The link between the Financial (Banking) Sector and the Real Economy

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I.   Introduction

The 'real' economy consists of firms, households and other agencies engaged in the production of goods and services which can either be consumed now or put to use with a view to producing more in the future. Economic activity is conceptualized as 'real' because real resources are applied to produce something which people can buy and use. The financial system is mainly concerned either with moving funds around so that those who wish to buy can do so, or helping people to exchange ownership of the productive resources. The activities of the real economy are essential to life. The real economy produces food, heating, lighting, consumer goods and entertainment, among other activities. The job of the financial system is to facilitate that by making sure that funds are available when and where they are wanted. In that regard, the issue of the structure of the financial system is brought to the fore as it would provide alternative financing windows which the operators in the real sector can avail themselves. These institutions, therefore, become the conduit through which small or large manufacturing concerns can access finance and, ultimately, increase output.

Directly related to the structure of the financial system, is the role the financial system undertakes to coordinate economic activities including the cost of finance, availability of investment funds and profitable investment outlets. Caprio, et al. (1994) states that "... control through the financial system permits decentralization in decision making-the hallmark of a market economy: provided that some entrepreneur or group of investors is prepared to assume the risks of undertaking a project with borrowed funds and that some lender believes that the loan will be repaid, the project can go ahead." This view obviously asserts the unquestionable need to ensure the solvency of financial institutions and instil confidence in the payments system which are intended to overcome systemic risk.

Following from above, technology and skills of the operators as well as institutions with oversight roles must be adequately in tandem with the level of development

of the financial system to provide the needed support to the real sector. There is yet to be a consensus on whether the link between the financial sector and the real sector is 'real', is unidirectional flowing from the financial sector to the real sector or vice versa and bi-directional. Whichever way, there seems to be an emerging agreement among economists that a link exists. The main objective of this paper is to discuss the connections between the real economies—the tangible world of jobs, goods and services—and the more intangible world of finance—of money/credit flow, interest rates and the stock market. They have a long and eventful history.

To achieve this objective, the paper is divided into five sections. Following the introduction, the paper reviews what constitutes the structure and role of the financial system in section II. Section III attempts to identify the link between finance and the real economy, while section IV gives an overview of the channels of transmission of monetary policy to the real economy as it relates to making finance available to the real sector. Section V concludes the paper.

II.   Structure/Role of the Financial System

The financial system comprises financial institutions and financial markets. The financial institutions include the banking system - central bank, banking institutions (commercial banks, merchant/investment banks, other deposit-taking institutions) and non-bank financial institutions (provident/pension funds, insurance, development finance institutions (DFIs), others). Financial markets comprise money and foreign exchange markets; capital markets - equity markets, bond markets, public debt securities, private debt securities – and derivatives markets.

The question of the role and structure of the financial system that should facilitate and sustain growth has largely remained inconclusive in the recent finance-growth literature. The general consensus viewpoints as articulated in Levine (2004) include: (i) countries with better functioning banks and financial markets are more likely to accelerate their growth pace; and (ii) better-functioning financial systems ease the external financing constraints that impede firm and industrial expansion. This section reviews the relevant literature in these dimensions.

II.1   Structure of the Financial System

The structure of financial system is conceptually viewed as the extent to which a country's financial system is bank-based or market-based.[1] Developing the

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[1] According to Levine (2009), a bank-based financial system relies largely on banks in mobilizing savings and financing corporate investment, while a market-based financial system relies on securities markets and equity financing.

financial sector requires the synchronization of objective of achieving financial stability with that of growth. This is because institutional weaknesses[2] in the financial sector could cause or exacerbate systemic instability and undermine economic growth.

Zhuang, et al. (2009) notes that maturity and currency transformation, and asymmetric information constitutes some of the features of banks that make them susceptible to runs and distresses. A run on systemically important bank or financial institution could trigger a contagion that can metamorphose into a systemic banking crisis. Thus, developing the structure of the financial system must incorporate a framework that will ensure macroeconomic stability, effective regulation and supervision, and the elimination of other structural bottlenecks in the financial sector.

Many views abound on the sequencing of the structure of the financial sector and raise the question of whether the evolvement of banks should precede capital market development. A microcosm of this question would be on the relative importance of large and small banks. Lin (2009) recently argued that low-income countries should make small, local banks the bedrock of their financial systems. The backdrop of his argument is centred on the seeming need to support the competitive sectors[3] of the economy which according to Lin (2009) are not in congruence with the size and sophistication of financial institutions and markets in the developed world.

Banerjee (2009) points to the possibility of too little risk-taking when banks are not nearly that big. Small banks may be unable to supply risk capital but the stock market in principle could directly fund large firms to reach a global scale and by enabling a venture capital model of funding high risk new ideas. However, he argues that regulatory challenges to making a stock market efficient are daunting.

For Moss (2009), local community banks and not the stock markets provide capital for the small companies. According to him, to create an enabling environment for the private sector, government of developing countries should focus on creating a legal and financial framework to promote access to credit across the spectrum of demand. Stock markets also promote wider participation in the formal economy—public listings as an avenue for allowing small local

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[2] Institutional weakness is exemplified by poor regulation and supervision, weak corporate governance, and moral hazards in excessive deposit insurance and other protective measures.
[3] In developing countries the competitive sectors are often dominated by the activities of small and medium-scale manufacturing enterprises, farming, and services firms.

investors to participate in privatizations and as a way for large multinationals to list their local subsidiaries.

Schoar (2009) agrees that a competitive banking sector is necessary in facilitating firm growth and competition, and that equity markets constitute only a small portion of overall financing in developing countries. She underscores that scale was important for banks, and tiny banks will not garner sufficient capital to finance small businesses for expansion. In particular, the banking sector should be established and tailored to improve the real economy and, as a tool to create jobs and opportunities. Schoar (2009) proposes a two-tier banking system where one tier consist of small banks that serve basic financial needs and the other tier should consist of larger banks that serve medium firms that can create jobs for many others and will grow to large scales.

According to Levine (2009) the form and function of financial institutions are country-specific and would rely on the legal and political system as well as the evolving economic activities. He, therefore, argues that a suitable policy objective would be to craft laws, regulations, and institutions that would create an enabling environment to engender competition among financial institutions in the provision of essential credit, risk, and liquidity services to the real economy. He states that although the stock markets do not provide much capital to firms, they provide complementary risk diversification services that facilitate the efficient allocation of credit.

Zingales (2009) favors a more fragmented and competitive banking sector, which according to him creates a fluid transition from a pure banking system to a system that relies both on markets and banks, as economic activities expand. To Thoma (2009), developing countries require not only small banks and microfinance institutions that support small borrowers, but could also do with relatively sophisticated financial instruments such as hedging price risks through futures markets, insuring against crop failures, purchasing farm equipment through pooling arrangements, and managing the problem brought about by seasonality. He acknowledges inadequate information on the financial history and worthiness of potential borrowers as a challenge and that small banks were better positioned to collect such information.

II.2   Role of the Financial Sector in the Economy

Economists believe that the most important role of the financial sector in facilitating growth is to reduce information, enforcement, and transaction costs. This is achieved through a number of specific functions that the financial sector

performs**.** The basic functions of financial sector are: (i) to provide efficient payments mechanism for the whole economy; and (ii) intermediate between lenders and borrowers. These basic functions are the domain of banking institutions. Banks together with other financial intermediaries play a major role in facilitating the overall funding of the economy:

■   Banks are major suppliers of credit to finance productive investment and other debt-financed activities;

■   The banking system of a country in its sacrosanct role as an intermediary performs the crucial task of channelling resources from savings to investment; and

■   The greater the financialization of savings, the greater the potential for the channelling of savings to productive activities and the more efficient the system, the better the mobilization of resources.

Indeed, financial intermediaries perform five basic functions that affect the real economy. Levine (2004) and Zhuang, et al. (2009) identified and summarized five key functions that a financial system provides in facilitating growth:

•   Mobilizing and pooling savings. When it is done efficiently, savings mobilization enhances technological innovation and resource allocation. The process of doing so from diverse savers is expensive. Thus, to mobilize savings, transaction costs and informational asymmetry must be contained. Financial systems that are more effective at agglomerating capital promote economic development by increasing savings, exploiting economies of scale, and overcoming investment indivisibilities. With large, indivisible projects, financial arrangements that mobilize savings from many diverse individuals and invest in a diversified portfolio of risky projects facilitate a reallocation of investment toward higher return activities with positive implications for economic growth.

•   Producing information ex-ante about possible investments and allocating capital. Individual savers face high costs of acquiring and processing information on firms, managers, and market conditions, which could prevent capital from flowing to its best uses. Financial intermediaries reduce information costs through specialization and economies of scale and thereby improving resource allocation and the pace of growth. Only better information can engender the identification of appropriate

production technologies and effective and efficient entrepreneurs. Stock markets may also stimulate the generation of information about firms. Expansion in markets and their growing liquidity, incentivize agents to expend resources in researching firms because it is easier to profit from this information by trading in big and liquid markets.

- Monitoring investments and exerting corporate governance. The degree to which the owners of capital (shareholders and creditors) can effectively resolve[4] the 'principal – agent problem' has important implications for savings, decisions for allocating the savings, and their utilization. Good corporate governance helps improve the efficiency with which firms allocate and utilize resources and makes savers more willing to finance production and innovation. Zhuang et al. (2000) state that monitoring and disciplining by creditors (banks or bondholders), shareholder activism exercised by institutional investors (such as banks, pension funds, etc), threat of takeovers and market for corporate control, threat of insolvency, and capital market competition, among others, are effective mechanisms for strengthening corporate governance.

- Facilitating the trading, diversification and management of risks. Financial systems help mitigate the risks associated with individual projects, firms, industries, regions, and countries, etc. A financial system's ability to provide risk diversification services affects long-run economic growth by improving resource allocation and encouraging savings. Financial systems also enhance liquidity, reduce liquidity risks, increase investment in longer-term, higher-return, but illiquid assets, and promote economic growth.

- Facilitating the exchange of goods and services. A financial system facilitates transactions in the economy, both providing and improving the payment systems and by reducing transaction and information costs associated with financial transactions. In this way specialization of production is encouraged, technological innovation is enhanced, and growth is ultimately achieved. Backward linkage effects occur from these productivity gains to financial market development and, thus, economic development can spur the development of the financial sector.

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[4] Effective corporate governance helps in separating ownership from control and serves as a check on the activities of managers and, thus, influences managers to optimize returns from investment.

Figure 1
A Schema on the Link between Financial Sector and Real Economy

Financial Markets

Financial Sector

| Financial Institutions | Money and Foreign Exchange Markets Capital Market Derivative Market | Real Economy |

III.   Financial Sector and Real Economy—Is there a Link?

The link between financial sector and real economy can be explored from two perspectives, namely, the intermediation role of financial institutions and monetary policy perspective - the transmission mechanism of monetary policy impulses. Economists have long believed that financial markets and institutions are important factors in supporting economic development. Economists like Goldsmith (1969), McKinnon (1973), Shaw (1973) and Fry (1995) state a strong positive empirical relation between the degree of financial market development and the rate of economic growth, and a negative relation between financial repression and growth. However, these early literature failed to give theoretical linkage between financial development and growth.

Recently, many economists have developed a model that drives a formal link between financial intermediation and growth. This literature considers two interrelated issues: it analyses how financial intermediation affects economic growth, and it studies how economic growth might itself affect the evolution and growth of financial intermediation. Levine (1997), for instance agrees that financial intermediaries enhance economic efficiency and, eventually, growth by helping to allocate capital to its best uses. Several other cross-country and panel data studies such as King and Levine (1993a,b), Khan and Senhadji (2000) and Levine, et al. (2000) showed that financial development had a positive impact on economic growth. Hassan and Yu (n.d) in a panel study, notes that in the short-run, there exists strong linkages between financial development and economic growth in high-income OECD countries, but not in South Asian and Sub-Saharan African regions. They, therefore, called for different efforts to achieve steady economic growth across geographic regions and income groups.

Lucas (1988), however, argues that the role of the financial sector in economic growth is 'over-stressed'. Demetriades and Hussein (1996) did not find evidence

to support the view that finance led economic growth. Their evidence seems to support for the majority of the countries they examine, bi-directional causality, while economic growth leads financial development in some instances. The argument for bi-directional causality is collaborated by the finding of Luintel and Khan (1999) for all ten less-developed countries utilized in the study.

It can be interpreted that high financial development increases growth or high growth leads to more developed financial systems. From the above literature review, it can be concluded that financial development is an important determinant of economic development. Many economists point out that not only financial development allows for economic growth but economic growth increases the incentive for financial development. Efficient financial systems help countries to grow by mobilizing additional financial resources and by allocating those resources to the best uses. Of course, Mehl, et al. (2005) notes that the financial sector is growth-supportive only if financial institutions are subject to proper governance structures resulting, in particular, in behaviour of banks that is incentive-compatible with that of depositors or borrowers. This is because the prevailing asymmetric information, subject banks to moral hazard and adverse selection problems.

As economies develop, so must the financial systems that serve them. As the financial system grows, efficient channelling of funds lowers both the transfer costs and risk-taking from savers to borrowers. The financial intermediary allows a better allocation of resources in the economy and, therefore, stimulates capital accumulation and growth. On the other hand, as a consequence of economic growth, investors increase their participation in financial market. The financial intermediaries lead to a better allocation of savings to investment, increases the rate of capital accumulation and the growth rate of the economy.

Financial sector development and economic development are inter-related. No economy can grow and improve the living standards of its population in the absence of a well-functioning and efficient financial sector. A sound and healthy banking system is directly related to economic growth and development.

Modern growth theory (Romer 1986; Lucas 1988; Rebelo 1991; Grossman and Helpman 1991; Pagano, 1993) identifies two main channels through which the financial sector might affect long-run growth in a country: through catalyzing the capital accumulation (including both human and physical capital) and by increasing the rate of technological progress. The five basic functions of an efficiently working financial sector allow the above two channels to work for

promoting growth by: mobilizing savings for investment, facilitating and encouraging capital inflows, and allocating the capital efficiently among competing uses.

IV.   Overview of channels of monetary policy transmission mechanism (MTM)

Monetary policy can be defined as the measures taken by the monetary authorities to influence the quantity of money or the rate of interest with a view to achieving stable prices, full employment and economic growth. Because monetary policy action works through financial markets, the transmission mechanism provides another link between the financial sector and real economy.
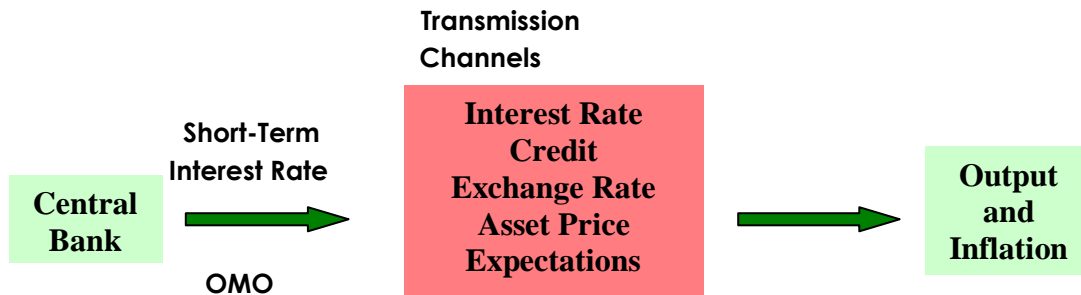
Central banks try to influence the quantity of money and/or interest rates with a view to achieving price stability, full employment and economic growth. This implies that there must be some link (or links) between monetary/financial variables (such as the quantity of money, interest and exchange rates) and macroeconomic variables (such as the price level, the level of employment and the gross domestic product (GDP)). These links are called the monetary transmission mechanism, that is, the way in which monetary/financial changes affect the real economy.

There are various views about the monetary transmission mechanism. Some economists, for example, see a direct link between changes in the quantity of money (M) and changes in the price level (P) but no link between changes in M and changes in real GDP. Other economists emphasize the link between interest rates (i) and investment spending (I) in the economy. They regard interest rates as the outcome of the interaction between the demand for and the supply of money. For example, if the money supply increases, interest rates will tend to fall. At the lower interest rates more investment projects will become profitable, therefore, investment (I) will increase. This, in turn, will result in an increase in GDP. That is why observers often call on the central banks to lower interest rates in an attempt to stimulate economic growth and employment. The literature on MTM has identified about five channels of monetary policy transmission (Mishkin, 1996) as follows:

- ❏ Interest rate channel (interest rate pass-through)
- ❏ Credit channel
- ❏ Exchange rate channel (exchange rate pass-through)
- ❏ Other asset price channel
- ❏ Expectations channel

A simplified illustrative transmission mechanism is shown in Figure 2 below.

Figure 2
A Simplified Illustrative Monetary Transmission Mechanism

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                          Transmission
                          Channels
                        ┌──────────────────┐
          Short-Term    │  Interest Rate   │
          Interest Rate │     Credit       │              Output
┌──────────┐            │  Exchange Rate   │          ┌───────────┐
│ Central  │  ───────►  │   Asset Price    │  ───────►│    and    │
│  Bank    │            │  Expectations    │          │ Inflation │
└──────────┘            └──────────────────┘          └───────────┘
             OMO
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IV.1   Interest Rate Channel

The interest rate channel operates within an IS-LM framework and is considered as the conventional or traditional view of MTM. Interest rate channel can be characterized by the following schematic showing the effects of a monetary expansion:

$$M\uparrow \Rightarrow ir\downarrow \Rightarrow I\uparrow \Rightarrow Y\uparrow \Rightarrow \pi\downarrow\uparrow \tag{1}$$

Where **M** is Monetary Policy
      ir is real interest rate
      I is investment spending
      Y is aggregate output
      Π is inflation

Expansionary monetary policy: a fall in real interest rate lowers cost of capital resulting in a rise in investment spending (business investment spending & consumer spending - residential housing + consumer durable expenditure) which will lead to an increase in aggregate demand and a rise in output.

IV.2   Credit Channel

The credit channel operates through the quantity of lending banks undertake. It is an enhancement mechanism operating through problems of asymmetric information in financial markets (Bernanke and Gertler, 1995). Two distinct credit channels arise as a result of information problems in credit market: those that operate through the effects on bank lending (bank lending channel); and those that operate through the effects on firms' and households' balance sheet (balance sheet channel).

IV.2.1   Bank lending channel

The lending channel operates under certain assumptions. According to Bernanke and Blinder (1988), and Kashyap, Stein and Wilcox (1993), firms should equally likely substitute between loans from financial institutions and bonds from the general public. In addition, the central bank should be able to influence the supply of loans through the use of monetary instruments. Thus, the lending channel is effective if much of the firm's total expenditure is financed from the banks. Thus, the size of bank finance expenditure vis-à-vis other sources, becomes crucial in explaining the lending channel of monetary policy transmission. Because of asymmetric problems in credit market, certain borrowers will not have access to the credit market unless they borrow from banks:

$$M\uparrow \Rightarrow R\&D\uparrow \Rightarrow L\uparrow \Rightarrow I\,(C)\uparrow \Rightarrow Y\uparrow \tag{2}$$

   Where **R&D** is research and development
   L is liquidity and
   I (C) is investment spending while other variables are as previously defined

The basic idea underlying this channel is that banks play special role in financial system—mobilizing deposits as well as granting loans for which few close substitutes exist and, therefore, are in a vantage position to solve asymmetric information problems in credit markets. Small banks tend to rely on deposits as principal source of funding for lending, while many small firms rely on bank loans as the principal source of funds for investment.

Juks (2004) and Kohler, Hommel and Grote (2006) found support for the existence of the bank lending channel in emerging market economies. Liquidity was found to insulate loan supply from interest rate shocks in the Baltic countries. Agha, et. al (2005) in a study of the transmission mechanism of monetary policy in Pakistan asserted that the role of bank lending is prominent because of the dominance of the banking sector. Other factors that might have enhanced the banks' role included financial reforms, market-based credit allocation and crowding-in of private sector credit due to the decline in fiscal dominance.

The extant literature shows that the bank lending channel is an important medium through which monetary policy permeates the real sector of the economy. Therefore, in the pursuit of price stability by monetary authorities, the consideration of the impact of lending on monetary aggregates is a necessary condition for attaining macroeconomic stability. A major implication of the credit view is that monetary policy will have a greater effect on expenditure by smaller

firms, which are more dependent on bank loans than it will on large firms, which can access the credit markets directly through stocks and bond markets.

IV.2.2 Balance Sheet Channel

The balance sheet channel is also referred to as the **broad credit channel.** Like bank lending channel, balance sheet channel arises from the presence of asymmetric information problem in credit markets. The basis of this channel is the net worth of business firms and the problems of adverse selection and moral hazard. It is based on the theoretical prediction that external finance premium facing a borrower depends on the borrower's financial position. Thus, the greater the borrower's net worth, the lower the external finance premium should be.

Since borrowers' financial positions affect the external finance premium and, thus, the overall terms of credit faced by them, fluctuations in the quality of borrowers' balance sheet similarly should affect their investment and spending decisions. The lower the net-worth of business firms the more severe the adverse selection and moral hazard problems in lending to these firms. Lower net worth means that lenders in effect have less collateral for their loans and so potential losses from adverse selection are higher. A decline in net worth, which raises the adverse selection problem, leads to decreased lending to finance investment spending. The lower net worth of businesses also increases the moral hazard problem because it means that owners have lower equity stake in their firms, giving them more incentive to engage in risky investment projects. Since taking on riskier investment projects makes it more likely that lenders will not be paid back, a decrease in businesses' net worth leads to a decrease in lending and, hence, in investment spending with implication for the real economy and, thus, economic growth.

Expansionary monetary policy affect firm's balance sheet in several ways:
- Rise in stock prices

- $M\uparrow \Rightarrow Ps\uparrow \Rightarrow$ firms' net worth $\uparrow \Rightarrow$ adverse selection $\downarrow$, moral hazard $\downarrow \Rightarrow$ Lending$\uparrow \Rightarrow I\uparrow \Rightarrow Y\uparrow$ (3)

- Cash flow channel

- $M\uparrow \Rightarrow i\downarrow \Rightarrow$ firms' cash flow$\uparrow \Rightarrow$ adverse selection $\downarrow$, moral hazard $\downarrow \Rightarrow$ Lending$\uparrow \Rightarrow I\uparrow \Rightarrow Y\uparrow$ (4)

- Unanticipated price level channel

- M↑ ⇒ unanticipated P ↑ ⇒firms' real net worth ↑ ⇒ adverse selection ↓, moral hazard ↓ ⇒ Lending↑ ⇒ I↑ ⇒ Y↑   (5)

The above mechanisms apply equally to households.

Agung (2000) examined the role of cash flow and leverage in firm investment to test indirectly whether the balance sheet channel exists in Indonesia. The result confirmed the existence of the channel, though it did not reveal whether monetary contraction exerts significant effects on the balance sheet of firms. Agung, et al. (2001) further investigated explicitly the existence of the balance sheet channel in Indonesia by extending the data employed by Agung (2000) to include the crisis period. The empirical evidence suggested that firms' balance sheet variables are very important determinants of the firms' investment and that small firms are more sensitive to their balance sheet changes than large firms.

IV.3   Exchange Rate Channel

Several studies, such as Arnostova and Hurnik (2004), Dabla-Norris and Floerkemeier (2006) and Eichenbaum and Evans (1995), have investigated the exchange rate channel and established the importance of the exchange rate channel in the transmission of monetary policy to the real economy.

With globalization and the advent of flexible exchange, more attention had been paid to how monetary policy affects exchange rates, which in turn affect net exports and aggregate output. This channel also involves interest rate effects because when domestic interest rates fall, domestic currency deposits (assets) become less attractive relative to deposits (assets) denominated in foreign currencies.

As a result, the value of domestic currency deposits (assets) relative to other currency deposits (assets) falls, and the domestic currency depreciates. The lower value of domestic currency makes domestic goods cheaper than foreign goods, thereby causing a rise in net exports and, hence, in aggregate output. The schematic for the MTM that operates through the exchange rate is:

M↑ ⇒ ir↓ E ↓ ⇒ NX↑ ⇒ Y↑   (6)
Where E is value of domestic currency deposits
NX is net exports and other variables as previously defined

IV.4   Other Asset Price Channel

Over the last three decades, there has been a surge in empirical research on the role of asset prices as a channel of monetary policy transmission. A study on the impact of housing wealth on consumption using German data, suggested the existence of a significant link between consumption and housing wealth (Hordahl and Packer, 2007). Eichengreen and Tong (2003) also confirmed the link between fluctuations in asset prices and changes in monetary policy regimes. Similarly, Kannan, (2006) tested the predictive power of equity prices for inflation rate and economic activity in India and discovered that stock prices seemed to be a leading indicator of inflation, though they appeared to lack predictive power for the output gap.

Saxton (2003) noted that asset prices could mirror price bubbles since such movements influenced and help to predict general price inflation. In this regard, if equity prices fall, the incentive to buy stock or use it as a source of financing investment weakens. For real estate, price affects aggregate demand through its direct effect on housing expenditure and increase in housing wealth. This would in turn lower the cost of financing housing investment, while increasing the prices of real estate. He, therefore, concluded that asset prices should be included in a broader and more comprehensive measure of the general price level which could be factored into the formulation of monetary policy by central banks.

Studies by Al-Mashat and Billmeier (2007) on asset price channel in Egypt concluded that the rapid development in the Egyptian stock market index between March 2003 and February 2006 could have contributed to the impact that the monetary policy stance had on real activities and prices. McCarthy and Peach (2002) in a study of residential investment focused on the effects of securitization on the monetary policy transmission mechanism by examining how regulatory changes and other innovations in housing finance had impacted on the transmission of policy shocks to housing investment. They discovered that interest rates as opposed to quantity constraints have taken on a larger role, since the dismantling of regulation and the shift from thrift-based intermediation to a more market – oriented system of housing finance. Perhaps as a consequence of these changes, mortgage interest rates responded swiftly to monetary policy than they did prior to 1986. However, residential houses responded more slowly and fluctuated more or less concurrently with the overall level of economic activity.

Thygesen (2002) noted that the transmission mechanism through changes in asset price to the real economy was well understood though difficult to quantify empirically. Thus, the three main transmission channels through which this could occur are the wealth effect, the Tobin's Q effect and changes in credit through the balance sheet of financial intermediaries.

Ehrmann and Fratzscher (2004) examined the reaction of equity markets to the US monetary policy in the period 1994 to 2003. They explained that a high degree of market volatility, changes in the direction of monetary policy, and unanticipated changes in the federal funds rate cause stronger effect on stock prices. The effect is stronger in industries that are cyclical and capital-intensive.

Thorbecke (1997) found that an expansionary monetary policy increased ex-post stock returns. With a low interest rate, firms' economic activity increased, leading to larger cash flows and higher returns. Similarly, Cooley and Quadrini (1999) developed a value-weighted index and employed a general equilibrium model with heterogeneous, old firms where financial factors played an important role in production and investment decisions, to examine the response of stock market index to monetary policy shocks. They found that small firms responded more to monetary shocks than big firms and as a result of the financial decisions of firms, monetary shocks had impact on output. Furthermore, monetary shocks led to considerable volatility in the stock market.

Two types of effects have been identified under the other asset price channel of transmission: Tobin's q-Theory and Wealth effects. Tobin's q-theory (Tobin, 1969) provides an important mechanism for how movements in stock prices can affect the economy. It explains how monetary policy can affect the economy through its effects on the valuation of equities. Tobin's q is defined as the market value of firms divided by the replacement cost of capital.

If q is high, the market price of firms is high relative to the replacement cost of capital, and new plant and equipment capital is cheap relative to market value of firms. Companies can then issue stock and get a high price for it relative to the cost of the facilities and equipment they are buying. Investment spending will rise, because firms can buy a lot of new investment goods with only a small issue of stock.

Conversely, when q is low, firms will not purchase new investment goods because the market value of firms is low relative to the cost of capital. The crux of the Tobin q-model is that a link exists between stock prices and investment spending.

The workings of the Tobin q-theory of monetary transmission is as follows:

$$M\uparrow \Rightarrow Ps\uparrow \Rightarrow q\uparrow \Rightarrow I\uparrow \Rightarrow Y\uparrow \tag{7}$$

    Where   Ps is Stock prices and
                q is Market value of firms
                Replacement cost of capital
While other variables are as previously defined

An alternative description of this mechanism is through the cost of capital:

$$M\uparrow \Rightarrow Ps\uparrow \Rightarrow c\downarrow \Rightarrow I\uparrow \Rightarrow Y\uparrow \tag{8}$$

                c is cost of capital

The wealth channel looks at how consumers' balance sheet might affect their spending decisions. Modigliani (1971) in his life-cycle model stated that consumption is determined by the lifetime resources of consumers, not just today's income. An important component of consumers' lifetime resources is their financial wealth, a major component of which is common stocks. Thus, the channel of transmission is as follows:

$$M\uparrow \Rightarrow Ps\uparrow \Rightarrow W\uparrow \Rightarrow C\uparrow \Rightarrow Y\uparrow \tag{9}$$

    Where   W is financial wealth an
                C is consumption.
    Other variables are as previously defined

A second wealth effect is through housing prices, because housing prices are considered an important component of household wealth. Thus, the monetary transmission mechanism is:

$$M\uparrow \Rightarrow Ph\uparrow \Rightarrow W\uparrow \Rightarrow C\uparrow \Rightarrow Y\uparrow \tag{10}$$

The Tobin's q framework can also be applied to the housing market, where housing is equity.

IV.5   Expectations Channel

Cerisola and Gelos (2005) showed the importance of anchoring expectations in inflation targeting regime, while Blanchflower (2008) revealed that inflation expectations were strongly influenced by past experiences, while evidences of future path of prices were highly correlated with an individual's evaluation of

current inflation. These conclusions were corroborated by other earlier studies such as Wuryandani, et. al. (2001), Mello and Moccero (2006), Goeltom (2008) and Orphanides and Williams (2002). They revealed that although inflation expectations were far from being efficient under an imperfect knowledge conditions, the uncertainties would aggravate inflation and distort the trade-off between inflation and output growth in monetary policy target. Also, they showed that expected inflation is determined predominantly by the exchange rate, past inflation, and the interest rate. The market expects inflation to increase as the interest rate increases.

Mohanty and Turner (2008) observed that most central banks agree that the growing role of the expectation channel has implications for the magnitude of their interest rate response. For example, in Colombia, the volatility of the policy rate had fallen since 2000 following improved credibility of monetary policy. Similarly, in Israel, more stable nominal wage expectations had allowed the central bank to moderate interest rate movements. Mayes (2004) in his study on the monetary policy transmission mechanism in the Baltic States found that monetary policy actions exerted effects on the economy through their impact on the confidence and expectations of economic agents about the future outlook of the economy. In particular, expectation effects might improve monetary policy transmission through the other channels by shortening reaction lags. He underscores how commitment to future expansionary monetary policy can raise expected price level and, hence, expected inflation

$$M\uparrow \Rightarrow Pe\uparrow \Rightarrow \pi e\uparrow \Rightarrow ir(=i-\pi e)\downarrow \Rightarrow I\uparrow \Rightarrow Y\uparrow \qquad (11)$$
Where Pe is expected price level and
      πe is expected inflation
Other variables are as previously defined.

V.   Conclusion

Linkages go both ways from the financial to the real sector and from the real to the financial sector. The financial sector's contribution to growth lies in the central role it plays in mobilizing savings and allocating these resources efficiently to the most productive uses and investments in the real sectors. The behaviour of the financial sector affects the behaviour of the real economy. People respond to stock market booms (by feeling rich and spending more) and to stock market slumps (by hoarding their incomes and cancelling spending plans). The real economy generates financial activity by employing people (who wish to save some of their income), in firms (which wish to borrow for investment purposes). Causality works in both ways: The link between the financial and real economy

has a long and eventful history. Empirical studies have demonstrated the preponderance of evidence suggesting a positive relationship between financial development and economic growth. When a crisis strikes, their connections are very evident and we pay attention. The recent financial and economic crises provide a very ample confirmation of the link between the two. The link between the financial sector and the real economy is always relevant—not only in times of crisis but even during periods of stability.

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