

New tools to solve problems finance

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Abstract

Financial innovation is not a new phenomenon. Modern banking originated in 14th-century Florence and modern insurance can be traced to Lloyd's Coffee House in 17th-century London. Reinsurance is one of the oldest innovations in the insurance sector. These and thousands of subsequent innovations continue to provide valuable financial functions, fundamental to a thriving economy.

Many of the most creative financial innovation have been directed at the consumer level (like adjustable rate mortgages, cash management accounts, and various new forms of life insurance). Financial innovation has been a continuous and integral part of corporate world. Greater freedom and flexibility have thus enabled companies to invent and innovate financial instrument and their subsequent introduction. A variety of factors such as increased interest rate, volatility, frequency of tax and regulatory changes etc have stimulated the process of financial innovations.

Financial innovation would promote high investment growth; the study employed an explanatory research design as the analytical tool for determining the relationship between financial innovation and changes in innovation activities such as interest rate, domestic credit, mortgage backed securities and the Consumer Price Index (CPI). The study used Annual Report drawn mainly from the Central Bank of Egypt publications for the period 2008 – 2010.

Keywords: Financial innovation, The Consumer Price Index (CPI), The American Telephone and Telegraph Company (AT&T), Mortgage-Backed Securities (MBS) and Asset-Backed Securities (ABS), Initial Public Offering IPO, Open Market Operations (OMOs).

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Part 1

1. Introduction

Financial innovations have helped certain kinds of firms to cut the cost of funds raised for investment and to raise funds more securely and quickly. For example, the venture capital industry, a financial services innovation, helped to launch many of the high technology firms that created prosperity in the United States from the 1950s through to today, including E-Bay/PayPal

and Amazon. Innovation has thus helped direct capital more efficiently towards the right firms, and in doing so may have helped establish the United States as the home of key technology companies. Finding new ways to identify the most productive entrepreneurs and fund their inventions might be almost as important as the technical breakthroughs themselves¹.

The introduction of financial innovations, in terms of both products and sources of financing, might generate a sharp increase in housing finance and in some cases the presence of a credit boom in mortgage loan markets. Therefore, the analysis of the mortgage credit recent behavior is relevant in determining a credit boom in Egypt.

The goal of this paper ‘Financial Innovation’ is to promote and strengthen the societal and institutional framework that enables financial innovation to flourish. The fundamental impulse that sets and keeps the capitalist engine in motion comes from the new consumer goods, the new methods of production or transportation, the new markets, the new forms of industrial organization that capitalist enterprise creates. This process of Creative Destruction is the essential fact about capitalism².

Innovation is the specific instrument of entrepreneurship – the act that endows resources with a new capacity to create wealth.” Peter Drucker³. Innovation is the vital spark of all human change, improvement and progress.” Theodore Levitt. Innovation is the central issue in economic prosperity.” Michael Porte⁴.

Few commentators on financial innovation have argued the world would be better without loans, car insurance or stock exchanges. Other than Shakespeare: “Neither a borrower nor a lender be⁵”.

In light of much financial services innovation having gone off track, particularly in the run up to the start of the 2007 financial crisis, the goal centred on reducing the chances of negative outcomes from financial innovation in a way that would not reduce the positive benefits of innovations. At the end of our journey, we believe this balanced goal is achievable.

This report is organized in three main parts, the first of which looks at how financial innovation is defined, its importance to society, the benefits of financial innovation and the counterbalancing role of innovation in the recent financial crisis, as well as the future role for financial innovation in helping society address fundamental problems. The second part of the report builds a framework offers methodology and analyses, The final part of the report offer the result and recommendations.

¹ Michalopoulos, S., Laeven, L. & Levine R. (in press) Financial innovation and endogenous growth. Providence, RI: Brown University.

² Schumpeter, J. A. (1942) Capitalism, socialism and democracy. London: Routledge.

³ Drucker, P.F. (1985) “The Practice of Innovation”, Innovation and Entrepreneurship Practice and principles, Harper & Row, New York, pp. 19-33

⁴ <http://www.thecommonwealth.org/files/223348/FileName/ICTCluster-Uganda.pdf>

⁵ Ibid

1.2 Research Objective

The objective of this paper is to highlight ways to improve the management of financial innovation. We want financial innovation to continue to develop products and services that will benefit society and drive economic development. At the same time seek to reduce the chances of unintended negative outcomes.

1.3 Important questions

Questions of this study revolve around the important of financial innovation, the study questions include following:-

- 1- Why is financial innovation needed?
- 2- How can financial innovation be improved to better emphasize the positive outcomes and reduce the risk of adverse consequences?
- 3- How can financial innovation be strengthened to better serve society's needs and economic development?
- 4- How does flourish financial innovations?

To answer these questions, try to analyse the relevant literature and seek the counsel of over 20 Businesses,.

1.4 Hypotheses

To examine the effect of financial innovation increasing use of interest-sensitive funds, financial innovation has widespread effects on monetary policy, and develops products and reduces the chances of unintended negative outcomes. The following hypotheses are proposed:

H0: there are negative relation between dependent variable (financial innovation) and independent variables changes in innovation activities, interest rate, domestic credit, mortgage backed securities and subsequent changes in default rates.

H1: there are positive role of financial innovations in lowering default rates in the short run.

2. Literature Review

Literature on financial innovation is diverse ranging from the developments in information technology to linkages between innovation, monetary policy, inflation and economic growth. Financial deregulation, development of new financial products and technological developments are some of the innovations in the financial system featuring most in the literature. In the context of financial innovation and monetary policy, most authors have focused on the effects of innovations on various channels of the monetary transmission mechanism with the interest rate, exchange rate and asset price channels dominating the literature. In general, it is conjectured in the literature that financial innovation has widespread effects on monetary policy that have various implications on transmission mechanism and thus on the effectiveness of monetary policy operations in influencing macroeconomic variables.

According to Mathews and Thompson (2008)⁶, the term “financial innovation” is an over-used term meant to describe any change in the scale, scope and delivery of financial services. Akhtar (1983)⁷ has defined financial innovation as to include new or altered financial instruments as well as issues of securities in money and capital markets and also changes in the market structure and institutions; and goes on to list five broad categories of financial changes which seem to reflect the major long-term trends in the financial systems of industrial countries. These categories are: (1) the increasing use of interest-sensitive funds by banks and other financial institutions; (2) the variable rate lending or borrowing and maturity shortening; (3) the growth of financial markets and of marketable financial instrument; (4) the changing shape of retail banking; and (5) the diversification of sources of financial services.

According to Ignazio (2007)⁸, financial innovation has not only opened up new opportunities for the sector participants, but also increased new market players arising from new products in the financial market. These developments have increased the range of financing and investment opportunities available to economic agents besides changing the role of banks with expanded diversification choices in terms of portfolio and sources of financing. Such developments affect the speed and strength of the channels of monetary policy transmission mechanism in the economy. In this case, as financial markets become more liquid and complete, changes in official interest rates are more readily transmitted to the whole term structure and more generally to financial asset prices. This in turn affects the whole economy through the cost of investment financing and return on saving. In addition, the increasing weight of financial and non-financial assets in firms and households’ balance sheets implies that the effects of monetary policy through changes in asset prices and related wealth effects are likely becoming larger while weakening the bank lending channel (Martin, 2007)⁹. This is partly explained by the fact that a wider range of borrowers are now able to shift to financial markets as a substitute for banking sources of financing. Consequently, the relevance of the bank lending channel is affected negatively by the emergence of non-bank lenders. In pursuit of price stability therefore, monetary authorities need to monitor more closely developments in asset prices that can eventually have an impact on inflation and growth.

According to Noyer (2007)¹⁰, financial innovation fosters faster dissemination of information and its more rapid incorporation into financial market prices. This is true for monetary policy decisions and can therefore increase the effectiveness of monetary policy, particularly via the

⁶ Senior Supervisors Group (March 2008). “Observations on Risk Management Practices during the Recent Market Turbulence

⁷ Akhtar, M.A., “Financial Innovations and their Implications for Monetary Policy: An International Perspective”. BIS Economic Papers No. 9 – December 1983.

⁸ Ignazio, V. 2007. Financial Deepening and Monetary Policy Transmission Mechanism, *BIS Review* 124/2007.

⁹ Martin, R. 2007. Financial Intermediation Through Institutions or Markets? *BIS Review*, 72/2007

¹⁰ Noyer, C., 2007. Financial Innovation, Monetary Policy and Financial Stability. Spring Conference, Banque de France.

interest rate channel. In addition, financial innovation contributes to an increased holding of financial assets by lowering transaction costs and facilitating arbitrage, hedging, funding and investment strategies. Financial innovation also gives firms broader access to securities markets, which may reduce information asymmetries at the source of the credit channel and thus weaken it.

Related studies with empirical content include Sukudhew et al. (2007)¹¹ who used two-step Engle-Granger ECM approach to obtain a long-run relationship between market rate of interest and policy rate, whose residual was used to develop a short run model. The authors then used simple crosscountry correlations to gauge the strength of the association between interest rate pass-through and various measures of financial developments including financial innovation indicators. Their results indicated that financial market development strengthens asset price channel; weakens impact of monetary policy on bank lending channel and has mixed impact on the balance sheet channel. According to their results, financial market development leads to faster and larger interest rate pass through. While some aspects of financial market development strengthen the interest rate channel, advancement of payment technology which enables consumption smoothing weakens the importance of the interest rate channel.

Ho (2006)¹² focused on the linkages between financial innovation, growth and monetary policy transmission mechanisms. He argued that monetary policy targeted at certain macroeconomic variables is essentially a financial process, with the financial system as the interface linking central bank policies and the real economy through the monetary policy transmission mechanism. Hence, any innovation development that affects the structures and conditions of financial markets will have the potential to exert effect on the transmission mechanism. The author identified the interest rate channel, exchange rate channel and asset channel as the three main channels through which financial innovation can affect monetary policy. He further argues that financial innovation can work against policy effects of transmission. For instance, new financial instruments such as futures and options significantly increase the ability of economic agents to lock in current interest rates for future funding needs, countering fluctuations in the cost of finance and improving the inter temporal substitution of income streams. In this case, current income is no longer the major determinant of current expenditure, while the net worth would gradually replace cash flows as the primary factor of investment expenditure. Hence, the intertemporal substitution effect of the monetary transmission mechanism will be contained due to the increased insurance possibility induced by financial innovation.

¹¹ Sukudhew, S et al., 2007. Impact of Financial Market Developments on the Monetary Transmission Mechanism, *BIS Papers* No. 39

¹² Ho, N. W. 2006. Financial Innovation and Its Impact on Central-Bank Policies, Monetary Authority of Macao.

In addition, Ho (2006)¹³ points out that evolution of electronic means of payment (e-money) which is basically an alternative form of money has the potential to substitute for traditional form of money. Electronic payments to the extreme, could replace bank demand deposits and other types of highly liquid deposits, undermining the functioning of monetary transmission mechanism, as the link between change in bank deposits and change in real sector activities is weakened. The implication is that the reduced demand for traditional form of money could lead to a reduction in the amount of reserves held by financial institutions with central bank. Moreover, technological advances in payment systems which allow for a more efficient settlement of interbank transactions reduce the necessity of holding excess reserves with central bank for precautionary motives. The usage of credit cards and electronic banking is one such innovation that contributed to what was previously observed as stable medium to long-run relation between the stock of money and aggregate nominal income. This instability between the money stock and nominal income eventually led countries to abandon monetary targeting (Iris and Grimes 2003)¹⁴.

Dowd (2005)¹⁵ attributes the emergence of financial risk management as a discipline to the following factors: (1) phenomenal growth in trading activity (2) massive increases in the range of instruments traded and trading volumes over the past two or three decades; (3) the huge growth of financial derivatives activity, and (4) the rapid advance in the state of information technology.

Ooi Sang (2005)¹⁶ argues that the effectiveness of monetary transmission mechanism hinges on changing forms and character of financial diversity and depth of financial markets. In this context, the author contends that with an increasing role of the capital market, investors have greater options to diversify their financing away from banks through the issue of bonds and equities. Accordingly, such changes in the financial system impact on the effectiveness of monetary policy by increasing or decreasing lags from changes in the Central Bank policy rate to the cost of funds to business and households, as well as relative returns of different asset classes for savers and investors. For instance, greater reliance on alternative sources of financing by business and corporations may delay speed and magnitude of transmission of policy rates to the actual cost of financing. This is especially important if alternative sources of financing have significantly different funding structures not directly influenced by Central Bank's policy rate. The author further conducted some descriptive analysis using data from Malaysia. The results of his analysis indicate that a diversified source of financing especially from the capital market had not impacted on monetary transmission in any significant way.

¹³ Ibid

¹⁴ Iris, C. and A. Grimes. 2003. Asymmetric Information, Financial Intermediation and Monetary Transmission Mechanism: A Critical Review, *New Zealand Treasury Working Paper* 03(19).

¹⁵ Dowd, K. (2005). *Measuring Market Risk*. Chichester, UK: John Wiley & Sons Ltd.

¹⁶ Ooi, Sang K., 2005. The Monetary Transmission Mechanism in Malaysia: Current Developments and Issues, *BIS Papers*, 35:345-361.

Resina (2004)¹⁷ concurs with this argument by contending that financial innovation tends to make existing relations between monetary and non-monetary variables much more unstable and unpredictable. This is because the broader range of financial assets available and their increased substitutability have made monetary aggregates more difficult to interpret. Thus there has been a trend towards downgrading quantitative targets and focusing instead on key prices such as the level of interest rate and the level of exchange rates. Consequently, in a changing financial environment, it is inappropriate to use any one monetary variable as the sole guide for monetary policy.

As pointed out by Frame and White (2002)¹⁸, innovation is clearly an important phenomenon of any sector of a modern economy. Successful financial innovation must reduce costs and risks or provide improved services to users. This notwithstanding, certain aspects of financial innovation may pose significant risks which should not be taken lightly. According to Mathews and Thompson (2008), by opening their doors to new products and activities, banks also let in a myriad of new risks associated with this activity. The rapid rate of innovation in the financial sector no doubt calls for an assessment of the efficacy of risk management systems of financial institutions on one hand and devising appropriate regulatory responses to the challenges that financial innovation may pose, on the other. It is important that risk management systems should keep pace with the financial innovations that take place. According to Greuning and Bratanovic (2003)¹⁹, risk rises exponentially with the pace of change, but bankers are slow to adjust their perception of risk. In practical terms, this implies that the market's ability to innovate is in most circumstances greater than its ability to understand and properly accommodate the accompanying risk.

Arturo (2001)²⁰ examined the effects of securitization on the transmission mechanisms of monetary policy using an estimated structural IS equation. The author found that the sensitivity of both real output and housing investment to the real federal funds rate declined significantly as the degree of asset securitization increased in the 1980s and 1990s. This implies that securitization largely affected channels not directly related to interest rates such as bank lending or credit channels. Aoki et al. (2004)²¹ assessed the impact of monetary policy on the real economy through its effect on housing prices and finds that the recent financial innovations such

¹⁷ Resina, K., 2004. The Implications of Evolving Technology on Monetary Policy: A Literature Survey, *Reserve Bank of Fiji, Working Paper*, 2004/02

¹⁸ Frame, W. Scott & White, Lawrence J. (2002). "Empirical Studies of Financial Innovation: Lots of Talk Little Action?". Working Paper 2002-12. Federal Reserve Bank of Atlanta, Atlanta GA, USA.

¹⁹ Greuning, H.V. and Bratanovic, S.B. (2009, 3rd Edition). Analyzing and Managing Banking Risk: "A Framework for Assessing Corporate Governance and Financial Risk". Washington, D.C, The World Bank.

²⁰ Arturo, E., 2001. Financial Innovation and the Monetary Transmission Mechanism, Mimeo, Federal Reserve Bank of New York.

²¹ Aoki, K., J. Proudman and G. Vlieghe, 2004. House Prices, Consumption, and Monetary Policy: A Financial Accelerator Approach. *Journal of Financial Intermediation* 13: 414-445

as flexible refinancing terms and increased consumer access to unsecured credit may have changed the transmission mechanism through housing prices.

Till the late seventies, central banks had unanimously acted as mere agents for the fiscal authority where monetary policy was tuned in with fiscal policy so that they generally focus on bridging inflation and income gaps. Both policies were coordinated in a demand management program since it was to a certain extent speciously believed that they have a long-lasting effect on the real variables of output and employment (Clarida et al., 2000)²². It is generally claimed that due to their inability to distinguish between real and nominal rates central banks aggravated the business cycle, and next to the surge in oil prices created an additional excessive monetary shock that was held highly responsible for the inflationary pressures of the seventies (Brunner and Meltzer, 1993)²³. In response, central banks instigated a policy of dedication to low inflation, to a large extent abiding by the Taylor rule. Many central banks around the world started by responding to lagged inflation and output rather than expected future values (Taylor, 2003)²⁴.

In their selection of monetary policy tools, central banks started using future forecasts based on a set of determinants as well as on the past responsiveness of key macroeconomic variables to changes in interest rates and money supply (ECB, 2004). Accordingly, they set the nominal policy interest rate, normally the short-term inter-bank rate, as a function of the deviation of inflation forecasts from their targets and real output from potential GDP (Taylor, 1999)²⁵. For example, Bernanke and Mihov (1998)²⁶ report that the Federal Reserve Bank has a goal horizon of one year for its inflation target and of two quarters for GDP since these time horizons are generally in line with the lag with which monetary policy affects either variable. Yet, it must be mentioned at this point that inflation targeting does not carry the implication that it gives unwarranted weight to price stability to the detriment of the growth of the real economy. In reality, inflation targeting is rather flexible comprising an additional measure of adequate resource utilization measured through the output gap (Svensson, 2007)²⁷.

In general, economists stipulate that there are various essential prerequisites for the successful implementation of inflation targeting that emerging market economies by and large lack. First

²² Clarida, R. et al. 2000. The Science of Monetary Policy: a New Keynesian Perspective. *Journal of Economic Literature*, 37(4):1661-1707.

²³ Brunner, K., A.H. Meltzer. *Money and the Economy: Issues in Monetary Analysis*. Cambridge: Cambridge University Press, 1993.

²⁴ Ibid

²⁵ Taylor, J.B. A Historical Analysis of Monetary Policy Rules, in J.B. Taylor, ed., *Monetary Policy Rule*, Chicago: University of Chicago Press, 1999.

²⁶ Bernanke, B.S., L. Mihov, L. Measuring Monetary Policy// *Quarterly Journal of Economics*, 1998. – No. CXIII, pp. 869-902.

²⁷ Svensson, L. Optimal Inflation Targeting: Further Developments of Inflation Targeting// in Mishkin, F., K. Schmidt-Hebbel, eds. *Monetary Policy Under Inflation Targeting*, Santiago: Banco Central de Chile, 2007.

and foremost, central bank independence is essential such that it has full discretion to choose the methods of financing its monetary operations. Furthermore, the monetary agent should neither be obliged to give preferentially low interest rates on public debt nor to be requested to sustain a particular nominal exchange rate. Yet, central banks in many EMEs lack sufficient sovereignty in composing their balance sheets and the freedom to use and select the tools needed to achieve their specific goals (Debelle and Lim, 1998)²⁸. Second, the absence of effectively developed financial institutions in many of the transition and developing nations deprives their central banks of political independence (Mishkin, 2004)²⁹. Moreover, since financial institutions and markets in EMEs are conjectured not to have acquired adequate levels of development, inflation targeting is apt to lead to poor macroeconomic results (Calvo and Mishkin, 2003)³⁰.

With respect to the Egyptian Stock Market, the existing literature, which is very few, is limited for testing the weak form of the efficient market hypothesis [EMH] and estimating the volatility of stock market returns. For instance, an early paper by El-Erian and Kumar (1995)³¹ provided a comparative analysis of equity markets in six Middle Eastern countries (Egypt, Iran, Jordan, Morocco, Tunisia and Turkey). They identified the principle characteristics of these markets and analyzed their informational efficiency. More recently, Shams El-Din (1998)³² detailed the institutional developments and its impact on the stock market performance and pricing efficiency since the stock market was revitalized in 1992. Fahmy (1998)³³ and Bahaa-El-Din (2000)³⁴ investigated the regulatory environment and legal aspects that govern the market. Both highlighted the weaknesses and deficiencies of current laws that played a role in hindering the market efficiency.

In summary, the foregoing literature show that financial innovations have widespread effects on monetary policy transmission mechanism, with differing implications on the effectiveness of monetary policy. Financial innovation creates new products and systems of financial services delivery that monetary authorities cannot ignore in their conduct of monetary policy yet it is not clear how best to incorporate some of these developments. This has the danger of impairing

²⁸ Debelle, G., C. Lim. Preliminary Considerations of an Inflation Targeting Framework for the Philippines // *International Monetary Fund*, 1998. – Working Paper No. 98/39, 1998.

²⁹ Mishkin, F. Can Inflation Targeting Work in Emerging Market Countries? // *National Bureau of Economic Research Working Paper Series*, 2004. – No. 10646.

³⁰ Calvo, G., F. Mishkin. The Mirage of Exchange Rate Regimes for Emerging Market Countries // *Journal of Economic Perspectives*, 2003. – No. 17 (4).

³¹ El-Erian, M., and Kumar, June 1995, “Emerging Equity Markets in Middle Eastern Countries”. *IMF Staff Paper*. Vol. 42, No. 2, pp. 313-343.

³² Shams El Din, A., 1998, “Capital Market Performance in Egypt: Efficiency, Pricing and Market-Based Risk Management”, *Financial Development in Emerging Markets: The Egyptian Experience*, published by *The Egyptian Center for Economic Studies & The International Center for Economic Growth*, pp.147-165.

³³ Fahmy, M., 1998, “The Legal and Regulatory Framework of the Capital Market in Egypt”, *Financial Development in Emerging Markets: The Egyptian Experience*, published by *The Egyptian Center for Economic Studies & The International Center for Economic Growth*, pp.167-183.

³⁴ Hermes Financial Index EFG-Hermes, Egypt Country Report, May 2000.

monetary policy effectiveness. It is therefore important that effects of financial innovation are well understood and considered in the formulation of monetary policy.

3. Overview about Financial innovations

The developments in the financial sector have not only led to the increase in the number of financial institutions, but also the development in level of sophistication with new payment systems and asset alternatives to holding money. This has resulted mainly from technological advancement and increase in competition as the number of institutions increase. Developments in payment systems have started to create close substitutes for hard currency, thus affecting a core part of central banking.

Financial innovation is creating new financial instruments, as well as new financial technologies, institutions and markets. The innovations are sometimes divided into product or process variants, with product innovations exemplified by new derivative contracts, new corporate securities or new forms of pooled investment products, and process improvements typified by new means of distributing securities, processing transactions or pricing transactions.

financial innovation introduce new ways for people to gain mutual advantage from complementary needs, e.g. the desire to borrow money, raise investment capital, or offset a risk, on the one hand, and the desire to lend, invest money or assume a risk in exchange for a fee on the other.

Financial innovations have helped certain kinds of firms to cut the cost of funds raised for investment and to raise funds more securely and quickly. For example, the venture capital industry, a financial services innovation, helped to launch many of the high technology firms that created prosperity in the United States from the 1950s through to today, including E-Bay/PayPal and Amazon. Innovation has thus helped direct capital more efficiently towards the right firms, and in doing so may have helped establish the United States as the home of key technology companies. Finding new ways to identify the most productive entrepreneurs and fund their inventions might be almost as important as the technical breakthroughs themselves³⁵.

Beneficial innovation in the financial services sector extends well beyond innovative retail products. Some commentators believe that the main benefits of financial innovation lie in improvements to the way in which financial services fulfil their classical functions in the broader economy.

³⁵ Michalopoulos, S., Laeven, L. & Levine R. (in press) Financial innovation and endogenous growth. Providence, RI: Brown University.

3.1 Functions of Financial Innovation

3.1.1 Functions of Financial Innovation Defined by Merton 1995³⁶

1. To provide ways of clearing and settling payments to facilitate trade. For example credit and debit cards, PayPal, stock exchanges.
2. To provide mechanisms for the pooling of resources and for the subdividing of shares in various enterprises. For example: - mutual funds, securitization.
3. To provide ways to transfer economic resources through time, across borders and among industries For example:- savings accounts, loans.
4. To provide ways of managing risk .For example:- Insurance, many derivatives.
5. To provide price information to help coordinate decentralized decision-making in various sectors of the economy. For example:- Contracting by venture capital firms.
6. To provide ways of dealing with the incentive problem created when one party to a transaction has information that the other party does not or when one party acts as agent for another. For example:- Price signals, extracting default probabilities from credit default swaps (CDS).

3.1.2 Functions of Financial Innovation Defined by Tufano 2003³⁷

1. Innovation exists to complete inherently incomplete markets. For example :-Zero coupon bonds, derivatives, exchange traded contracts.
2. Innovation persists to address inherent agency concerns and information asymmetries. For example:-embedded options, direct selling, automated underwriting, credit scores.
3. Innovation exists so parties can minimize transaction, search or marketing costs. For example:- ATMs, smart cards, ACH technologies, e-401(k) programmes, e-commerce.
4. Innovation is a response to taxes and regulation. For example :- Zero coupon bonds, Eurodollar Eurobonds, mortgage-backed securities (MBS) and asset-backed securities (ABS), various equity-linked structures used to monetize asset holdings without triggering immediate capital gains taxes, and trust preferred structures.
5. Increasing globalization and risk motivate innovation. For example:-Foreign exchange futures, swaps and options; interest-rate futures, swaps, options, and forwards to manage increased volatility and new risks arising from globalization.
6. Technological shocks stimulate innovation. For example: - Open Initial Public Offering IPO.

³⁶ Merton, R. & Bode, Z. (1995) The global financial system, a functional perspective, chapter one: a conceptual framework for analyzing the financial environment. Boston: Harvard Business School Press.

³⁷ Jagger, S. & Hosking, P. (2009) "Wake up, gentlemen", world's top bankers warned by former Fed chairman Volcker. The Sunday Times. December 9. Available at: http://business.timesonline.co.uk/tol/business/industry_sectors/banking_and_finance/article6949387.ece.

3.1.3 Innovation and business functional

- Strategy Innovation
- Marketing Innovation
- Sales Innovation
- HR Innovation
- R&D Innovation
- Purchasing Innovation
- Finance Innovation
- Organizational Design Innovation
- Production Innovation
- Engineering/Design Innovation
- Logistics Innovation
- Information Technology Innovation
- Public Relations Innovation
- Investor Relations Innovation
- Employee Satisfaction Innovation

4. Special Features of Financial Innovations

Many financial innovations arrive with special features that determine the size and shape of both positive and negative outcomes. Financial products contain embedded features that trigger changes in outcome a relatively long time after the sale of the product, e.g. the change in the interest rate for a mortgage from a fixed to a floating rate.

The fact that financial products are often paper or electronic rather than physical goods also tends to increase the volumes that can quickly be produced (and adopted) before the product has been tested by time – as well as making it easy to make further incremental innovations that may affect the nature of the outcome (e.g. by tweaking the characteristics of the original product).

Leverage is a distinct feature of many financial products (as well as a feature of the financial industry as a whole). It often acts to magnify the effect of negative outcomes. In May 2007, before the events of the financial crisis unfolded, Ben Bernanke (Chairman of the Federal Reserve) elaborated on leverage in relation to financial innovation follow:

The leverage that can be embedded in new financial instruments and trading strategies compounds the difficulties of risk management. Embedded leverage can be difficult to measure; at the same time, like conventional leverage, it may increase investor vulnerability to market shocks. Some credit derivatives do make it easier for investors to take leveraged exposures to credit risk³⁸.

³⁸ Bernanke, B. S. (2007) Speech to Federal Reserve Bank of Atlanta's 2007 Financial Markets Conference. May 15. Available at: <http://www.federalreserve.gov/newsevents/speech/bernanke20070515a.htm>.

4.1 Types of Innovation

The development of the capital markets is the increase in innovations in the financial sector. Tufano (2002)³⁹ broadly categorises financial innovations into two types, product and process innovations. Product innovation can be illustrated by corporate securities or derivative contracts, while process innovation can be demonstrated by new means of distributing securities, processing transactions or payment system technologies.

4.1.1 Product innovation is the introduction of a good or service that is new or significantly improved with respect to its characteristics or intended uses. This includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Product innovations can utilise new knowledge or technologies, or can be based on new uses or combinations of existing knowledge or technologies. The term “product” is used to cover both goods and services.

4.1.2 Process innovation is the implementation of a new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software. Process innovations can be intended to decrease unit costs of production or delivery, to increase quality, or to produce or deliver new or significantly improved products.

Importantly, in relation to the focus on financial services, the manual’s definition embraces innovative services as well as physical products and technologies, and includes significant improvements to existing products and services as well as truly revolutionary ideas.

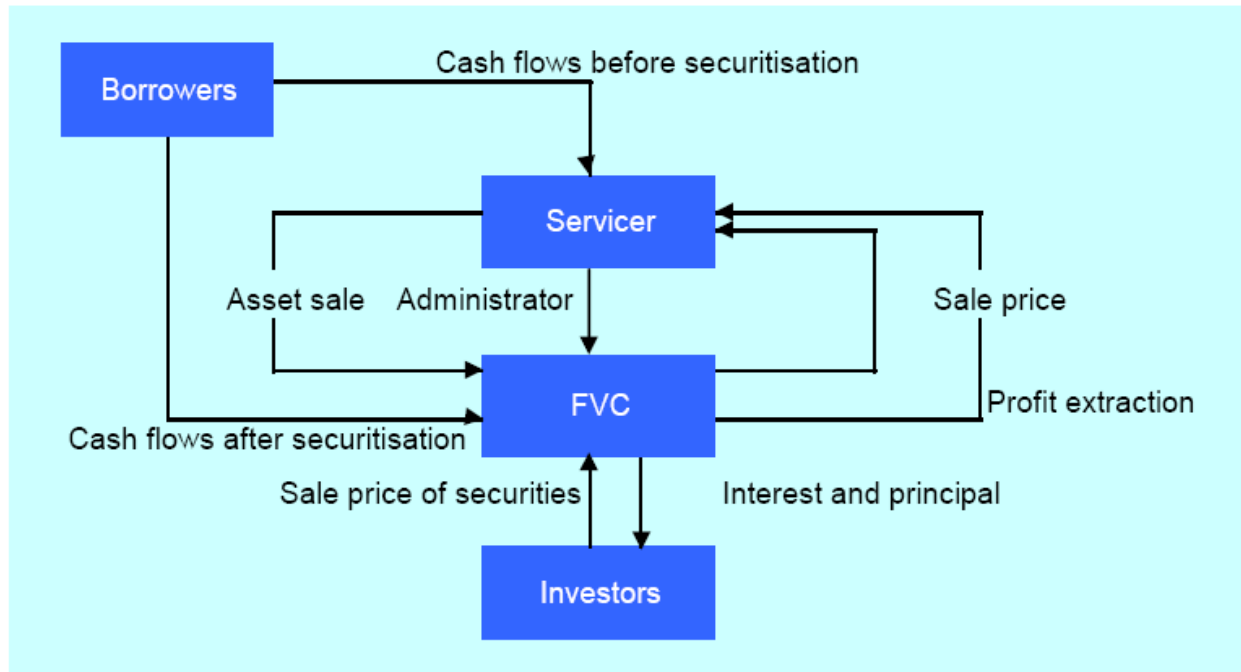
4.1.3 Securitisation and the introduction of derivative instruments have been happening for the last three decades. However, only in recent years have these markets grown in size and become vastly more complex. Securitisation enables the transformation of illiquid financial assets into highly liquid, marketable capital market assets. More specifically, it enables financial institutions to repackage and off-load their loans in the form of bonds, hence making their lending activities less constrained and ultimately more attuned to market conditions. Furthermore, banks’ fee-based activities, which include simultaneous securitisation and issuance of bonds, have led the interest rate payable by the non-financial sector to be closely related and sensitive to prevailing market interest rates.

4.1.3.1 Securitisation activities

Taking into account the modifications in terms of financial assets and liabilities and of financial corporations, the updated SNA provides the ingredients for the recording of securitization activities within the system. Securitisations usually encompass the issuance of debt securities through an off-balance sheet process involving an FVC or a trust. In particular, once the originator, usually a MFI, has selected a pool of assets from its portfolio, it then sells them to the

³⁹ Tufano, P. “Financial Innovation” *The Handbook of the Economics of Finance*, June 2002

financial vehicle corporations (FVC)⁴⁰. This entity legally separates the underlying assets from the originator and finances the purchase of the assets by issuing debt securities to investors, while holding the assets in trust.²¹ Once the debt securities are issued, the interest and principal of the underlying assets are collected and managed by a “servicer” and rechannelled to investors through the FVC⁴¹. The diagram below describes the typical transactions with this separate institutional unit (usually referred to as an FVC or a special purpose vehicle (SPV) or, in the United States, as a special purpose entity (SPE).



The FVC also insures the pool of assets against default, thus improving the quality of the underlying assets through a process known as credit enhancement. This can take several forms, including over-collateralisation (according to which the value of the assets exceeds the value of the debt securities issued), insurance contracts, letters of credit, subordination of tranches that absorb losses first, and the use of sponsor agencies (eg governments or multilaterals) to guarantee payments or reserve funds. A credit derivative is also generally used to change the credit quality of the underlying portfolio so that it will be acceptable to the final investors. A credit derivative is a financial derivative, the price and value of which derives from the creditworthiness of the obligations of a third party, which is isolated and traded. Credit default products are the most commonly traded credit derivatives and include unfunded products such as credit default swaps (CDS) and funded products such as synthetic credit default options (CDOs).

⁴⁰ Usually assets are homogeneous, in terms of credit quality, maturity and interest risk.

⁴¹ Legal separation is important in the securitisation process. It determines whether, in the event of bankruptcy of the original holder, the assets pledged continue to service the issue on the terms originally agreed on, thus making the FVC “bankruptcy-remote”.

All assets can be securitised as long as they are associated with cash flows. Hence, the debt securities, which are the outcome of securitisation processes, are termed ABS. They are based on pools of assets, or collateralised by the cash flows from a specified pool of underlying assets. Assets are pooled, which can make otherwise minor and uneconomical investments worthwhile, and to reduce risk by diversifying the underlying assets. Securitisation makes these assets available for investment to a broader set of investors. These asset pools can be made of any type of loans like credit card payments, auto loans and mortgages. There are different securitisation and more complex techniques exist that can be applied to different asset classes and institutions. In developed markets, financial derivatives have allowed the introduction of synthetic securitisation in which the credit risk of the pool of securitised assets is transferred to a third party using credit derivatives rather than the direct transfer of ownership of assets.

In the context of national accounts, issues that need to be clarified depend on which types of securitisation transactions take place. Securitisations in the form of “true sales” imply that cash flows related to securitised loans are sold to a FVC together with all risks and rewards. This leads to the disposal of the loans by a financial institution (probably a MFI) and their acquisition by the FVC, which is being financed by the issuance of debt securities and the proceeds of which are paid back to the financial institution.

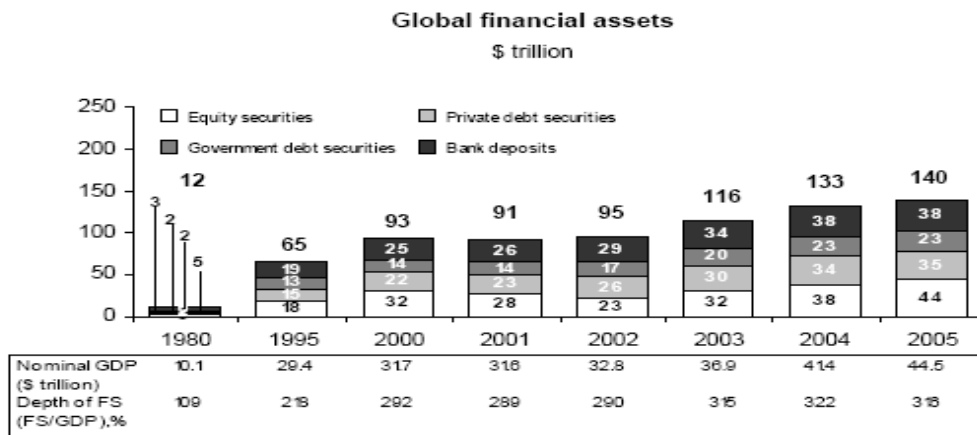
In the case of “synthetic securitisations”, only the credit risk is transferred from the financial institution (the credit protection buyer) to the financial vehicle corporations (FVC, the credit protection seller) by entering a credit default Swaps (CDS). The financial institution pays a premium to the FVC in return for a payment in the case of a credit default. The payment in the case of a credit default may be collateralised and financed by the FVC through the issuance of credit-linked notes or other debt securities.

A new European Central Bank (ECB), Regulation will facilitate the collection of data on FVCs and will cover transactions, other flows and positions of these institutional units vis-à-vis other market participants, specifically MFIs. Given the role of MFIs as originators and loan servicers for many FVCs, an integrated reporting scheme is necessary for FVCs and monetary financial institutions (MFIs). MFIs are to limit the reporting burden as far as possible, and to achieve the best possible quality of statistics. Data on securitised loans will have to be reported which are granted by these institutions, but originated and continued to be serviced by MFIs and by other resident sectors and by non-residents. Questions will remain how to establish reporting schemes to collect supplementary data on synthetic securitisations and on financial vehicle corporations engaged in the securitisation of assets” FVCs created outside the euro area and by non-MFIs.

4.1.4 Large-scale usage of derivative instruments has become a central feature of financial markets globally and activity in those instruments has been growing. Derivatives are used for hedging and the transfer of specific risks of an underlying security among economic agents. They can also generate high leverage, thereby raising the volume of transactions and reducing the costs of capital. In addition, derivatives also make it easier to arbitrage between different types of assets, i.e. increasing the substitutability between assets. Based on my study of the OECD countries using data from the BIS, Mylonas et al (2000)⁴² show that there is evidence of rapid growth of the mortgage-backed securities (MBS) market and the over-the counter (OTC) market for interest rate derivatives.

In Figure 1, the growth rates of equity, private debt securities and government debt securities are used as measures of financial innovation while traditional banking is represented by bank deposits. The growth in equities and securities was twice that of bank deposits from 1980 to 1995 (growth of 657 percent over the 15-year period compared to 380 percent growth of bank deposits). The IMF’s World Economic Outlook in September 2006 also reported significant increases in asset-backed securities (ABSs), banks’ non-interest income and bank liabilities vis-à-vis non-bank financial institutions over the recent decade⁴³. (See the following Figure 1).

Figure 1



Source: McKinsey Global Institute Global Financial Stock Database.

4.1.5 The growth rates of equity. Private debt securities and government debt securities are used as measures of financial innovation while traditional banking is represented by bank deposits.⁴⁴

⁴² Mylonas, P., Schich, S. and Wehinger, G. “A Changing Financial Environment and the Implications for Monetary Policy” *OECD Economic Department Working Papers*, No. 243, May 2000

⁴³ Alternative investment vehicles, such as venture capital, are another example of financial innovation. According to Gompers and Lerner (1998) the growth in venture capital has been assisted by the rapid development in financial structures over the last two decades and the increasing importance of institutional investors as suppliers of venture capital financing.

⁴⁴ Financial Stock Database

4.1.6 The greater use of derivatives has two important implications for monetary transmission. First, it may improve transmission by extending the impact of changes in policy rates from short-term interest rates to the prices of assets in other markets as derivatives increase asset substitutability across financial markets. Indeed, based on an empirical assessment using data from the United States, Germany and Japan, Cohen (1996)⁴⁵ suggests that derivatives accelerate the incorporation of new information into asset prices, thus facilitating greater asset substitutions. Furthermore, interest rate option contracts based on government securities, for example, can be used to protect against a change in the interest rate on a corporate security. This practice increases the link between the government and corporate securities markets, thereby strengthening the relationship between short-term and long-term rates. As such, Mylonas et al (2000)⁴⁶ argue that derivative instruments are another reason for the increased sensitivity of asset prices to monetary policy actions, increasing the degree of the pass-through of changes in policy rates to the rates of return on various financial assets.

A second implication of the greater use of derivatives is that it may help create a less abrupt or extreme financial market reaction to monetary policy changes because these instruments are designed to help insulate firms, at least temporarily, from unexpected changes in their revenues and debt-servicing costs. However, this remains a conjecture as the hypothesis is rather difficult to test empirically.

Vrolijk (1997)⁴⁷ analyses the effect of incorporating the derivatives markets in examining the channels of monetary policy transmission. He argues that theoretically, derivatives trading speeds up transmission to financial asset prices, but changes in transmission to the real economy are ambiguous. Table 1 summarises the theoretical underpinnings of the impact of financial innovations on the various channels of monetary policy transmission as proposed by Vrolijk.

However, in his empirical estimation, Vrolijk is unable to find statistically strong evidence of the impact of derivatives on the monetary transmission mechanism in the United Kingdom. On the other hand, Gomez et al (2005)⁴⁸ conclude that monetary policy has lost some effectiveness in influencing real variables in the short run, due to the partial dilution of the main monetary transmission channels, i.e. the credit channels, caused by the completion of financial markets that derivative instruments imply. The hypothesis is that, given greater securitisation, the traditional bank lending channel will become less important. However, Gomez et al's argument is based on

⁴⁵ Cohen, B.H. "Derivatives and Asset Price Volatility: A Test Using Variance Ratios" *BIS Working Papers*, No. 33, January 1996.

⁴⁶ Mylonas, P., Schich, S. and Wehinger, G. "A Changing Financial Environment and the Implications for Monetary Policy" *OECD Economic Department Working Papers*, No. 243, May 2000.

⁴⁷ Vrolijk, C. "Derivatives Effect on Monetary Policy Transmission" *International Monetary Fund Working Paper*, September 1997.

⁴⁸ Gomez, E., Vasquez, D. and Zea, C. "Derivative Markets' Impact on Colombian Monetary Policy" *Banco de la Republica Colombia Working Paper*, April 2005.

the assumption that monetary policy operates primarily via the credit markets, and that securitisation has transformed these markets and rendered monetary policy less potent. By estimating a partial equilibrium model of firm investment behaviour, Fender (2000)⁴⁹ derives similar conclusions to Gomez et al (2005)⁵⁰. In addition, Loutskina and Strahan (2006)⁵¹ and Edwards and Mishkin (1995)⁵² also find evidence of the weakening of the bank lending channel with the advent of financial innovations such as derivative instruments and securitisation.

An empirical study by Estrella (2002)⁵³ finds that securitisation affected the effectiveness of monetary policy in influencing real output in the United States. Specifically, while the sensitivity of mortgage rates is higher with higher securitisation, he finds that sensitivity of output to the federal funds rate declines with higher securitisation. Thus, he suggests that the transmission of policy through the mortgage markets occurs primarily through changes in liquidity and the supply of intermediated credit, hence the credit channel, instead of the interest rate channel.

The issue of mortgage securitisation has attracted extensive research because of its implication for monetary transmission via the residential sector⁵⁴. McCarthy and Peach (2002)⁵⁵ assess the possible changes in monetary transmission to this sector as a result of liberalisation of the sector and the introduction of mortgage securitisation. They find that mortgage securities reduce the housing sector's response to monetary policy. Aoki et al (2002)⁵⁶ suggest that the link between house prices and consumption in the UK may have changed due to financial innovations such as mortgage equity, based on the financial accelerator model. Their model suggests that, because of the existence of mortgage equity, consumption responds more to monetary changes but housing variables and collateral values tend to respond less. Kuttner and Mosser (2002)⁵⁷ provide an excellent summary of some of the studies with regard to financial innovations and monetary transmission. Overall, the impact of financial innovations on monetary transmission remains contentious. Monetary policy may be powerful through its effect on asset values, which reinforce the direct impact on aggregate demand through the interest rate and wealth channels. However,

⁴⁹ Fender, I. "Corporate Hedging: The Impact of Financial Derivatives on the Broad Credit Channel of Monetary Policy" *BIS Working Papers*, No. 94, November 2000.

⁵⁰ Ibid

⁵¹ Loutskina, E. and Strahan, P.E. "Securitisation and the Declining Impact of Bank Finance on Loan Supply: Evidence from Mortgage Acceptance Rates" *NBER Working Paper*, January 2006

⁵² Edwards, F. and F. Mishkin. "The Decline of Traditional Banking: Implications for Financial Stability and Regulatory Policy" *FRBNY Economic Policy Review*, July 1995.

⁵³ Estrella, A. "Securitisation and the Efficacy of Monetary Policy" *FRBNY Economic Policy Review*, May 2002.

⁵⁴ Certainly, changes in the residential sector are not only driven by financial innovations such as mortgage securitisation and equity. Other factors such as fundamental restructuring and liberalisation of the sector are also playing a significant role in its transformation.

⁵⁵ McCarthy, J. and Peach, R.W. "Monetary Policy Transmission to Resident Investment" *FRBNY Economic Policy Review*, May 2002.

⁵⁶ Aoki, K., Proudman, J. and Vlieghe, G. "Houses as Collateral: Has the Link between House Prices and Consumption in the UK changed?" *FRBNY Economic Policy Review*, May 2002.

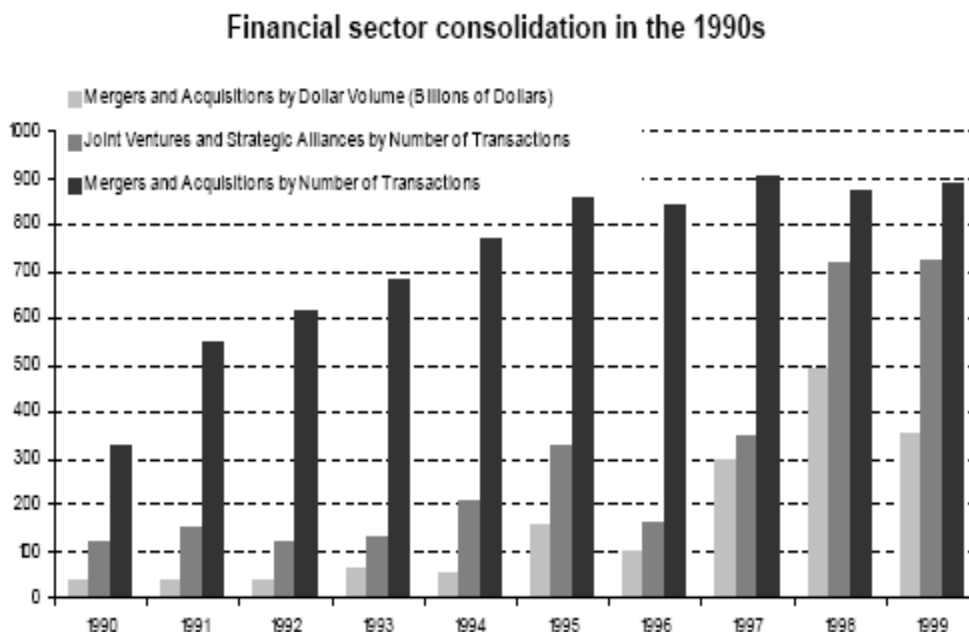
⁵⁷ Kuttner, K.N. and Mosser, P.C. "The Monetary Transmission Mechanism: Some Answers and Further Questions" *FRBNY Economic Policy Review*, May 2002.

monetary policy may take longer to have an influence on the economy, as wealth effects take longer to play out. At the same time, financial innovations that lead to the deepening of credit markets by improving the markets' liquidity would produce a market less susceptible to the impact of monetary policy changes through the credit channel.

5. Financial consolidations

The 1990s saw a strong wave of financial consolidation in financial sectors across the globe (Figure 2). Recent financial consolidation has been driven mainly by technological factors, deregulation and globalisation, as well as by the responses formulated by policymakers to resolve weaknesses in their financial systems. Greater financial consolidation might change the economic and financial environment in which monetary policy decisions are made, and thus it could also affect policy transmission. (See the following Figure 2).

Figure 2



Financial consolidation may lead to a decreasing number of counterparties for monetary operations, thus reducing competition. The degree of pass-through is reduced if liquidity is reduced or volatility is increased in the interbank market due to the lower number of participants. Moreover, financial firms in a less competitive financial sector generally have greater power of discretion in terms of adjusting prices to changes in costs. Empirical studies by Hannan and Berger (1991)⁵⁸ and Neumark and Sharpe (1992)⁵⁹ support this view, as they find that interest rate rigidity is significantly greater in markets characterised by higher levels of concentration.

⁵⁸ Hannan, T.H. and Berger, A.N. "The Rigidity of Prices: Evidence from the Banking Industry" *The American Economic Review*, Vol. 81, No.4, 1991.

However, if financial consolidation led to the creation of large and strong banks, the resulting outcome would differ because larger institutions, often operating in several markets, may promote a faster arbitrage of interest rate changes across markets and assets, hence resulting in an improvement in the degree and speed of pass-through. As shown by Cottarelli and Kourelis (1994)⁶⁰, the existence of large and strong banks operating in a competitive environment enhances pass-through. Therefore, the impact of financial consolidation on the pass-through of the policy interest rate to money market and retail interest rates is highly dependent on the competitive environment it creates. If it leads to increased competition, then pass-through is more efficient.

The creation of large and strong banks from the consolidation exercise may dampen the bank lending channel. Large and newly merged banks often have better access to alternative sources of funds because of lower information costs, which implies that their lending activities will be less constrained by monetary policy actions. In addition, if the consolidation process reduces small banks' share in the industry, then the effect of a contractionary monetary policy on the supply of bank loans is likely to be reduced, further weakening the credit channel.

The Group of Ten (2001)⁶¹ undertook a comprehensive study on financial sector consolidation which included the effect of consolidation on monetary policy. The report concludes that financial consolidation imparts negligible effects on monetary policy. The report also recognises the difficulty in assessing the independent impact of consolidation on interest rate pass-through and the relative importance of channels, as in many countries consolidation is accompanied by other financial market changes such as the introduction of new technology, the removal of barriers to entry and improved access to alternative sources of finance. English (2002) provides an excellent summary of the Group of Ten's report.

In the credit channel view of the transmission mechanism, collateral plays a crucial role in the lending process⁶². It is, however, unclear whether consolidation will improve or worsen the asymmetric information problems between lenders and borrowers which underscore the importance of collateral. If larger and well capitalised banks can afford new technologies to assess borrower risk, thereby leading to more efficient evaluation of credit risks, then less

⁵⁹ Neumark, D. and Sharpe, S.A. "Market Structure and the Nature of Price Rigidity: Evidence from the Market for Consumer Deposits" *The Quarterly Journal of Economics*, 1992.

⁶⁰ Cottarelli, C. and Kourelis, A. "Financial Structure, Bank Lending Rates, and the Transmission Mechanism of Monetary Policy" *IMF Staff Papers*, Vol. 41, No. 4, December 1994.

⁶¹ Group of Ten, *Report on Consolidation in the Financial Sector*, Bank for International Settlements, January 2001.

⁶² Collateral is not an issue in the conventional interest rate view of the transmission mechanism since enforcement on debt contracts is assumed to be costless. Conversely, if enforcement is costly, then lenders will ask for collateral in order to give loans, and this will result in some borrowers being constrained by the value of the collateral that they can provide. If this is the case, a policy contraction will reduce the value of collateral, and the borrowers that have to provide collateral will not be able to borrow as much.

collateral will be needed, thus reducing the role of the balance sheet channel in transmitting policy impulses. On the other hand, if a large multinational bank acquires a small local bank, there may be a loss of local knowledge, therefore necessitating greater use of collateral. This enhances the role of the balance sheet channel.

5.1 How to reflect financial innovations in the new System of National Accounts (SNA)?

The current update of the new SNA is based on a list of 44 updating issues for discussion⁶³. Many of them are linked to topics related to relatively new financial phenomena such as the treatment of repurchase agreements, non-performing loans, index-linked debt instruments, or employee stock options in the accounts.

To obtain a more complete picture of the updating process it is also necessary to look at the issues for discussion in the context of defining institutional units or of classifying sectors. One of the central topics refers to questions on how to determine the relevant features of institutional units and how to group them into institutional sectors or subsectors. Closely linked to these questions is the issue of how to separately identify financial corporations involved in financial intermediation activities like securitisation transactions, securities lending, and repurchase agreements. Looking more closely at the tasks of how to refine the current financial asset and liability classification and to subdivide the financial corporation sector.

6. Payment instrument technology

The CBE's efforts to develop the payment systems and information technology have been in progress, to bolster the soundness and stability of the financial system, reduce credit risks, expedite payment settlements, and ensure their reliability and confidentiality. The existence of a national payment system was instrumental to the financial stability in Egypt, especially during the 25th of January Revolution, leading as such to the stability of the banking system.

Managing the disbursement of pensions via ATM debit cards, with the joint efforts of the National Organization for Social Insurance (NOSI), CBE and banks working in this project. Interestingly, while NOSI branches were closed in the wake of the revolution, 90% of pensioners managed to disburse their pensions via their cards and through banks' ATM terminals.

On the 1st of June 2010, the Direct Credit service in the national ACH became officially operative by the Egyptian Banks Company (EBC). The number of monthly transactions processed through this facility is about 200 thousand, and a gradual increase is expected. Moreover, preparations for the launch of the Direct Debit system are under way. It is planned that a pilot operation of this service will start in the first half of 2012. Enlarging the electronic payments base, these services will help speed up money transfers among individuals, and in turn, increase the national product.

⁶³ These 44 issues for discussion are described on the UN website: <http://unstats.un.org/unsd/sna1993/issues.asp>.

Within the project of disbursing salaries of government employees by electronic cards, more than one million bank cards were distributed for salaries, and one million bank cards for pensions, in addition to other one million and five hundred thousand cards for pensioners, to be disbursed from the outlets of the National Organization for Social Insurance.

Financial markets have undergone rapid technological change over the last two decades, and nowhere is this more obvious than in the emergence of new payment technologies. The existence of Automated Teller Machines (ATMs) and electronic money (e-money) holdings of cash, while cheques and debit and credit cards represent alternative and more convenient modes of payment that affect the velocity of money. Arnone and Bandiera (2004)⁶⁴ discuss the issues pertaining to electronic money, central banks' operations and monetary policy effectiveness. They conclude that as long as central banks continue to operate and retain control over short-term interest rates and money supply is used only as an information variable, the impact of digital money on monetary transmission is unlikely to be of concern.

The usage of credit cards allows greater consumption smoothing and to some extent boosts spending. To the extent that the pass-through to credit card rates is large and quick, the impact of monetary policy actions on consumption and spending will be significant. On the other hand, as credit cards provide a form of financing, akin to a personal loan, interest rate changes due to monetary policy will have a lesser income effect on households as credit cards can be used to cushion this impact.

Hawkins (2001)⁶⁵ postulates that electronic money, finance, broking and trading affect the behaviour of agents in that they encourage greater consumption and investment. For example, the lower transaction costs resulting from the introduction of novel payment technologies may induce small investors to invest directly in the equity markets, thus accentuating the role of the wealth channel in transmitting monetary impulses. With electronic finance, previously constrained firms may be able to access a wider range of potential lenders including those outside the banking system, thus weakening the bank lending channel. Furthermore, the link between real activity and interest rate changes may be severed if hedging against exchange rate and interest rate fluctuations becomes easier and cheaper because of novel technology. Nevertheless, as these developments are relatively recent, there is a dearth of empirical studies examining these issues, and thus the above arguments remain conjectural.

⁶⁴ Arnone, M. and Bandiera, L. "Monetary Policy, Monetary Areas, and Financial Development with Electronic Money" *IMF Working Paper*, July 2004.

⁶⁵ Hawkins, J. "Electronic Finance and Monetary Policy" *BIS Papers – Electronic Finance: A New Perspective and Challenges*, November 2001.

8. The Dynamic Nature of the Financial Services Innovation Environment

The environment into which financial innovations are born is different. It is a complex, volatile, social environment that is constantly changing in ways that create uncertainties for the innovator.

dynamism is created by the financial sector's links to the real economy and to fundamental drivers of change, such as economic and technology trends and political decisions. Perhaps the real complication, however, is the degree of interplay and feedback between these forces, the interconnected financial markets and the process of innovation itself. It is helpful to think about this in three dimensions:

- **Innovation interaction:** Innovations are born into a world of continuing, connected innovations that can make outcomes difficult to predict. Those involved in the development of the first credit cards could not have imagined the role this product would come to play in the Internet economy some decades later.
- **Behavioural change:** Innovations are subject to, and help to create, changes in human behaviour as outlined in the previous sub-chapter.
- **Economic and market change:** Financial innovations can trigger changes in the fundamentals of an economy or market that, in turn, create a new environment for the innovation (and for many other innovations). Perhaps the most dramatic example of this in recent years occurred in the run up to the financial crisis beginning in 2007 as financial innovations helped promote a rise in US house prices which, in turn, reinforced beliefs about the stability of the market and fostered further rounds of product innovation.

9. Islamic finance

The first instance of Islamic banking came into the picture in Egypt in 1963. The pioneering efforts by Ahmad El Najjar brought this bank into existence, whose key principle was profit sharing (non-interest based philosophy of Shariah). By the end of 1976 there were 9 such banks in the country. These banks neither charged nor paid interest but their activities were mostly limited to trade and industries where these banks invested directly or as partners of depositors. Hence, functionally these banks were working more as financial institutions rather commercial banks. In 1971, Nazir Social Banks is known to be the first commercial bank in Egypt, though its charter never made references to Shariah. The first bank explicitly based on Shariah principles was established by the Organization of Islamic countries (OIC) in 1974, called Islamic Development Bank (IDB). This bank was primarily engaged in intergovernmental activities for providing funds for development projects running into member countries. Its business model involved fees for financial services and profit sharing financial assistance for projects.

10. Patterns of Innovation in the Financial Services Sector

On top of these special sector characteristics and product features, some commentators believe that certain patterns of innovation are characteristic of the financial services sector.

First, financial innovations are usually highly dynamic, implying that as a financial innovation diffuses from early adopters to the mass market, the structure of the product and the uses to which it is put change over time – as well as the costs, benefits and externalities associated with the innovation⁶⁶. It is likely, for instance, that the risk to consumers from a new kind of washing machine, or even a new way of building bridges, will change little over time. However, the risk to the consumer and to society from an innovation in derivatives technology might be highly dynamic. An innovative component of derivatives contract might be beneficial in one market and yet associated with negative outcomes in another.

Second, financial innovations can spawn a series of further incremental innovations. Merton (1992)⁶⁷ introduced the term “financial innovation spiral effect” to describe this process. He pointed out that the development of a market in standardized products often then leads to more tailored, bilateral products. These tailored products are then hedged on the standardized market, leading to yet more volume, lower trading costs, and more encouragement to launch similar contracts and markets, spiralling toward the theoretically limiting case of zero marginal transaction costs and dynamically complete markets⁶⁸.

Third, the distinct pattern by which consumers adopt financial products may itself shape the likelihood of positive or negative outcomes. Many marketing experts (e.g. Rogers 1962)⁶⁹ think about product adoption in terms of a hierarchy that ranges from early adopters (opinion leaders), through the majority of the population, to late adopters. Early adopters tend to be better educated, more confident and more willing to take time to learn about a product and experiment, while later adopters tend to be less knowledgeable, less willing to learn and more conservative.

Clearly, this could lead to problems in the area of financial innovation, particularly in the field of credit and investments⁷⁰. For instance, it suggests that the early adopters capable of understanding the risks of a financial product will be followed by larger numbers of consumers

⁶⁶ Lerner, J. & Tufano, P. (2011) The Consequences of Financial Innovation: A Counterfactual Research Agenda. Annual Review of Financial Economics, 3: 41-85.

⁶⁷ Merton, R. (1992) Financial innovation and economic performance. Journal of Applied Corporate Finance, 4, pp. 12–22.

⁶⁸ Ibid

⁶⁹ Rogers, E. (1962) Diffusion of innovations. New York: Free Press.

Lerner, J. & Tufano, P. (2011) The Consequences of Financial Innovation: A Counterfactual Research Agenda. Annual Review of Financial Economics, 3: 41-85.

who are unwilling or unable to make the same kind of intellectual investment. Yet while a poor decision by the consumer about a hair dryer has few material consequences, a poor decision about a big-ticket, long-term financial product tends to be harder to bear. If large numbers of consumers are involved (e.g. in a mortgage market), there may be implications for the solvency of the provider, systemic risk and a serious effect on the real economy.

11. The Role of Innovation

11.1 The Role of Innovation in the Economy

Innovation, Competition and Investment – A Complex Relationship:-

1. The complex relationship between innovation, investment and competition is fundamental to modern economies. Policies that affect one of the three tend to have unforeseen effects on the others as well.
2. Without competition, for example, monopolists and oligopolists have far less incentive to innovate and introduce novel or improved products and services. Competition is seen as so essential to innovation that the US Department of Justice and the Federal Trade Commission cite worries about the potential negative effect upon innovation in over a third of merger challenges⁷¹.
3. The history of the mobile phone illustrates why the relationship is so important. The American Telephone and Telegraph Company (AT&T) held a virtual monopoly of the American communication market for most of its 100-year existence before it was forced to spin off parts of its business in 1984. By effectively controlling the communications market, AT&T was able to determine the direction of the industry including the development of novel systems and infrastructure. Cellular telephones were developed in the United States by Bell Labs (a part of AT&T) as early as the 1940s and were used for a variety of niche purposes. However, AT&T did not believe there was a sufficient market for cellular phones and invested relatively little in research, development and infrastructure.
4. Shortly after the breakup of AT&T, Motorola released the first widely available mobile telephone. While AT&T had originally estimated that the global mobile phone market would reach 1 million people by the year 2000, instead the market grew to 740 million by that date⁷².
5. It is easy to dwell on the benefits of successful innovation to the innovator but this example perhaps shows that competition is at least as strong a spur to innovation as “the spoils of the upside”.
6. If competition supports innovation, the reverse is also true. Without innovation, much of the creative power of competition to support society’s goals is lost too. Imagine, for

⁷¹ Gilbert, R. J. (2006) Competition and innovation: Issues in competition law and policy. California: Berkeley Electronic Press.

⁷²The Economist.(2005) The Fall of a Corporate Queen. February, 3. Available at: http://www.economist.com/node/3632638?Story_ID=3632638.

example, a pharmaceuticals industry where competition existed simply to make the production and marketing of existing drugs more efficient.

7. Innovation in the pharmaceutical industry is essential for continued improvements in healthcare. However, drug development is a particularly capital- and cash-intensive undertaking, as the contribution by Bill Shew in Part III describes. Furthermore, the vast majorities of novel discoveries never go into production and therefore never provide any revenue.

11.2 The Role of Financial Innovations in the Financial Crisis

The financial services sector and several financial innovations have been assigned much of the blame for the financial crisis beginning in 2007 and the ensuing global recession. This has led many prominent politicians and academics to question the value of financial innovation in general. For example, Paul Volcker, Former Chairman of the Federal Reserve, famously commented: “I wish someone would give me one shred of neutral evidence that financial innovation has led to economic growth — one shred of evidence⁷³.”

12. Mortgage Backed Securities (MBS)

Impetus for Invention and Benefits One of the most important US financial innovations of the later 20th century was born out of the needs of government to remove mortgage-related debt from the federal budget, the desire to make mortgages more easily available to US households, and the need to manage interest rate risk exposure.

Part 2

1. Research Methodology

The methodology adopted in this research includes critical and comparative analyses. The critical analysis reviews the theoretical and empirical literature related to financial innovation in emerging markets, focusing on industrial companies. The research will review and assess the effectiveness of the financial innovation, legal, and institutional framework, in addition to the existing innovation systems. Taking into approaches in meeting the requirements of financial innovation. This will help in identifying policy recommendations on how to develop the financial innovation decision in industrial companies.

The sample selected for interview was the financial managers, or their representatives, in the industrial companies under study listed in Egypt.

In the context of financial innovation, this paper follows similar approaches by specifically focusing on the interest rate channel which facilitates capturing the monetary policy stance as practiced in Egypt. In Egypt, the monetary authority target reserve money and uses the Open

⁷³ Jagger, S. & Hosking, P. (2009) “Wake up, gentlemen”, world’s top bankers warned by former Fed chairman Volcker. The Sunday Times. December 9. Available at: http://business.timesonline.co.uk/tol/business/industry_sectors/banking_and_finance/article6949387.ece

Market Operations (OMOs) to attain that target. As such, the interest rate plays a significant role as a link to other macro economic variables, mainly output which also forms one of the overall goals of any monetary authority. The theoretical basis of this study is embedded on the traditional Egyptian view which postulates that monetary policy influences the real cost of borrowing by setting nominal short term interest rate. Changes in nominal interest rate are expected to influence real rates and eventually have an impact on investment and consumption both of which are key components of output.

1.1 Method of the survey

The researcher analysis is comprehensive for the companies that use the financial innovation through questionnaire and interviews with the financial managers to discuss the research problem.

1.2 Empirical study

The framework of applied research has been adopted on the following:

- The actual accounting data contained in the annual financial reports under consideration.
- Time limit of search only in achieving its objectives and to test assumptions imposed by the mainland and within the limits of the data for a time period of seven years starting from 2008, and ending in 2010 was chosen as that period of time based on market conditions, it included a rise in the cases of Egypt and then declines relative stability.
- Application was on a sample of companies within the Arab Republic of Egypt due to the possibility of the availability of information used in the study.

1.3 Model and data description

To assess the importance of financial market developments in influencing the pass-through from changes in the policy rate to bank retail rates and other market interest rates, we estimate differences in the nature of interest rate pass-through between developed industrial countries and developing Africa countries. The estimates of interest rate pass-through are then compared with various measures of financial market developments using simple correlation analysis to gauge the strength of the association between interest rate pass-through and various measures of financial developments.

In undertaking these estimations, we adopt the standard two-step Engle-Granger ECM approach. That is, in the first step, we estimate a long-run relationship between the market rate of interest and the policy rate:

$$i_t = \gamma + \beta p_t + \varepsilon_t$$

where i is the market rate of interest – retail bank deposit and lending rates, the short-term paper rate (proxied by the treasury bill rate) and the long-term bond rate (proxied by government bond rates) and p is the policy rate or short-term money market rate (as a proxy for the policy rate).

In the second step, we then estimate the following short-run model incorporating the error correction term, i.e. the lag residual from the above long-run equation:

$$\Delta i_t = \gamma + \alpha_1 \Delta i_{t-1} + \alpha_2 \Delta i_{t-2} + \beta_0 \Delta p_t + \beta_1 \Delta p_{t-1} + \beta_2 \Delta p_{t-2} + \delta \bar{\varepsilon}_{t-1} + \eta_t$$

In the above equations, the immediate impact or pass-through is represented by β_0 and the “speed of adjustment” towards the long-run relationship is represented by δ . The long run pass-through is represented by β^* . These are the three coefficients that we are interested in for our assessment of the effectiveness of the policy rate in influencing market interest rates.

Most empirical studies by other authors investigating interest rate pass-through have employed the ECM methodology. However, the alternative approach is to model interest rate pass-through based on the expectations hypothesis – that is, to differentiate changes in the policy rate into anticipated and unanticipated policy rate changes as advocated by Kuttner (2001)⁷⁴. Kuttner proxied the anticipated policy rate change using the difference between the previous period fed funds futures rate and the previous period spot fed funds rate and the unanticipated policy rate change as the difference between the current period spot fed funds rate and the previous period fed funds futures rate. Found that short-term paper rates in the US responded almost one-to-one to unanticipated policy rate change but not to anticipated policy rate change. Similar results were found for long-term bond rates although the pass-through from unanticipated policy rate change is less than one to one.

While a similar approach would clearly enrich the present study by allowing analysis of the impact of financial developments on the pass-through of anticipated and unanticipated policy rate changes, this approach is not possible for our study due to unavailability of long time series of short-term futures rates for most of the company in our sample. In addition, overnight or short-term interbank rates were generally volatile in the early part of the sample period have only recently adopted a monetary policy operating framework that centers on a policy rate.

Various approaches have been used to model financial innovation depending on the measure or proxy adopted. Some authors have modeled financial innovation by using M2/M1 and other related proxies such as bank assets/GDP ratio (King’ori, 2003)⁷⁵. In other cases, financial

⁷⁴ Kuttner, K.N. “Monetary Policy Surprises and Interest Rates: Evidence from the Fed Funds Futures Market” *Journal of Monetary Economics*, Vol. 47, No. 3, 2001.

⁷⁵ King’ori, Z. 2003. The Determinants of Income Velocity of Money in Kenya, Unpublished Thesis, University of Zimbabwe.

innovation is considered as a shock in which case the innovation is assumed to involve technological progress in transactions and policy changes such as financial regulation or deregulation. In this framework financial innovation is modeled as a non-stationary process or deterministic trend (Arrau and Gregorio, 1991)⁷⁶. Other approaches model financial innovation based on new financial products associated with innovation. Under this framework, some authors have used the number of ATM terminals to represent financial innovation while authors using data from developed countries have used securitization as their main variable to proxy for financial innovation (Arturo, 2001)⁷⁷.

This study adopts the approach used by Arturo (2001)⁷⁸ and modifies equation in order to test for the effects of financial innovation on the reaction to monetary policy moves. This is by allowing the coefficient of the real interest rate, β_3 in equation above to vary with the extent of financial innovation. This modification gives:

$$y_t = \beta_0 + \beta_1 Z_t + \beta_2 y_{t-1} + \beta_3 y_{t-2} + \beta_4 Z_t (i_{t-1}^- - \pi_{t-1}^-) + \eta_t$$

Where financial innovation variable is represented by Z_t in equation with bank assets-GDP ratio and ratio of M3 to M1 as its proxies, which are alternately, entered in the regression equations.

Part 3

3. Analysis and Results

Before discussing our results, a few caveats are in order. First, the above equations presume that aside from the policy rate, there are no other variables that would explain the movement of market interest rates. We had initially included two additional control variables – annual inflation rate and the growth rate of the industrial production index – but we found that these two variables were generally not statistically significant. Second, for most industrialized countries, we have been able to compile data on the actual announced policy rates. However, policy rates were only adopted recently in some countries, especially African countries. To the extent that we employ the short-term money market rate as the proxy for the policy rate, it is assumed that there is a very close one-to-one relationship between the money market rate and policy rate. While this is generally the case in recent periods, the conduct of monetary policy in the early 1980s might not have used the same tools as those currently employed by central banks. The level of volatility of money market rates was generally higher in the 1980s compared with the period since the early 1990s. Third, as much as the availability of data permits, efforts have been made to ensure consistency in the compilation of interest rate time series, especially those for lending rates. The

⁷⁶ Arrau, P. and J. De Gregorio. 1991. Financial Innovation and Money Demand: Theory and empirical Implementation. Policy Research and External Affairs Working Papers, WPS 585.

⁷⁷ Securitization involves a process of transforming otherwise non-liquid financial assets such as residential mortgages into marketable capital market securities. It involves pooling and repackaging loans into securities that are sold to investors.

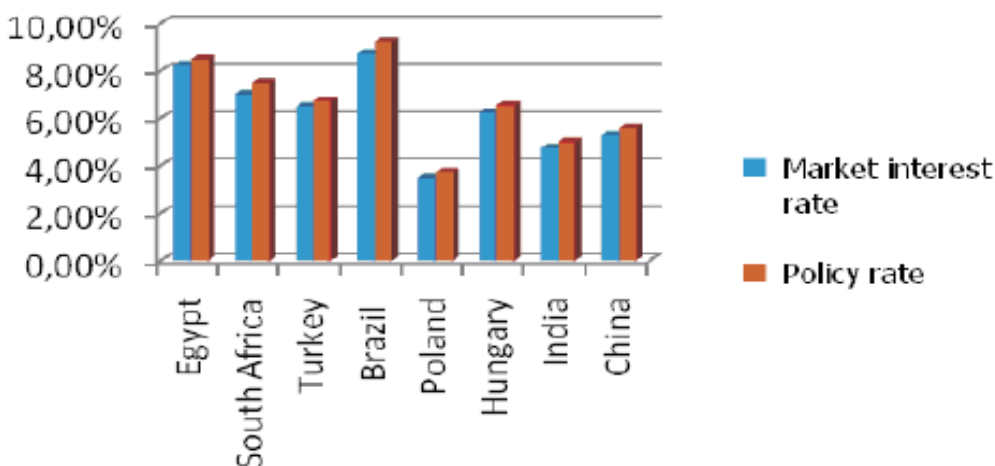
⁷⁸ Arturo, E., 2002. Securitization and the Efficacy of Monetary Policy. Federal Reserve Bank of New York, Economic Policy Review 9: 243-255.

preferred lending rate is the one associated with the prime rate offered to the best customers on new loans, instead of the average lending rate on outstanding loans.

As the overriding objective of the monetary policy is price stability, the CBE seeks to bring inflation to such an appropriate and stable level that helps build confidence and sustain appropriate levels of investment and economic growth. The CBE adopted the overnight interbank interest rate as the operational target of the monetary policy, by applying a framework based on the corridor system, within which the ceiling is the overnight interest rate on lending from the Bank, and the floor is the overnight deposit interest rate at the Bank.

Bernanke and Gertler (1995) stipulate that the dominance of commercial banks and information asymmetries in many EMEs are liable to make the interest rate channel the most prominent in monetary transmission mechanism. Till the outbreak of the global financial crisis, most central banks around the world used the discount rate to signal a shortterm policy rate. By controlling the amount of reserves in the market, the central bank can set the overnight rate by signaling the level of the desired interest rate. As displayed by Figure 3 this has proved successful in signaling market interest rates in many emerging markets. (See the following Figure 3).

Figure 3

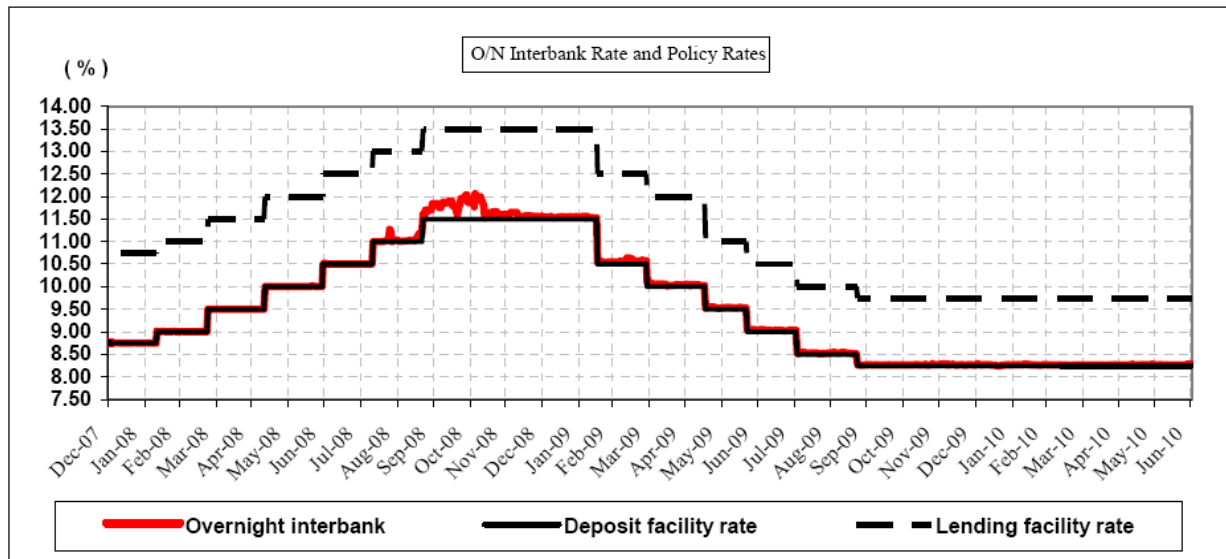


Source: Various websites of central banks.

The above decisions of the MPC were reflected on the overnight interbank interest rate. Given the excess liquidity at the banking system, the weighted average of the said rate moved closer to the overnight deposit rate at the CBE in the reporting year (see the following Figure 4)⁷⁹.

⁷⁹ Source :- website of central bank

Figure 4



Domestic Liquidity and Counterpart Assets

Domestic liquidity went up by LE 86.3 billion or 10.4 percent during FY 2009/2010 (against LE 64.5 billion and 8.4 percent a year earlier) to reach LE 917.5 billion at end of June 2010. The rise resulted from the growth in net domestic assets by LE 58.0 billion or 10.0 percent, and net foreign assets by LE 28.3 billion worth or 11.1 percent. (see the following Figure 5).

Figure 5

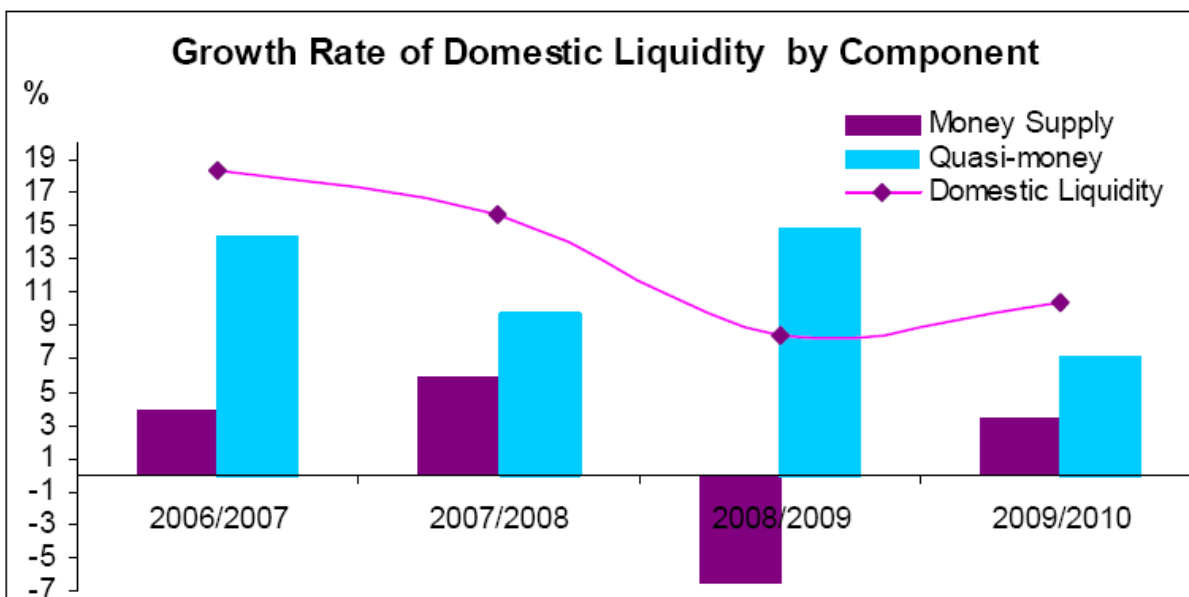
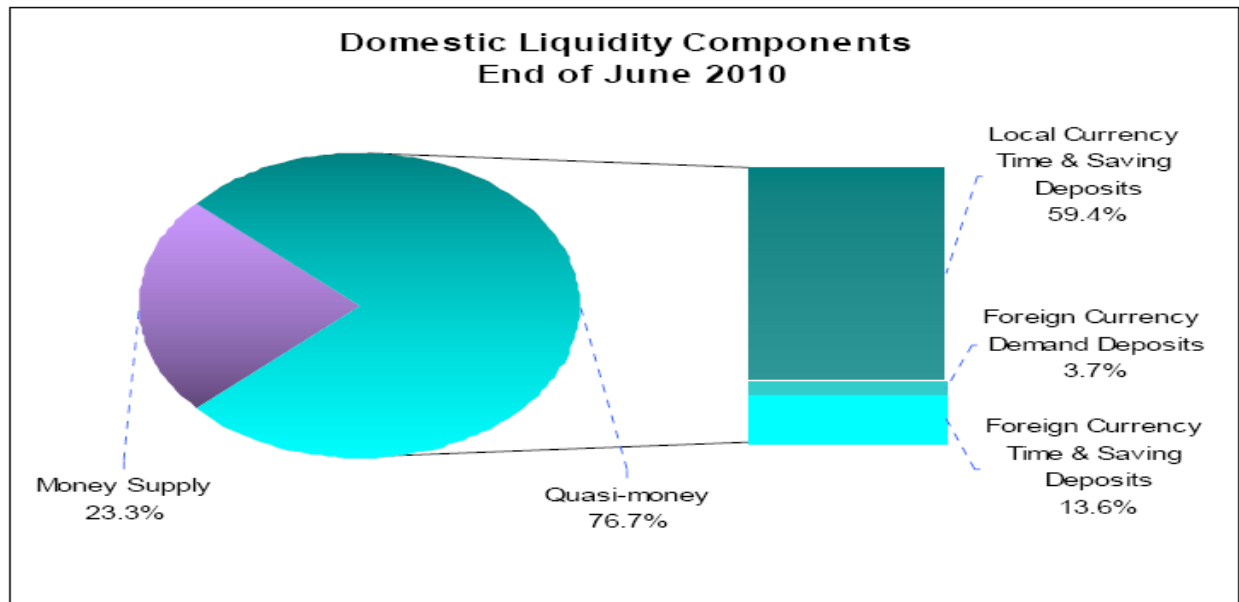


Figure 6

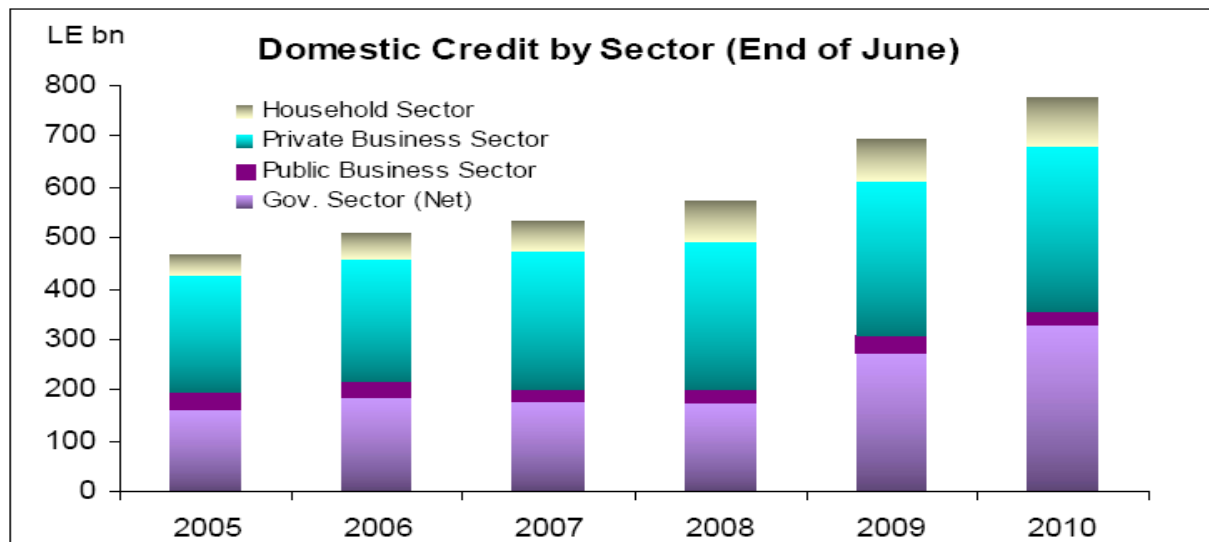


Most of the increase (93.4 percent) in LE time and saving deposits was contributed by the household sector. Deposits of that sector rose by LE 60.0 billion or 15.5 percent, to reach LE 448.3 billion or 82.2 percent of total LE time and saving deposits and 63.7 percent of total quasi-money. By contrast, foreign currency deposits of all sectors declined by LE 9.1 billion worth or 5.4 percent, to stand at LE 158.1 billion worth and to represent 22.5 percent of total quasi-money at end of June 2010.

Domestic credit rose by LE 79.9 billion or 11.5 percent during the reporting year (against LE 124.4 billion or 21.8 percent a year earlier) to reach LE 775.3 billion at end of June 2010.

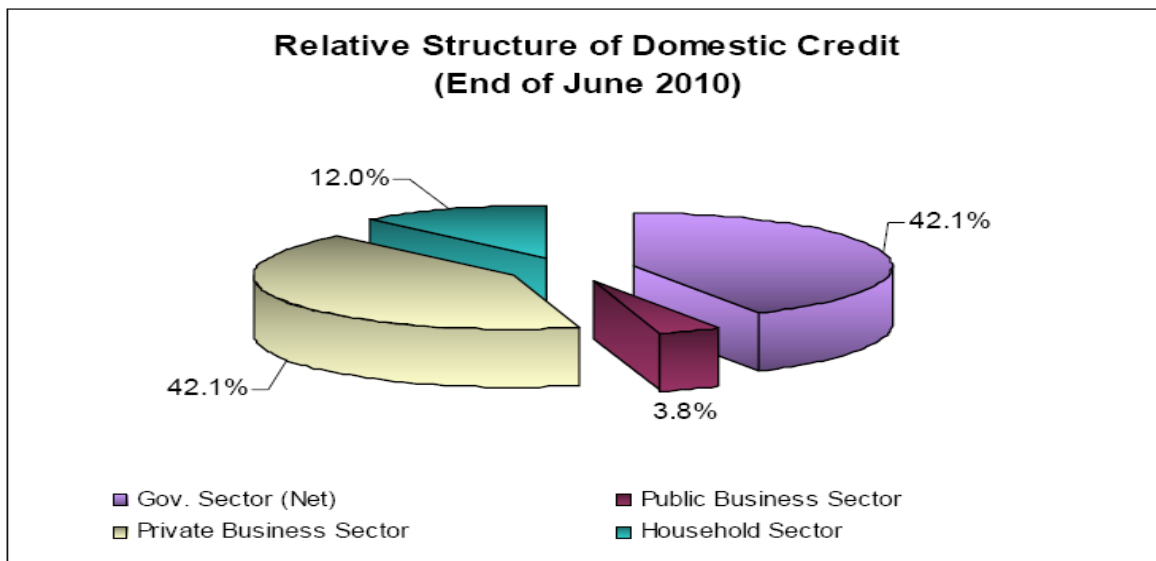
Domestic credit rose by LE 79.9 billion or 11.5 percent during the reporting year (against LE 124.4 billion or 21.8 percent a year earlier) to reach LE 775.3 billion at end of June 2010. Such a rise came as a result of the increase in banks' holdings of government securities by LE 42.6 billion, and in government borrowing by LE 12.2 billion, on the one hand, and the rise in government deposits by LE 1.8 billion, on the other hand (see the following Figure 7).

Figure 7



Given the marked rise in its investments, credit to the private business sector augmented by LE 21.9 billion or 7.2 percent (against LE 12.8 billion or 4.4 percent) posting LE 326.4 billion or 42.1 percent of total domestic credit at end of June 2010. due to the increase in the activities of retail banking and consumer credit (especially personal loans). However, credit to the public business sector rolled back by LE 3.2 billion or 9.5 percent (against a rise of LE 6.2 billion or 23.2 percent), bringing its indebtedness to banks to LE 30.0 billion or 3.9 percent of total credit at end of June 2010. (See the following Figure 8).

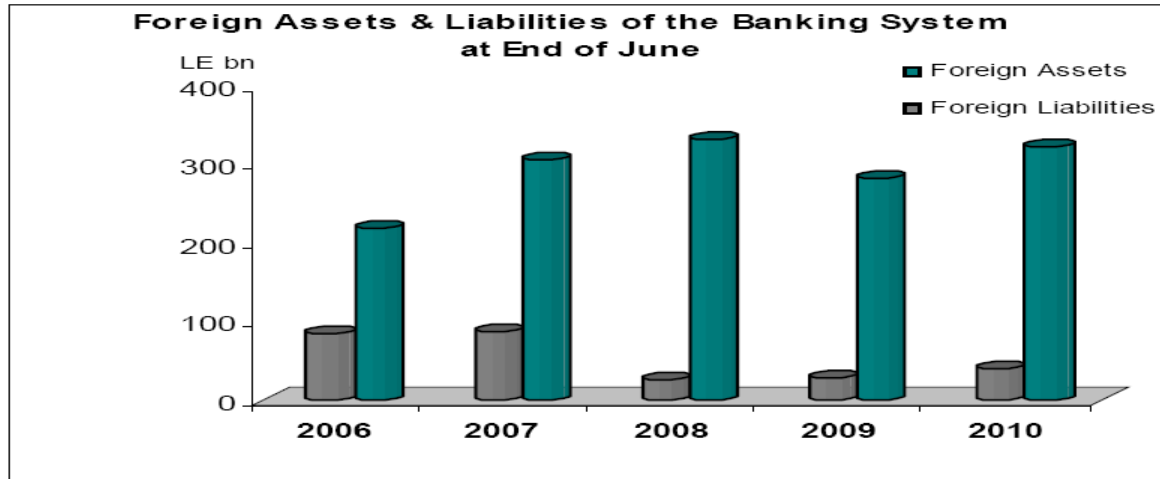
Figure 8



Net foreign assets with the banking system amounted to LE 282.4 billion worth at end of June 2010, with a rise of LE 28.3 billion worth or 11.1 percent in the reporting year (against a decline

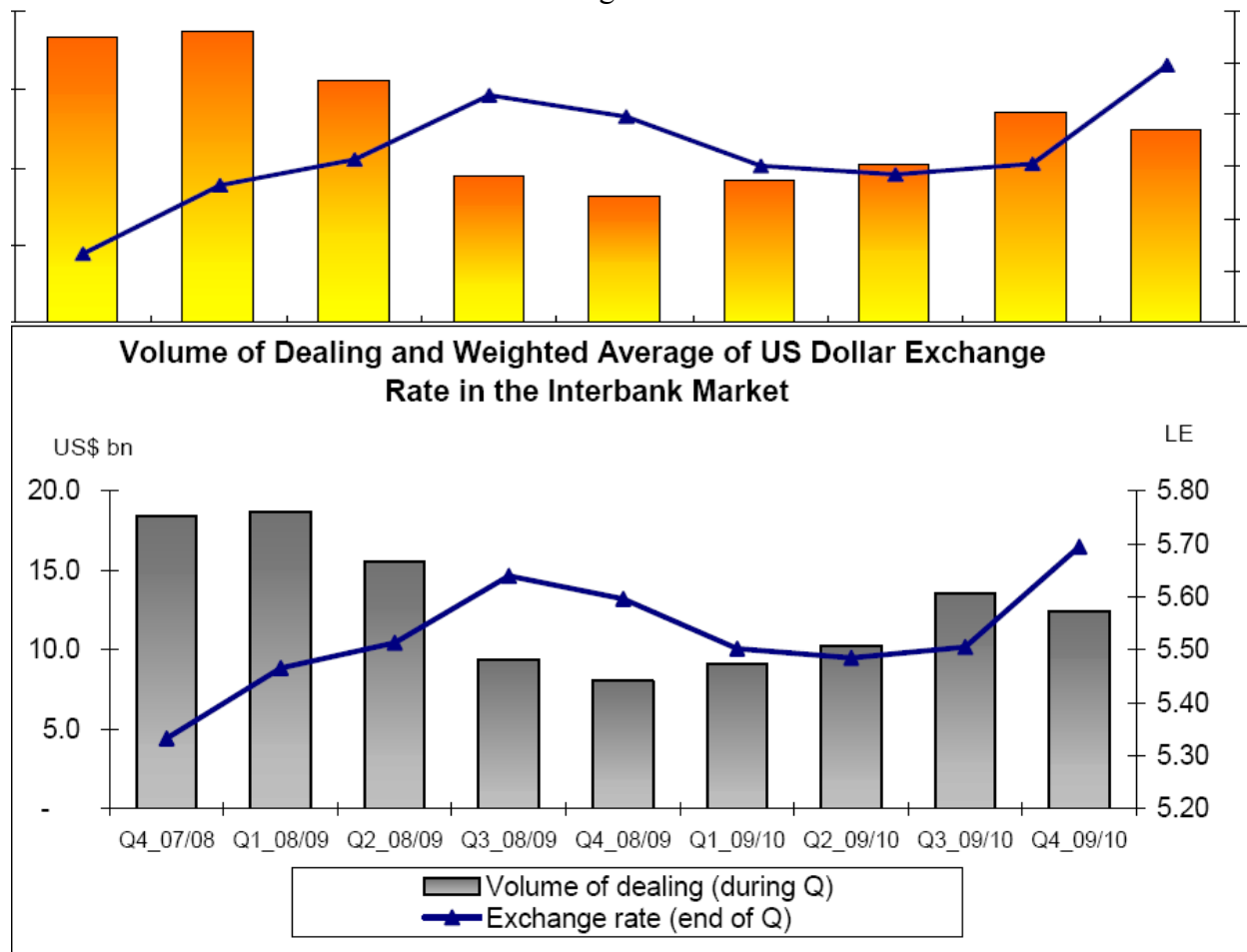
of LE 49.5 billion worth or 16.3 percent a year earlier). The rise reflects larger net foreign assets at the CBE by LE 18.5 billion worth (due to the rise in its foreign assets by LE 25.6 billion worth, and its foreign liabilities by LE 7.1 billion worth) and higher net foreign assets at banks by LE 9.8 billion. The marked increase in net foreign assets at the CBE reflects the stronger performance of the balance of payments that registered an overall surplus of US\$ 3.4 billion during the reporting year (against an overall deficit of almost the same amount in the preceding FY). (See the following Figure 9).

Figure 9



The CBE went ahead with its successful management of the forex market through the dollar interbank market. It managed to boost dealers' confidence in the efficiency of the forex market, and to dispel their concerns about any imminent fluctuations in the Egyptian pound. The weighted average of the US dollar interbank rate rose from LE 5.5964 on 30/6/2009, to LE 5.6952 on 30/6/2010, down by 1.7 percent in the LE value during the reporting year. (See the following Figure 10).

Figure 10



Human Resources Development

During FY 2007/2010, the CBE continued to upgrade the skills of the staff, so as to provide a new generation of leaders who are capable of leading vital sectors. To this end, introduced a number of qualification and training programs that were conducted by local and foreign parties, and applied the latest international banking developments.

Emphasizing its role in raising awareness about the latest economic and banking developments, the Banking Institute organized a number of seminars, conferences and workshops. In this context, 18 seminars were organized, attended by 1056 trainees. It is worth mentioning that the number of participants in the training programs increased in the reporting year to register 23100 participants over 24355 training hours. (See the following Figure 11).

Figure 11

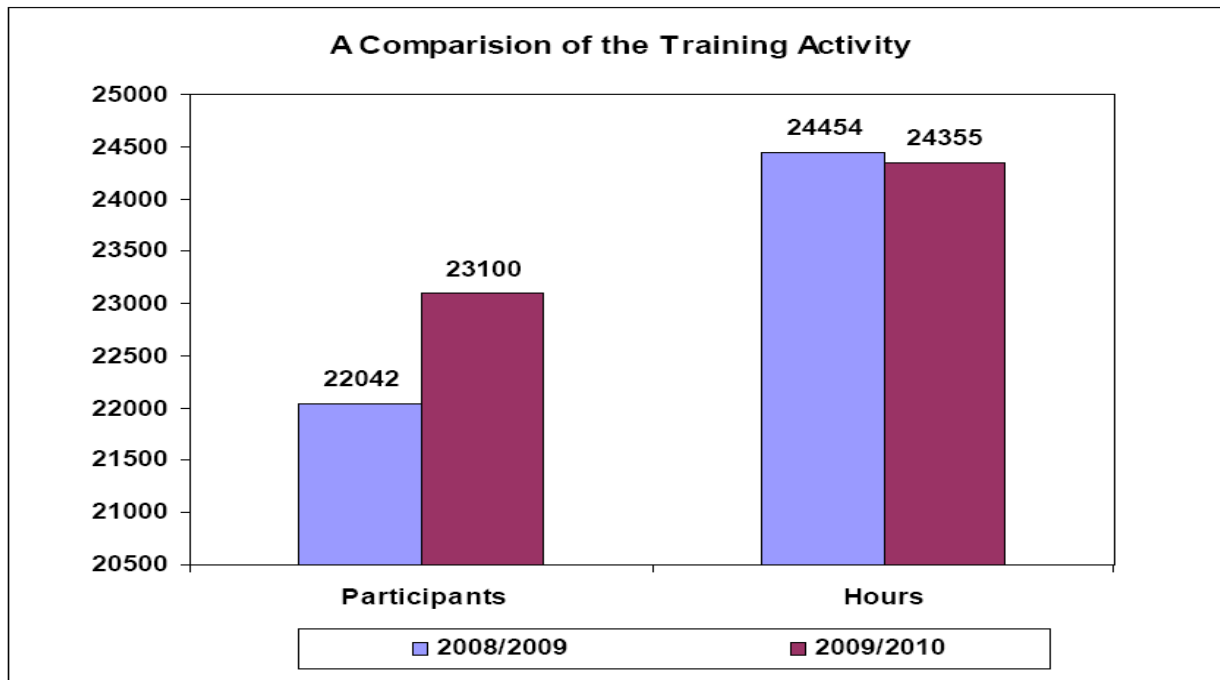


Figure 12

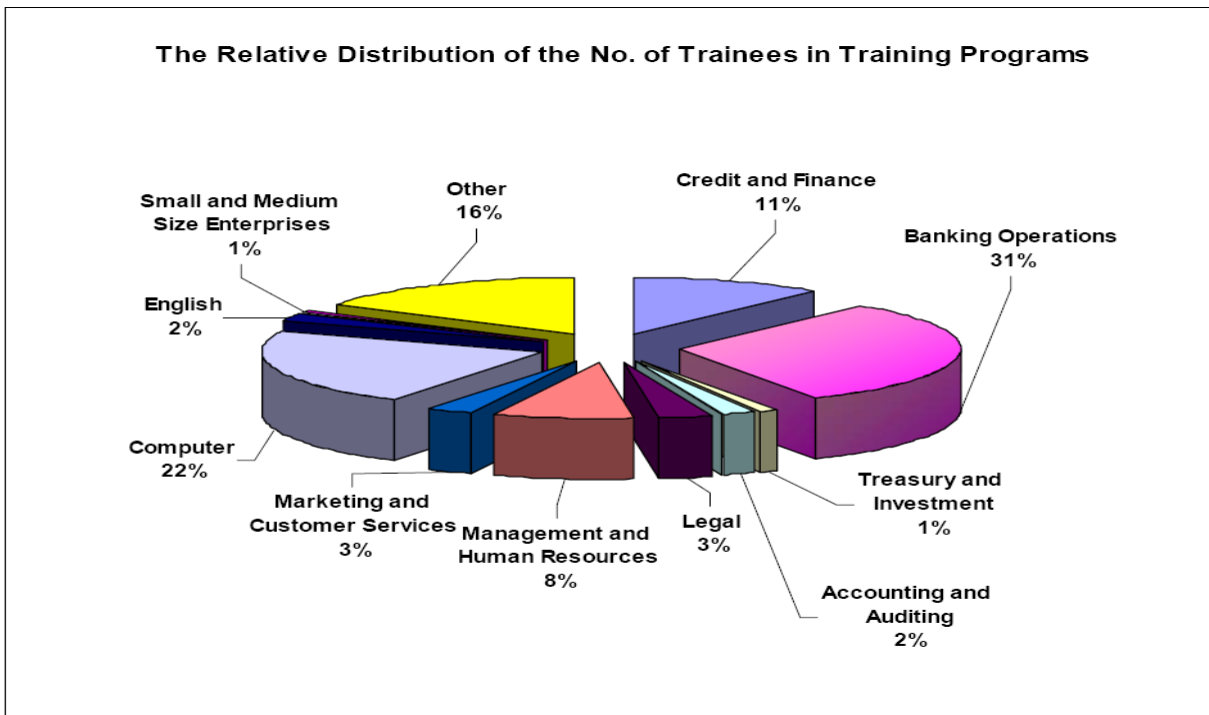
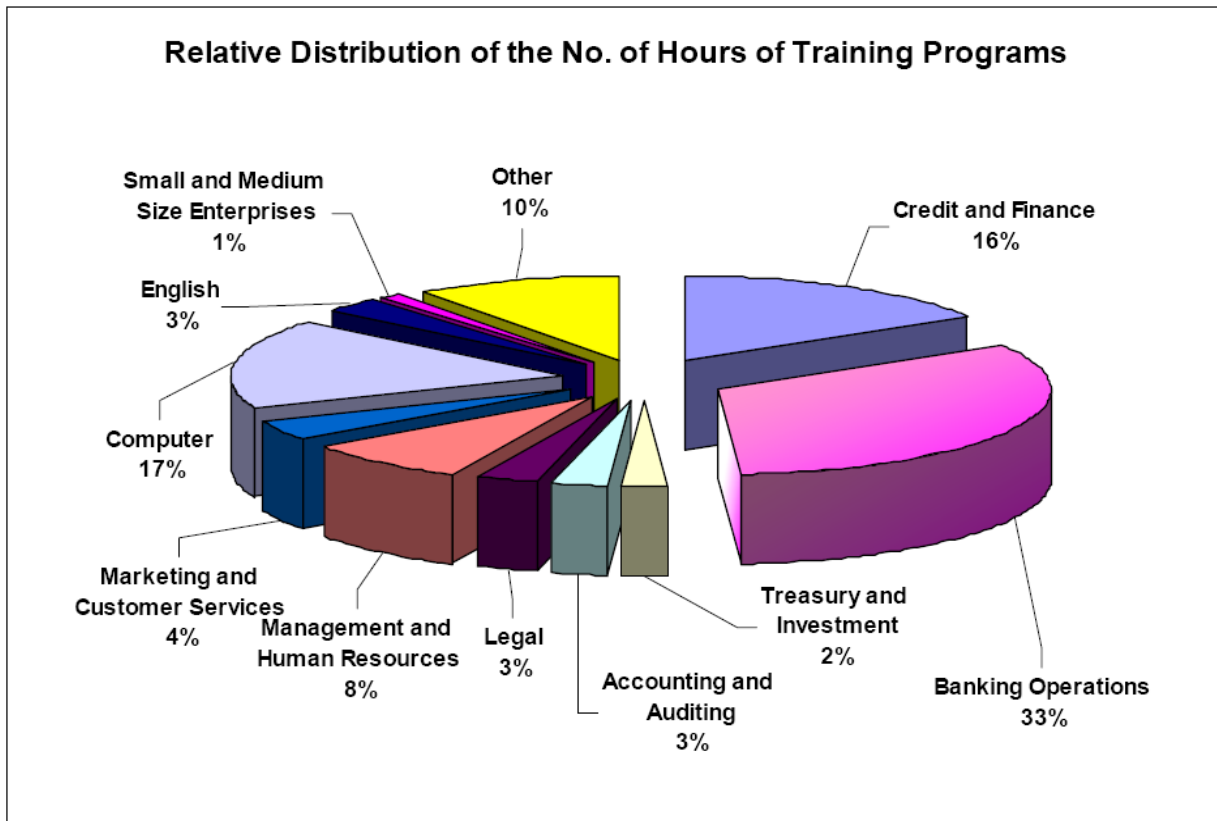
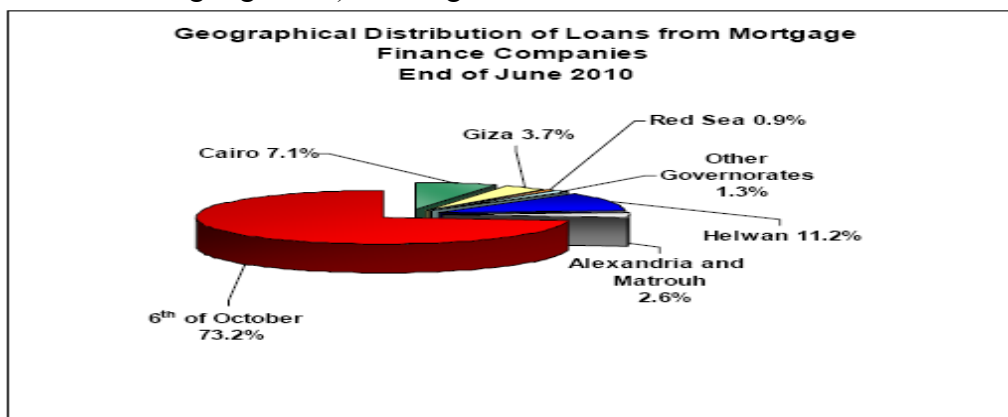


Figure 13



Mortgage Finance

During FY 2009/2010, efforts were kept up to develop the mortgage finance sector, with a focus on tightening the supervision rules to avoid any future financial crises. The indicators of mortgage finance activity manifested the marked growth of the market, despite the adverse impact of the global financial crisis. Loans extended by banks and mortgage finance companies rose by LE 1.1 billion or 36.5 percent during the year, reaching LE 4.0 billion at end of June 2010. (See the following Figure 14). Figure 14



Result

- 1- Decisions of the MPC were reflected on the overnight interbank interest rate.
- 2- Domestic liquidity rise resulted from the growth in net domestic assets by 10.0 percent, and net foreign assets by 11.1 percent.
- 3- Domestic credit rose by 11.5 percent during the reporting year (against LE 124.4 billion or 21.8 percent a year earlier) to reach LE 775.3 billion at end of June 2010. Such a rise came as a result of the increase in banks' holdings of government securities by LE 42.6 billion, and in government borrowing by LE 12.2 billion, on the one hand, and the rise in government deposits by LE 1.8 billion, on the other hand .
- 4- the marked rise in its investments, credit to the private business sector augmented by 7.2 percent 42.1 percent of total domestic credit at end of June 2010. due to the increase in the activities of retail banking and consumer credit (especially personal loans). However, credit to the public business sector rolled back by 9.5 percent (against a rise of 23.2 percent),
- 5- The marked increase in net foreign assets at the CBE reflects the stronger performance of the balance of payments that registered an overall surplus of US\$ 3.4 billion during the reporting year (against an overall deficit of almost the same amount in the preceding FY).
- 6- The CBE went ahead with its successful management of the forex market through the dollar interbank market. It managed to boost dealers' confidence in the efficiency of the forex market, and to dispel their concerns about any imminent fluctuations in the Egyptian pound. The weighted average of the US dollar interbank rate rose from LE 5.5964 on 30/6/2009, to LE 5.6952 on 30/6/2010, down by 1.7 percent in the LE value during the reporting year.
- 7- During FY 2007/2010, the CBE continued to upgrade the skills of the staff, so as to provide a new generation of leaders who are capable of leading vital sectors. To this end, introduced a number of qualification and training programs that were conducted by local and foreign parties, and applied the latest international banking developments.
- 8- The indicators of mortgage finance activity manifested the marked growth of the market, despite the adverse impact of the global financial crisis. Loans extended by banks and mortgage finance companies rose by LE 1.1 billion or 36.5 percent during the year, reaching LE 4.0 billion at end of June 2010.

'There is significant relationship between dependent variable (financial innovation) and independent variables (innovation activities, interest rate, domestic credit, mortgage backed securities and subsequent changes in default rates.) '

Conclusion

The challenges that financial innovation poses for public policy and the regulatory framework in ensuring financial stability are enormous and cannot be over-looked. The supervisory approach

must therefore, take account of the benefits as well as the risks that accompany financial innovation and the appropriateness of regulatory responses. From a central banker's point of view, the objective of ensuring financial stability remains critical. In light of the evolving financial landscape, financial stability can be said to be dependent on the adequacy of risk management and control systems by market participants, on one hand, and appropriate supervisory responses by the regulator, on the other hand. It is therefore imperative for the Central Bank of Egypt that as regulator to take a more proactive role, using a combination of both the prescriptive and market-oriented approach, in laying a strong foundation in the proper practice of risk management systems by banks in Egypt . The Central Bank of Egypt must be seen to be taking a continuous and leading role in providing leadership in research on the latest developments in the field of financial innovation and risk management.

Financial innovation – like any innovation – can be used for many purposes. There is an important role for regulation to ensure that financial products are offered responsibly to consumers. It is just as important to ensure that we continue to discover, test and offer new products and services that will improve the everyday financial lives of families.

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