, they use data on 47 countries over the period from 1976-1993. The finding shows that financial development is good predict of economic growth, capital accumulation, and productivity growth. The results suggest that financial factors are an integral part of the growth process.

In contrast, Rousseau and Wachtel (1998) find that a well organised equity, debt, and derivative markets may substitute the traditional role of financial intermediary as the financial system becomes more sophisticated. Therefore, they suggest that to search the causality relationship between the role financial intermediaries and general economic performance should focus on historical periods when growing intermediaries dominate the financial sector. By using the data for five industrialising countries over the period 1870-1929, they find that an increase in the intensity of interme-

diation has positive effect on level of output. The results support the notion that a rapidly growing financial system plays crucial role in allocating resource and improving the economic performance.

The rapidly growth of financial instruments and the development of information technologies in the last three decades also bring about the changes in the role of financial intermediaries. This is due to the advent of the technological revolution that has substantially reduced the cost of information and minimized information asymmetry. For example, Allen and Santomero (1998) explained that the theory of intermediaries, especially in the discussion of the role of the intermediaries such as transaction costs and asymmetric information are less relevant in explaining the development of intermediaries. They proposed new functions of intermediaries that consist of risk trading and participation costs. They argued that risk management has become a key role area of intermediary activity, because they facilitate the risks transfer and they deal with varieties of financial instruments and markets and thus putting the central concept of participation costs. This is happen because over the period mostly traditional financial markets have expanded and new market exists (financial market) and transaction costs have fallen and information has become cheaper and more available.

Nevertheless, the intermediary's services are keep on increasing. The shift of the role of the financial intermediary as discuss by Allen and Santomero (1998), were refuted by Scoter and van-Wiston (2000). They argued that the risk management is not the only factor that determines the role of financial intermediaries. The two other factors, transaction cost and asymmetric information, are still relevant in the financial intermediaries, even though information technology is available. In the future, they believe that risk management is still relevant.

Even though financial intermediation can precede its risk management to face liquidity shocks but this management subject to accord designed by regulator in financial system. Holmstorm and Tirole (2000), explained that risk management operate by financial intermediaries consists of credit risk (banking book) and market risk (trading book). But these management risks were subject to accord designed Basle Committee with amendment in 1996.

These roles of financial intermediary cannot be implemented accordingly if there are no regulatory, enforcement, and accounting practices. For example a study conducted by Levine, et al. (2000), they find that legal and accounting reforms that strengthen banks rights, contract enforcement, and accounting practices can boost financial intermediary develop-

ment and thereby accelerate economic growth. Their studies show that the laws that give a high priority to secure banks getting full present value of their claims against firms. Legal systems that rigorously enforced contracts, including government contracts, and accounting standards that produce high-quality, comprehensive and comparable corporate financial statements tend to have better developed financial intermediaries. Besides that, the exogenous component of financial intermediary development is positively associated with economic growth.

MONETARY POLICY AND REAL VARIABLES

In the standard macroeconomic analysis, a change in monetary policy affects financial sector, and later influences the aggregate demand. Several studies, for example Romer and Romer (1989, 1991), Kasyap and Stein (1993), Cooley and Quadrini (1999), and Chatelain, et al. (2001), have explored the link between monetary policy and real variables. These studies are an extension from the earlier studies such as Friedman and Schwartz (1963), Karaken and Solow (1963), Tobin (1965) and McKinnon (1973). They focus on the initial impact of monetary policy on rate of interest from the special characteristics of the liability side of banks balance sheet, i.e., money view channel in the monetary transmission mechanism to real sector. However the different of the study by Romer and Romer (1989) from the studies above is that, they clearly identify the six episodes of monetary shock between first-world war and second-world war; and postwar period; and the implication of these shocks to real sector. They find that the implementation of tight monetary policy reduces the industrial production index by 12 percent and increases the rate of unemployment by 2 percent.

Later, Romer and Romer (1991) extend the discussion of the effect of monetary policy on aggregate demand in the imperfect credit market. But this time they not only looking at money view channel but also at lending view channel as a new monetary transmission mechanism to explain the effect of monetary shock to output aggregate. According to the lending channel, any changes in monetary policy will affect the interest rate and subsequently toward the asset side of banks' balance sheets. Stiglitz & Weiss (1981), and Jaffee & Russel (1976) argue that the imperfect credit market forces market disequilibrium. Under this circumstances bank may prefer credit rationing rather than providing credit base on the existing interest rate. Thus credit rationing necessitates the bank from making an adverse selection, and therefore the bank can maintain its profitability.

Eventually, these affect investment and production, and consequently, cause macroeconomic fluctuations and monetary policy. Furthermore, it can influence aggregate demand.

Then, Kashap et al., (1993) bring new evidence to allow for a clear identification of the lending channel of monetary-policy transmission. Rather than just looking at how bank assets and liabilities respond to policy changes, they also focus on the behavior of an important substitute for bank finance i.e., commercial papers. When the central bank tightens the monetary policy and reduce the supply of bank credit, we might expect an increase in commercial paper issuance to the extent businesses have some ability to substitute of two sources of finance. They suggest that the shifts in monetary policy seem to alter the mix loan and commercial paper, and the induced shifts in this mix seem to affect investment.

A new definition of monetary shocks has been introduced by Cooley and Quadrini (1999), they introduce a change in lending rate may lead to a larger impact on the interest burden of small firm, which in turn imply a larger impact on the next period equity. Given the reduction of value of equity firm borrow less in the next period. Furthermore this will cause nothing to increase the production of small firm. Conversely, when a fall of nominal interest rate on loans decline the interest payments of the firms and increase the firm profits. The reinvest of retained profit, the next period financial capacity of the firm will increase and persistently allows them to increase investment and expand production. To show this relationship they developed a model of general equilibrium with heterogeneous, where financial factors play crucial role in long-lived firms' decision on investment and production, and their response to the monetary shocks. They find that small firms respond larger than big firm to monetary shock. However the aggregate impact of monetary shocks on the real sector of the economy is not large, but this monetary shocks cause considerable volatility in financial markets, especially in stock market returns.

The current studies of monetary transmission move to a new direction by focusing on the empirical evidence at firm level. For example, Chatelain, et al. (2001) believe that monetary policy is generally thought to be able affect business investment through two channels. First, changes in interest rate imply changes in cost of capital, which in turn affect investment. Second, changes in interest rates have an impact cash flow available to the firm. However, in a present in a perfect capital market, the availability of cash flow has also an impact on investment. This finding strengthens result obtained by Kashap et al., (1993) and Cooley and Quadrini (1999).

FINANCIAL INDICATORS

As discussed in sections 2.2.1 and 2.2.2, the intensity of financial intermediation and the target variables of monetary policy lead us to identify several financial indicators that can be linked to economic performance. This idea motivate researchers such as Gurney and Shaw (1955), King and Leaven (1993a), Levine and Zervos (1998), Rousseau and Wachtel (1998), Beck, Levine, and Louisa (2000) to produce the theoretical and empirical evidence of this relationship.

The traditional view of Gurley and Shaw (1955) suggest that the transfer of funds from surplus spending units to deficit units mainly occur through the banking system. However, the introduction of various financial services and institutions lead to the current studies such as King and Levine (1993a) and Levine et al., (2000), to focus on other financial indicators. They construct a new data set and focus on three measures of financial intermediation, i.e., the total assets of financial intermediation, total assets of commercial banks or central bank, and total credits of financial institutions.

Most of the studies regarding the relationship between financial development and economic growth show that the financial indicators are strongly and robustly correlated with economic growth. For example, King and Levine (1993a) conducted a study on both 'purely cross-country analysis using data average over 1960-1989 period and pooled cross-country, time series using data average over 1960s, 1970s and 1980s on 80 countries to find linkage between financial indicators development and economic growth'. Each indicator as a measures of financial depth and provides richer picture of financial development. Implicitly, they conclude that financial services can generate economic growth by increasing the capital accumulation and improving the economic efficiency.

Further more, King and Levine (1993b) are not only discussed on relationship between financial development and economic growth but also the role of entrepreneur to generate the economic growth. They find that an efficiently allocation fund from intermediaries to entrepreneurs is able to lower the cost of investing in productivity enhancement and stimulates economic growth. The reason is that the financial intermediaries can influence the decision to invest in productivity enhancing activities through their ability to evaluate and monitor the prospective entrepreneur, and provide fund to potential entrepreneur.

In addition, studies done by King and Zervos (1998) also try to investigate the relationship between stock markets and bank credit with eco-

nomic growth. They find that the rapid growth of capital market plays a crucial role in allocating fund to entrepreneur and thus ultimately influence the decision to invest. As a proxy for stock market development, they use four indicators namely turnover, value traded, capitalization and volatility of share price. These variables have a positive relationship with economic growth.

The well-functioning financial intermediaries could not only be seen in terms of financial deepening but also cover the legal and accounting systems. Levine, Loayza, and Beck (2000) support the evidence that legal and accounting reforms strengthen the banks rights, contract enforcement, and accounting practices. The strengthening of these elements can boost financial development and accelerate economic growth. They also conversely support the evidence that the countries that have no reform in legal and accounting systems weaken the banks rights, contract enforcement, and accounting practices.

Therefore, we can conclude that the roles of financial intermediaries could be derived in providing financial services that become the important financial indicators to economic growth. We also find that the debt financing are important to firms, particularly for financing investment of new project and to expand the current business activities.

DEBT AS FINANCING CHOICE

The effectiveness roles of financial intermediaries to provide debts financing to firm and generate the economic activities depend not only on the efficiency of allocating fund, improvement of liquidity risk management, monitoring the project undertaken, mobilizing saving and facilitating exchange, but also the nature, the contain and enforcement of debt contracts. There are many aspects regarding the debt contracts which financial intermediaries have to take into account to ensure the return of debt and the firm pursuits the project.

The tendency of banks to provide debt is generated partly on the role of banks as monitors and information specialists. Preach and Mullineaux (1996) establish this role. On the other hand, the contractual characteristics of debt also bring the potential sources of value to entrepreneurs. For example, Nakamura (1989), Gorton and Kahn (1993), and Berlin and Mester (1990) construct the models in which the properties of loan contracts facilitate potential renegotiation and restructuring in the event of default. These properties include the senior position of bank lenders, the presence

of collateral, and the utilization of covenants, which are relatively more restrictive than those in public debt contracts. However, in the syndication loan, the banks involve in this facility and give loan to single entrepreneur possess less contractual flexibility than loans by single lender. Therefore, the participating banks cannot 'free ride' on the lead bank's evaluation. In this situation, the participating banks can engage in 'monitoring the monitor', as the lead banks carry out its loans administration responsibilities. If the lead bank fails to perform, it substantially cost the future business and foregone the fee income. It also increases the costs of monitoring and debt risks.

On the firms' side, they acquire funds through internal and external financings. Firms with no endowment or less tangible asset, they use bank debt as the external financing. However, Diamond (1983) finds that firms with higher tangible asset are able to reduce the agency and monitoring costs. Holmstrom and Tirole (1997), further argue that the firm's net worth determines the ability of firm to get a loan. Firm with low net worth turns to bank and is willing to allow banks to monitor more intensively. The evidence produced by Rajah and Zingales (1996) shows that the tangible assets affect the supply of bank debt to firms.

In the following studies, Johnson (1997) finds that the selection of the sources of debt is an important element to the capital structure decision of the firms. He identifies four types of firms, i.e., firms with smaller fixed assets, firms with high market-to-book ratios; firms with more volatile earnings, and smaller firms that choose lower optimal leverage. The first and second firms produce the problems of greater potential asset-substitution and underinvestment, respectively. The last two firms bring the problem of greater likelihood of financial distress. These problems become severe when the lenders are asymmetrically informed. He believes that banks are able to overcome these problems because they are more effective and efficient than other lenders at reducing information asymmetries. The results show that bank debt increases the optimal leverage for firms by mitigating the negative effects on leverage of potential asset-substitution problems, but does not alter the relationships between leverage and potential underinvestment problems or the likelihood of financial distress.

Firms may also borrow from the Islamic banking system, and the principle concept of financing differs from the conventional banking system. The Islamic banking system applies the concept of profit-loss sharing and 'mark-up' profit in providing the equity and debt financing, respectively. The indenture of debt contract ranges from the concept of

murabaha and *ijara* for bank loans to the concept of *al-bai' bithaman ajil* (deferred installment sale), *bai' al-murabahah* (cost plus), *bai' al-inah* and *bai'al-dayn* for bonds. Where as the concept of profit loss sharing can be utilized in *mudharabah* and *musyarakah* contract and have been used in equity financing such as stock, preferred stock, and warrants.

Although, there are many Islamic economists such as Tag El-Din (1992), Bashir (1993), Mohsen dan Shamim (1994), Abd. Ghafar (1994), and Aggrawal dan Yousef (1996, 2000) suggest the emphasis on equity financing. But, Aggrawal dan Tarik Yousef (1996, 2000) find that, in reality, Islamic banking system prefer to provide debt financing rather than equity financing. The main reason is that most of the demand is in short-term debt financing, the risks of project investment is in the form high equity financing, agency cost problem in *mudharbah financing*, adverse selection and moral hazard problems, and requirement to fullfill the risks of capital weighted ratio. Many scholar such as Siddiqi (1983) and Khan (1995) stated that 'markup' should be avoided or restricted, this is because its acceptability under Islamic Law is disputed and they can imply a fixed return of investment for the bank. Thus Aggrawal dan Yousef (2000) fear that markup financing may open a "back door" to interest and they worried that this contract may stunt economic growth by constraining entrepreneurs from investing in new projects.

However, in dealing with debt contact, there are several issues need to be highlighted such as the aspect of monitoring, interest rate spread, loan restructuring, loan syndication, default rate, moral hazard and adverse selection, and pricing mechanism. Each of these issues will be discussed to shed light on the benefits and costs to both lenders and firms.

Monitoring The fulfillment of firm to the debt contract indenture is normally verified through the monitoring process. This process can also minimize the solvency rate. On the other hand, the expected return to the project is only available to an entrepreneur, but not to lender in the situation of asymmetric information. To solve this problem lender should provide monitoring and screening to access the expected return of that project (Booth; 1992). Before bank provides debt to firm, they should screen the firm in term of value and reputation in ex ante debt contract. For example, Johnson (1997) explain that the resolution of ex ante information asymmetries signals firm value, and thus bank reduces problems stemming from the under-pricing of a firms' performance. In the case of monitoring, Holmstrom and Tirole (1997) identify several forms of monitoring such as

the firm's potential cash flow, and its balance sheet position and management. Therefore, these actions encourage the bank to allocate funds to promising entrepreneur efficiently and assess the return.

In the situation of asymmetric information, as suggested by Diamond (1984), the financial intermediation can minimize the cost of monitoring information. The minimization of the cost monitoring can be done by diversification within an intermediary, such as traditional diversification by "risk sub-dividing" independent risks and by adding more independent risks of given scale. To overcome the costs of providing incentive for delegated monitoring, financial intermediaries should form independence body like credit rating and bond rating for publicly issued debt. Therefore, financial intermediaries can acquire information about the value of firm and reduce the monitoring costs and hence the loans spread rate. Consequently, the lender provides the incentive to minimize the cost of capital for investment.

Intermediaries charged monitoring cost to the firms through debt contract covenant. Booth (1992) uses the hypothesis of cross-monitoring and financial contract costs to find that bank loan pricing illustrates differences in monitoring-related contract costs resulting from observable cross-monitoring and the ratio of assets subject to low versus high monitoring costs. He concludes that rated public debt reduces the firm's borrowing costs than private firms, including public firms going private. Hence the information associated with public ownership includes investigation and reporting by securities analysts, filing requirements, public audits, use of capital market, and/or public announcement lead to decline the monitoring related contract costs. Cost monitoring the borrower's behavior toward assets affects loan pricing, where behavior asset in place is easier to control through covenant (low cost monitoring) and behavior asset to growth or investment opportunities requires continuing monitoring (high cost monitoring). He use cross-monitoring hypothesis and finds the evidence that bank loans are priced to reflect monitoring-related contract costs. Cross-monitoring in the form of publicly held and equity lowers the monitoring-related contract cost of bank rather than private debts, including the converting of public debts to private debts that posses higher monitoring-related contract costs.

The monitoring cost can also be related to credit rationing. The increasing costs of monitoring are reflected in loan pricing. Since, the determination of lending rate, as suggested (Stiglitz and Weiss (1981), can be used to distinguish between high risk and low risk entrepreneurs. Usually, the banks charge higher lending rate to high risk entrepreneurs and lower

to low risk entrepreneurs. These phenomena can create adverse selection problem. Hence, Diamond (1984) and Williamson (1987) advocate that the increasing costs of monitoring cause the banks to ration entrepreneurs. These findings also supported by Longhofer (1997) and Yin Yang (1997). In addition, they also find that banks impose credit limit to small firms. Because, the small firms face higher bankruptcy costs and loan losses. The banks have to ration the small firms, if they want to alleviate those losses. Hence, the bankruptcy cost is lower to small firms.

Loan Syndication The constraint on the bank's legal lending limit or a limit imposed by the regulators may lead bank to participate in the syndicated loan. Although, the benefits of loan syndication give the opportunity for firms to acquire a greater amount of external financing, and is an attempt to diversify and to limit the size of loans to a single entrepreneur. But, it produces the cost to bank when it involves the amendment on loan agreement for example the requirement to get the approval among the banks and other major changes such as a change in lending rate, loan term or pledged collateral.

However, Preece and Mullineaux (1996) mention that the syndication loan may affect the loan's characteristics with respect to monitoring perspective and the capacity for loan renegotiation. The bank regulations require that all participants evaluate the loan at its origination stage as if each were the sole lender. Consequently, participant banks cannot 'free ride' on the lead bank's evaluation. In addition, the participant banks are engaged in 'monitoring the monitor', as lead bank carries out its loan administration responsibilities. The volume and quality of monitoring should increase because the number of syndicates bank increasing. Large syndicates possess less contractual flexibility than loans by single lender, when syndicate participants increase, a private debt issue becomes increasingly similar to public issue. This will make difficulties in renegotiating, because all participants must typically agree to allow temporary violation of loan covenants and all must approve any significant restructuring of the terms of the loan agreement.

Debt Restructuring When the firms have insufficient cash flow to meet their debt payment, they try to restructure their debts. Firms react by restructuring their assets or liabilities. Firms in financial distress, as proposed by Asquith et al. (1997), also tend to make several options such as debt restructuring, sale of assets, merger and capital expenditure

reduction. However, firms with fewer tangible assets or less liquid assets, and lower capital prefer to use the debt restructuring.

From the bank's perspective, in the case of default the cost of bankruptcy is larger than liquidation of entrepreneur's asset bank usually like to renegotiate the debt. This renegotiation may also be induced by the good relationship with the entrepreneur (Mathias (1999)). The debt restructuring may encourage the banks to "loosen" and/or "tighten" debt contract. The "loosening" of debt contract may take in different forms such as deferring the principal and interest payment, providing new financing, and waiving covenants. The "tightening" of debt contract may also take in different forms such as accelerating the principal and interest payment, reducing lines of credit, and increasing collateral. The banks are more prone to loosen the terms of contract when they hold secured position and tighten when they hold unsecured position.

Firms can also make debt restructuring through an exchange offer. It means that firms offer a package of cash and securities in exchange for some or all of its outstanding debt. This package cannot reduce the principles amount of public debt without the approval from shareholders, except through an agreement with debt-holders or tender offer that exchange the old debt for new securities. The problem associated with an exchange offer is the emerging of free rider. The debt-holder, which has small a share, brings no effect to the exchange offer. Finally, Asquith et al. (1997) find the negative correlation between loosening of private debt restructuring and exchange offer.

Default When the firms violate covenant and omit debt payments or declared default, the entrepreneur has the exclusive right to propose a reorganization plan before declared bankrupt. Banks can try to force an end to exclusivity in order to propose their own organization plan or banks can attempt to life the automatic stay in order to take possession of their collateral. Bankruptcy continues until a re-organization plan is approved or the firm is liquidated. The bankruptcy proceeding can be settled in court, but when the costs of an out-of-court are less than costs of bankruptcy, the banks prepare to renegotiate (go for restructuring out-of-court).

However, when the firm posses public debt or large numbers of debt-holders, then there are obstacles to efficient bargaining outside of courts or restructuring. For example Below and Shaven (1978) and White (1980), characterize the operating inefficiencies and bankruptcy outcomes that can result form the inability to renegotiate with too much public debt-holders. However, when the firm posses public debt or large numbers of

debt-holders, then there are obstacles to efficient bargaining outside of courts or restructuring exercise. For example Below and Shaven (1978) and White (1980), characterize that, when there are too many public debt-holders, the firm is unable to renegotiate and therefore the operating of offer exchange is inefficient and can cause bankruptcy. Furthermore, study by Gertner and Scharfstein (1991) shows that operating inefficiencies and bankruptcy can persist even if firms can restructure public debt via exchange offers. Asquith et al. (1994) and also Gilson, John, and Lang (1990) have shown empirically that distressed firms with more public debt relative to bank debt are more prone to file for bankruptcy and less prone to restructure out of court.

The bankruptcy proceedings can be avoided if the firms have good relationship with bank as in the case of Japan and Germany. These finding are mentioned by Hoshi et al., (1991). They give two reasons; first, the concentration of debt and equity enables the bank to restructure the firm's liabilities without having to rely on the coordinating role of the bankruptcy courts. Second, the concentration of borrowing and the linkage of debt to equity also reduce the cost of financial distress because it reduces conflicts that arise among investors when a firm is near default. These reasons cause costs of financial distress decline and enable firms to access more debt, consequently firm can avoid the adverse-selection costs associated with equity financing and receive the greater tax advantages of debt financing. They also produce three benefits of a good relationship with bank: (a) banks with larger share in their client firms have the incentive to monitor these firms, and the information and incentive problem can be reduced; (b) conflicts among banks are eased, especially when a firm is in financial distress; and (c) the placement of former bank employees in management positions at client firms can facilitate information flows between bank and firm.

Moral Hazard and Adverse Selection As mentioned in section 2.3(a), the model of credit rationing developed by Stiglitz and Weiss (1981) advocate that the determination of optimum interest rate causes bank to ration the credit giving to borrowers. The determination of interest rate can also allow us to distinguish between high risks entrepreneur and low risks entrepreneur. Consequently, this determination of interest rate could create the problem such as moral hazard and adverse selection. To avoid these problems bank ration the credit to overcome asymmetric information problem and fixed the optimum interest rate.

The existence of moral hazard problem in debt contract gives incentive for entrepreneurs to go bankrupt. These phenomena would encourage entrepreneur to increase his incentive to take higher risks project associated with higher interest rate and persistently affects the return of project. Therefore, entrepreneur is expected to have higher return with high interest payment to banks. However, bank faces higher risks because of the probability of bankruptcy is higher and suffers the severity when firm fails to pay the installment.

On the other hand, the adverse selection problem is caused by asymmetric information. Jaffee and Russell (1976) argue that the asymmetric information between entrepreneur and lender can cause a very serious adverse selection problem. They believe that entrepreneur knows the expected return of projects, while the lender gathers the information from the project proposal submitted by the former. It implies that lenders are concerned about the loans given to entrepreneur and the expected return from it. If the higher interest rate charges to entrepreneur, then the higher is the project risks. The implication could cause a lower to lender and the higher cost of capital to run a business, especially to small firms which have less collateral and other net worths.

Loan Pricing Several aspects can be related to loan pricing. These aspects include the charges of different rates, interest rate swap and loan spread. First, the charges of interest rates can be differentiated between high risks entrepreneur and low risks entrepreneur. The high and low risk entrepreneurs pay higher and lower rates, respectively (Stiglitz and Weiss (1981). But, sometime banks charge a fixed rate and floating rate and it depends on the length of debt maturity. Normally, the floating rate and fixed rate are charged to short terms and long terms loans, respectively. However, in some cases, banks charge a fixed rate to short term loans and floating rate to long term loans. The rational why floating rate is charged to the long terms loan, because the longer maturity the higher risks which financial intermediaries would suffer. In addition, banks also face other uncertainties such as the effects of inflation and monetary policy; and also the probability of entrepreneur defaulted.

Second, bank may also use its discretion to restructuring the bank loan by implementing interest rate swap to provide firms with greater flexibility in determining their liability streams. The swap transaction is done where a fixed-rate payer promises to make periodic payment based on a fixed interest rate to a floating payer, who in turn agrees to make variable payments tied to some short-term interest rate. These swap ac-

tivities bring an impact on corporate financing, because they provide with additional flexibility to restructure long term fixed rate obligation, especially when the firm is currently regarded as having greater likelihood of bankruptcy. Yang et al. (2001) find that the swap users with higher effective tax rate are able to reduce their debt ratio range and also enlarge the influence of firm size on firm debt policy. There are also no effects of swaps usage on the debt ratio range that can be related to bankruptcy cost and the volatility of the asset value. These findings show that the use of swap can help firm stick to an initial high debt ratio and make more use of the large tax benefit of debts on debt financing decisions.

Third, generally loan spread is determined by the difference between loan rate and deposit rate. When the loan rate increases, strictly consumer-oriented bank ask for higher deposit rate. However, Lim (2001) finds that banks value their borrower and tend to pass on the decline in loan rate faster than they pass on the increases and also the greater rigidity in the passing of increases in deposit rates compared to the passing of decreases in deposit rates. The determination loan spread also takes into account the monitoring cost, and processing fee. In addition, Booth (1992) also considers the costs of controlling entrepreneur behavior to be included in loan spread. He uses the natural log of the quoted spread plus fees in basis points to the prime rate or inter-bank rate as proxy for loan spread.

MONETARY POLICY AND FIRM BEHAVIOR

The above discussion shows that firms use debt as external financing. This variable is important for us to predict certain components of economic activity even after allowing for interest rate changes and other factors (including collateral and cash flow). These changes are necessary to address the issue of lending as channel of monetary transmission. Therefore, when firms borrow fund from banks and pay interest, hence firms are exposed to monetary policy changes. Thus, the question arises on how do the debt and monetary policy affect the firm's behaviour?

There are two complementary ways of explaining about how firm might be influenced by the changes of monetary policy, i.e., through the balance sheet channel and the bank lending channel.

THE BALANCE SHEET CHANNEL

The theory of business cycle or 'the balance sheet channel' emphasizes the role of firm's balance sheet. This theory, among others, are propagated by Bernanke and Gertler (1989), Calomiris and Hubbard (1990), Gertler (1992), Greenwald and Stiglitz (1993), Kiyotaki and Moore (1993), Gertler and Gilchrist (1994), Cooley and Quadrant (1999), and Leo de Haan and Elmer Sterken (2000). With an assumption of capital market imperfections, the basic idea in this theory focuses on the spending of firms depend on their balance sheet position, which is related to the value of collateralizable net worth and the terms of credit. This leads directly to a financial propagation mechanism: swings in balance sheets over the cycle amplify swings in spending.

The pioneering work of Bernanke and Gertler (1989) produces the relationship between the condition of firm's balance sheet and the output fluctuations. They develop the simple neoclassical model of the business cycle in which the condition of firm's balance sheets is a source of output fluctuations. The firm's net worth is an important item to assess the position of firm's balance sheet. The higher firm's net worth leads to the stronger position of firm's balance sheet and vice versa. However, when there is asymmetry information between firm and bank, it increases the agency costs. It implies that the external funds are more costly compared to internal funds. Then, the greater the level of net worth of the potential firm, the lower will be the expected agency costs. Thus, when firm net worth is low, the agency costs in investment are relatively high. Therefore, two main implications can be derived. First, the level of firm net worth is seems to be pro-cyclical, i.e., firms are more solvent in the period of good times. The agency costs are expected to decline and increase in boom and recession periods, respectively. Second, the shocks to firm net worth that occur independently of aggregate output will be an initiating source of real fluctuations.

Gertler (1992) extend the study with multi-period contracting model of financial propagation mechanism. The model emphasizes the roles of firm financial assets (internal funds) in reducing the agency costs of investment, and generating the expected profit. This expected profit could increase the collateral value. As the result of this kind of mechanism, small but persistent shifts in macroeconomic fundamentals may induce large fluctuations in credit constraints and this, in turn, are transmitted into potentially large fluctuations in output.

The aim to obtain evidence on the financial propagation mechanisms for aggregate data is reported in Gertler and Gilchrist (1994). Using the sample of small and large firms manufacturing firm, they try to analyze the differential response of both firms to monetary policy in boom and recession periods. They use the Romer dates episode (Romer & Romer (1992)) and the 1966 credit crunch as proxy of the shifts to tight money. The respond of firms to the impact of tight money can be detected from the items in the firm's balance sheet, such as inventories, expected sales and short-term debt. They find that monetary policy shocks have a greater cumulative impact on small firms than on large firms. For small firm, inventories, short-term debt and sale drop rapidly after tight money. Where as, for large firm, inventories, short term and sale decline slowly. They conclude that small firms are much sensitive to monetary policy shocks than that of large firms.

Other empirical evidences, as produced by Cooley and Quadrant (1999), are applied at firm level. They develop a general equilibrium model with heterogeneous and long-lived firms. They also try to prove that financial factors play an important role in firm's production and investment decisions. In their model, they show that small firms which less net worth (equity) heavily depend on debts and the change of lending rate reduces the firm's profit, which in turn decreases their next period equity. This implies that firms borrow less in the next period and, consequently, affect their production and investment compared with large firm with high net worth and easy to access funds in capital market.

The recent study in monetary theory such as Haan and Elmer Sterken (2000) shows that it is important to analyze the differences in impact of monetary policy on various types and classes of firms, and moreover on various balance sheet items. They indicate that small firms are more likely to face high external financing. Therefore, it is important to analyze the influence of monetary policy on capital structure and the balance sheets of various types of firms. In addition, the impact of monetary channel on the behaviour of banks and corporate decisions seems to be relevant, since corporate decisions have a large impact on business fluctuations. Using the sample of a half million European firms, they analyze the influence of monetary contraction on leverage, financial debt, and loans. They find that these financial indicators decline after monetary shocks.

Therefore, monetary policy influences both directly and indirectly on firm spending. An increase in interest rate directly weakens balance sheets by reducing cash flows (net of interest) and by lowering the value of collateral assets. The impact can also influence indirectly. The tight mon-

etary policy may produce a decline in spending and subsequently, the decline in cash flows and asset values. This initial decline in spending causes balance sheet of firms to deteriorate and, further, propagating the economy downturn.

THE LENDING CHANNEL

The theory of "credit" and "lending" view or "the bank lending channel" stress the ability of monetary policy to regulate the pool of funds available to the bank-dependent firms, owing to the presence of legal reserve requirements on bank deposits. Among the authors that introduce this theory are Romer and Romer (1991), Fuerst (1992), Bernanke and Blinder (1992), Kasyap, Stein and Wilcock (1993), Kashyap, Lamount and Stein (1994), Oliner and Rudebusch (1996), Siegfried (2000) and Chatelain, Generale, Hernando, vonKalckreuth, and Vermeulen (2001).

The lending channel introduced by Romer and Romer (1991) is developed based on their previous study (1989) and look at the impacts of monetary shocks on real variables, such as output and unemployment rate. They explain those impacts through the new monetary transmission, i.e., 'money view' and 'lending view'. According to 'money view' transmission mechanism, the reduction in reserves raises interest rate because it implies a fall in transaction deposits. It shows the special characteristics of the liability side of banks' balance sheets.

In 'lending view', the reduction in the stock of reserves reduces the quantity of loans, because the scarce reserves force the banks to bid up interest rates to the depositor and this, in turn, raises interest rate. Over time, as mentioned by Bernanke and Blinder (1992), the brunt of tight money forces bank to terminate old loan and refuses to provide new debt. Therefore, the tight monetary policy has a direct impact on bank lending. Hence, the change of monetary policy leads to a declining in real sector. However, the imperfect credit market may also cause borrower to search for alternative sources of funds. Here, there is no evidence for monetary transmissions mechanism through lending channel. Based on these results, we can conclude that monetary policy has little effect on bank lending.

Later, Fuerst (1992) offers a somewhat related analysis on lending view based on "liquidity effect" approach. The central bank controls the liquidity in the market by injecting new cash (as lender of last resort) and this can increase the quantity of debt provided by bank. Consequently,

the injections of cash can cause the nominal interest rates to fall and benefit the firms to increase current and future production.

The effect of monetary policy on bank lending can also be observed through the effect on firms' capital structure, as suggested by Kashyap, Stein and Wilcock (1993). This study takes the Romer episodes and credit crunch as the indicator of monetary policy shocks. They suggest the credit rationing may cause the supply of loan to decline and, consequently, the interest rate increases. The later affect the firms' cash flow, and push down asset prices and weaken the balance sheets of firms. Holmstrom and Tirole (1997), further, argue that this phenomenon pushes loan losses and lower asset prices. Thus, significantly eats the equity of bank and causes banks to pull back on their lending and to increase interest rate spreads. Then, credit crunch hit weak collateral of small firms the hardest and dependent bank borrowers.

Although firm relies on bank loans, when the tight monetary policy is implemented the commercial paper issuance rises while bank loans fall. In this regard, Kashyap, Stein and Wilcock (1993) investigate the movements in financing variable such as bank loans, commercial papers, mixed of commercial papers and bank loans, and commercial paper to Treasury bill. This study tries to provide evidence on the existence of a loan supply channel of monetary policy transmission. They use Roomer dates, the credit crunch of 1966 and interest rate as indicators of the stance of monetary policy. They find that a decline in the mix variable indicates the reduction of loans supply affect investment, especially to the bank-dependant entrepreneurs.

In addition to examine the respond of firms to bank lending condition, they augment a standard inventory models with mix variables. They discover that mix variables economical and statistically significant. Therefore their results suggest that information on the state of bank loan supply does a better job of explaining inventory movements compared to open-market interest rates. And also interpret that the monetary policy has an important effect on bank lending condition and firms are not access external finance for publicly market have inventory investment more sensitive to bank lending. They conclude that in order to achieve for monetary policy to affect the economy through a lending channel, first, bank must view debts and securities as imperfect substitutes on the asset side of their balance sheet and second, in liabilities side of firm's balance sheet, debts and non-bank sources of finance also be imperfect substitution. Or else this channel transmission mechanism will be less function.

Therefore, the current studies on monetary transmission are applied at firm level, see for example Kashyap, Lamount and Stein (1994), Oliner and Rudebusch (1996), Siegfried (2000) and Chatelain, Generale, Hernando, vonKalckreuth, and Vermeulen (2001). They use inventories to capture the lending view transmission mechanism. We expect the inventories of bank-dependent firms to fall more sharply in response to a monetary contraction than the inventories of firms which do not need to rely on bank debt. By using firm level inventory data, Kashyap, Lamount and Stein (1994), construct the inventory equation to examine the effect of monetary policy to the liquidity of firms. They fix three episodes that indicate the changes in monetary policy, i.e., the periods of 1974-1975 as tight monetary policy; the recession periods of 1981-1982; and the loose policy periods of 1985-1986. They find that the first and second episodes only affect the firms which have less access to external finance from public market. At the same time, in the second episode, the bank loan supply also declines. Although the results are consistent with the prediction of lending view but it is not still clear how sharply they can distinguish between lending view and other variables in the imperfect capital market. An example for the later is the recession causes the decline of collateral value and thus increase the cost of bank finance.

In another study by Oliner and Rudebusch (1996), they try to improve the Kashyap-Stein-Wilcock model by widening the definition of financial variables to include trade financing plus commercial papers as debt from non-bank sector and using firm level data. They find that small firms could not increase the use of trade credit during periods of tight money. This finding is consistent with Gertler and Gilchrist (1994).

Most of the above studies use the U.S. data to prove the lending view channel of monetary transmission. Other studies such as Siegfried (2000) and Chatelain et al. (2001) apply the European countries data. Both writers use the disaggregate firm level data to examine interest channel and credit channel in monetary transmission mechanism as the implication of changes in monetary policy toward the decision of capital structure of the firms. In the Chatelain et al. (2001) study, they find that investment is sensitive to user cost changes in Germany, Italy, France and Spain after monetary shocks. The user cost changes happen within the first two years. These imply that the interest channel works in these countries. Only in Italy, smaller firms react more to cash low movements compared with large firms and implying that a credit channel might not be pervasive in all countries.

In contrast, the study done by Siegfried (2000) finds that interest rate channel seems to be of little importance for investment decisions of firms

in Germany. The results show that the credit channel is dominant in Germany. The firms also suffer credit constraints only in some periods of tight monetary policy.

Basically in the lending view, there are three assets such as money, publicly issued bonds, and intermediated "loans" will be working in the transmission mechanism. In this view the banking sector now can be special in addition to creating money and makes loans. Now monetary policy can work not only through its impact on the bond-market rate of interest, and the supply of intermediated loans. An example, the decrease in reserves can have important real consequences, if it leads banks to cut back on loan supply: the cost of loans relative to bonds will rise, and those firms that dependent entrepreneurs will be led to cut back on investment. Thus the monetary policy can have significant real effects that are not summarized by its consequences for open-market interest rates. These studies also find that the frequent increases in the market interest will depress firm investment and also increase the firm interest rate through the balance sheet channel and persistently will decrease firm investment. These surely will affect more hardly to the firm with highly debt.

CONCLUSION

There are several conclusions that can be derived from this chapter. First, monetary policy is able to affect the firm's behaviour through two variables, i.e., the amount of debt and interest rate. The changes in interest rate imply changes in cost of capital (to get external financing (debt)), which in turn affect investment. An increase in interest rate also weakens balance sheets by reducing cash flows (net of interest) and by lowering the value of collateral assets. Second, the presence of an adverse monetary policy shock affects the reduction in the net worth of firm's bank dependent borrower; consequently firms have problems in finding funds and reduce their economic activity. The reduction in their economy activity operates largely through a decline in inventories investment. These conclusions will be used as a motivation to study the monetary policy's affect on the firm behavior at micro-level data. This study is necessary as most of the studies that have been done used the Europe and U.S firms and macro-level data to capture the relationship between monetary policy and firm behaviour.

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Islamic Development Management Project (IDMP)
School of Social Sciences
Universiti Sains Malaysia
Penang
e-mail: bzak@usm.my