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Moving towards a delivery free hedging strategy: Sri Lankan Domestic FX Market

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1. Introduction

The unpredictable and uncertain nature of the financial markets always put a huge burden on the investors and on the financial market participants across the globe. The potential risks faced by the investors such as interest rate risk, exchange rate risk etc. would require them to look for opportunities to mitigate those risks in order to safeguard their investments. Unavailability of such adequate hedging opportunities to hedge the potential markets risks had been one of the major reasons for the financial crisis in the past. Therefore, the scope of hedging or risk trading or taking offsetting positions in one asset to reduce the adverse price movements of another asset was expanding over the years with the lessons learnt from the past and the rapid developments in the financial markets.

However, finding alternative hedging instruments to offset the risk exposure by the foreign investors who are exposed to higher price volatility in the emerging market economies are still difficult as most of these markets are very thin and less liquid. The emerging markets are always under pressure and subject to significant capital flights as they are frequently expose to the adverse market conditions created through unfavorable domestic financial market situations or spillover effects of developments in the advanced economies, such as rate hikes, positive economic outlook and so on. These outflows from the capital market would lead to continuous depreciation of the exchange rate against US Dollar. In such a situation, exporters would be the first group to react on the arising depreciation pressure and would tend to be away from today's market for higher return at a latter date with the expectation of a further depreciation of the exchange rate. Such reaction from the exporters will boost more pressure on the exchange rate resulting in the importers to front load their future import bills being fear of the continuous depreciating pressure. Hence, the spillover effects created through external factors, would spread through the importers and exporters, finally affecting the entire economy of the emerging markets.

Being one of these emerging economies, Sri Lankan domestic foreign exchange market is also facing these issues given the very thin daily average trading volumes of around USD 80 million and limited hedging options such as forwards, FX Swaps and options (not much developed) with the absence of technological support as there is no exchange trading or electronic order matching systems in place. Specially being a shallow market with only 6 major active Licensed Commercial Banks (LCBs) out of 26 LCBs who act as the authorized dealers in the foreign exchange market operations and 9 Authorized Money Brokers who act as intermediaries by controlling 80 % of the

interbank foreign exchange market while managing with limited foreign reserves in hand , the Sri Lankan domestic foreign exchange market finds it difficult to face the risks arising from the external factors and provide a stable market with low volatility. The high depreciation of USD/LKR exchange rate by 16% in 2018 with four US interest rates hikes and political uncertainties in the country is a good example for this situation.

2. An alternative to mitigate the risk

In the recent past, Sri Lankan domestic foreign exchange market was over pressurized when the USD/LKR exchange rate was at a continuous depreciation mainly due to the spillover effects created through externally driven factors. As a result, exporters practiced a wait and see approach by delaying conversion of export proceeds while the importers started to settle their import bills early to minimize their cost expecting the exchange rate to depreciate further. Further, during this period, some major banks in the domestic FX market tried to speculate the market towards their desired direction and all these factors created an unnecessary volatility in the USD/LKR exchange rate. During that period, Central Bank of Sri Lanka (CBSL) was struggling to find ways to overcome this unrest situation and tried so many alternative strategies to address these conditions while taking several measures and actions. Finally, it was decided to analyze the facts and study the other country experiences in finding a solution to overcome this issue in the domestic foreign exchange market. In doing so, it was identified that introducing an alternative hedging instrument named Domestic Non Deliverable Forwards (DNDF) would provide a leeway for both foreign investors and importers/ exporters who are exposed to high risk of volatile price movements in the emerging markets.

DNDF market is an over-the-counter market and very much similar to the traditional forward market with the exception that there is no physical delivery of funds, instead the contract is cash-settled on net basis in local currency (LKR) at the expiration and usually short-term. DNDF as a hedging instrument is popular in emerging markets with capital controls, where the currencies could not be delivered offshore while the traditional forward contract is much popular among countries where the currencies are liquid and have no convertibility restrictions. DNDF makes it possible for foreign investors, importers and exporters to manage the currency risk of doing business by hedging their exchange rate risk exposure when transacting in markets where the currencies are less liquid and have convertibility restrictions. Therefore, this instrument will complement the existing foreign exchange market instruments to facilitate alternative hedging facilities and reduce the spillover effects from externally driven volatility.

3. What is a DNDF?

A DNDF is a cash-settled (in local currency) and usually a short-term, forward contract. The notional amount is never exchanged. In the case of a currency DNDF, two parties agree to take opposite sides of a transaction for a set amount of money at a fixing rate. The profit or loss is calculated on the notional amount of the agreement by taking the difference between the agreed-upon rate/ fixing rate, which is the rate agreed at the time of entering into the transaction and the Benchmark rate/Reference rate which is calculated at the settlement.

Domestic cash Flow = (Fixing rate-Benchmark rate) × Notional amount

DNDF as a normal hedging instrument has the following features:

(a) Notional Amount

Notional amount is the "face value" of the DNDF product, which is agreed between the two counterparties. The notional amount is not exchanged between two parties. Hence, it should be noted that there is no intention to exchange the notional amounts in the two currencies.

(b) Fixing Rate/ Agreed-upon Rate (Price)

The rate agreed at the time of entering into the transaction (today) to settle the transaction on a future date, which is essentially the outright forward rate.

(c) Benchmark/Reference Rate

The official spot rate, published by the central bank or any other relevant authority on the fixing date. This rate is a standardized, ubiquitous exchange rate which is calculated based on a globally accepted methodology to execute the spot market trades in a more transparent manner.

(d) Fixing Date

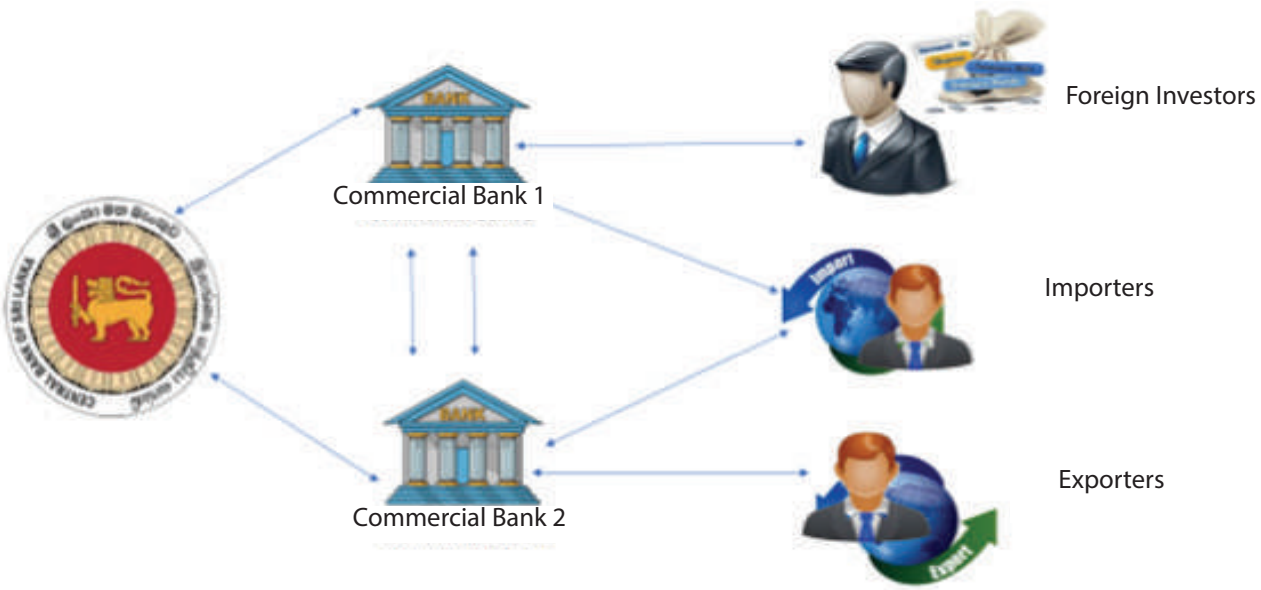
This is the date on which the comparison between the fixing rate (agreed upon rate) and the benchmark rate (reference rate), is made. In other words, the date at which the difference between the prevailing markets exchange rate, and the agreed upon exchange rate is calculated.

(e) Settlement Date

This is the date on which the difference between the fixing rate and the benchmark rate (reference rate) is paid or received. It is usually one or two business days after the fixing date. In other words, the date by which the payment of the difference is due to the party receiving payment.

4. Workflow of the DNDF

DNDF can be traded among the market participants in the domestic foreign exchange market in Sri Lankan as follows:



The DNDF transactions can be executed among LCBs, between LCBs and importers, between LCBs and exporters, between LCBs and foreign investors or may be between LCBs and the CBSL.

(a) Transactions between Licensed Commercial Banks

Normally, all LCBs act as the intermediaries in the DNDF market and they are allowed to purchase and sell the DNDF product in the domestic FX market. LCBs may issue DNDF to the market by themselves. In addition, LCBs may be allowed to actively participate and to trade on DNDF for speculative purposes even without having underlying assets[1] with a view to develop the DNDF market by encouraging them to trade by ways of buying and selling of DNDF.

(b) Transactions between Licensed Commercial Banks and Customers

If the DNDF transaction is between a LCB and a customer, i.e., an importer or an exporter, it is required to produce an underlying asset to execute that transaction. In other words, individual customers are not permitted to do DNDF transaction for speculative purposes. This could be done only for the purpose of hedging the exchange rate risk.

1. Underlying assets can be : (1) Trading of goods and services onshore and offshore (2) Investments in the forms of direct investment, portfolio investment, loan capital and other investments onshore and offshore (3) Bank lending of financing in foreign currency for trading and investment activities, particularly for transactions between Bank and customers

(c) Transactions between Licensed Commercial Banks and Foreign Investors

With the intention of hedging the exchange rate risk, foreign investors are able to execute DNDF transactions with LCBs. In this situation too, it is required to have an underlying asset in order to execute the said transactions.

(d) Transactions between Central Bank and Licensed Commercial Banks

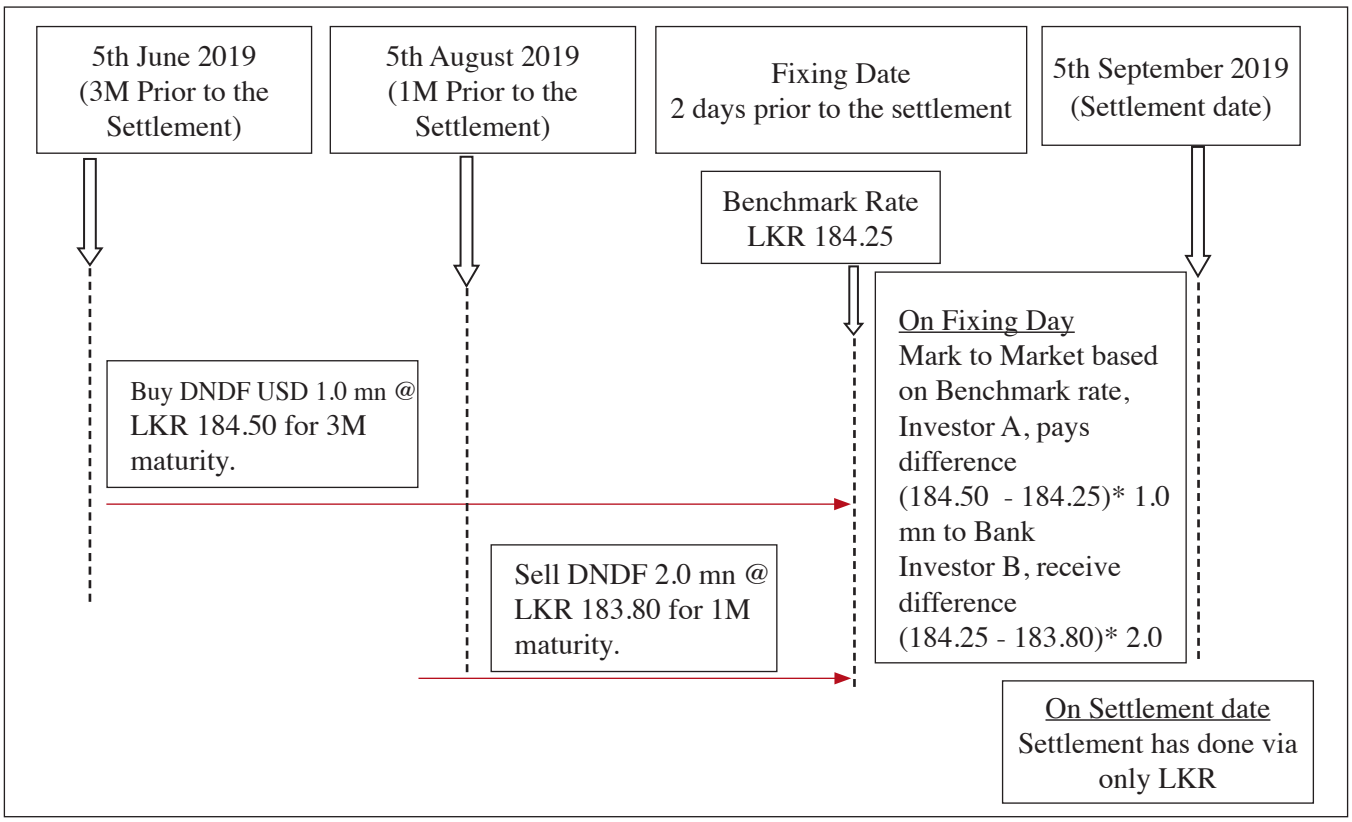
Central Bank of Sri Lanka as the regulator in the domestic FX market is mainly responsible for issuing guidelines and a mechanism on DNDF product, to the domestic FX market and setting the market infrastructure to trade DNDF. However, at the initial stage, CBSL should have to issue DNDF to the market to provide liquidity until the product is developed and popular among market participants.

5. Market Mechanism of DNDF

E.g.:

5th June 2019 Investor A, who has a government bond, buys DNDF 1.0 million @ LKR 184.50 for the period of 3M.

5th August 2019 Exporter B, who wants to sell their export proceeds, sell DNDF 2.0 million @ LKR 183.80 for 1M maturity.



6. Impact of DNDF in Sri Lankan Domestic FX Market

There are a number of ways that we could generate positive effects on the market participants, market development and also on economic development through the introduction of DNDF to the Sri Lankan domestic foreign exchange market.

Introducing DNDF will have a direct impact on stabilizing USD-LKR exchange rate by reducing the spillover effects arising from externally driven factors as it provides an alternative to hedge the exchange rate risk exposure. Therefore, this instrument could bring about less volatility and more stability in the LKR spot market through improving credibility in the domestic fixing of the exchange rate. As a result, the

need of the CBSL to manage the excess volatility in the exchange rate at the cost of foreign reserves will be minimal and hence it will reduce the continuous draining of foreign reserves, as it will be LKR settled rather than USD settled.

DNDF will evolve as a hedging instrument and thereby increase the hedging implementation when the LCBs are encouraged to use DNDF to hedge the USD/LKR exchange rate risk and to promote DNDF among their customers who has rupee assets. With the gradual increase in the trading of DNDF, the DNDF market will get developed and would provide a standard and reliable market for the local importers, exporters and foreign investors to hedge their risk exposure. Therefore, successful implementation of DNDF as the step towards deepening the domestic foreign exchange market by allowing nonresidents/ foreign investors to participate in the investment in domestic government securities market may provide a cushion to spillover risks from internal and external factors.

This will in turn increase market confidence in carrying out economic activities and investments through the ease of hedging transactions against the risk of the USD/LKR exchange rate volatility and support the development and the deepening of the domestic foreign exchange market and eventually minimize the external volatility from spilling over excessively towards the domestic FX market.

7. Steps to make DNDF effective

In order to make a more effective and reliable DNDF market in Sri Lanka, it should be ensured that DNDF is implemented along with other market infrastructure and proper monitoring mechanisms. This would include,

(a) Guidelines, Rules and Regulation

(b) IT infrastructure

(c) Supervision

(d) Reporting Requirements

(e) Sanctions

(a) Proper Guidelines, Rules and Regulation

In order to develop a consistent and reliable DNDF market, CBSL should issue guidelines, rules and regulation with regard to the DNDF transactions to the market participants. This guidelines and regulation would include the general provisions, types of underlying transaction documents, other restrictions imposed on DNDF if any, acceptable trading methods, reporting requirements, supervision of the DNDF transactions, sanctions with regard to DNDF transactions and operations and closing provisions.

(b) IT Infrastructure

As financial markets are now developing around trading platforms, trading exchanges and central counterparty clearing systems, it is important to have proper systems, trading platforms, hardware, settlement systems and other IT support services in place to facilitate DNDF trades and for the DNDF market to develop by reaching the foreign investors and other clients across the world in seconds and making the trading settlements without delays or errors.

(c) Supervision

The activities relating to the DNDF transactions conducted by LCBs, should be supervised by CBSL by way of either indirect supervision; and/or onsite examination from time to time in order to ensure the smooth functioning of the DNDF market. In conducting examinations, CBSL may coordinate with other authorities such as Sri Lanka Customs, Importers, and Exporters etc. Under the supervision requirement, it should be mandatory for LCBs to provide relevant data and information requested by CBSL and the responsibility of ensuring the accuracy of data and the information is remained with relevant LCBs.

(d) Reporting Requirement

Reporting requirements with regard to the DNDF transactions should be essential to monitor the market activities on regular basis and to take actions if there are any unethical and unusual transactions. Therefore, reporting requirement should be clearly specified in

the Operating Instructions issued by CBSL and made it mandatory for all LCBs to adhere to those reporting requirement. In this regard, all transactions classified as "LCB to LCB" and "LCB to Customer" should be reported by LCBs through a CBSL reporting system on daily basis.

(e) Imposing Sanctions

CBSL may impose sanctions in order to address misconducts or violation of any regulation relating to DNDF. This can be in the form of an administrative sanction, in the form of a written warning or even may be a financial penalty as decided by the CBSL.

8. Risk and Challenges

Even though DNDF seems to be an alternative hedging instrument and a viable solution to exchange rate volatility issues in the Sri Lankan domestic foreign exchange market, there are number of risks and challenges associated in implementing DNDF in Sri Lanka.

As Sri Lanka is an import driven country, the external position of the country mostly faces with some headwinds and normally records a deficit in the current account, creating high demand for USD. This sustained demand for USD in the domestic foreign exchange market amidst the tighter supply of USD liquidity, may create more one way trade for the LKR DNDF. This would further, aggravated through global financial conditions such as wrapping up of assets purchasing programme and expectations on further interest rate hikes resulting capital outflows from the country. As a result, the DNDF market liquidity will be affected by more purchases of DNDF compared to a very few sales. In such a scenario, CBSL will have to intervene in the DNDF market as a seller of DNDF to pump liquidity to the DNDF market and eventually, it would affect the monetary policy implementation process of CBSL.

Even though the prime motive behind introducing DNDF is to stabilize the USD/LKR exchange rate, the impact on the exchange rate may not be fully reduced when small banks enter into DNDF with large importers as banks will still struggle to cover the USD requirement on the settlement date which will create market pressure. On the other hand, the building position in DNDF market by Banks may also increase the bank's market risk, and so in the end it will impact the spot market.

There is also a possibility of small banks running short of required rupee liquidity to do the DNDF transactions. Hence, they might not encourage their customers to enter into DNDF transactions to hedge the exchange rate risk and thereby continue to directly cover the positions through forwards or in the spot market.

Furthermore, documentation, reporting requirements and restrictions on underline transactions for potential DNDF customers may be more restrictive and discouraging for both banks and the customers to enter into DNDF transactions. It will also be a challenge to CBSL to monitor each and every DNDF transaction in the market.

In addition, the attractiveness of the pricing of DNDF as a hedging tool compared to other alternatives and the ability of DNDF to cater for broader financial market players in the local market rather that catering to specific type of investors is yet to be discovered.

9. Way forward in the Sri Lankan context

In the implementation process of DNDF in the domestic foreign exchange market of Sri Lanka, it is always advisable to adopt a step by step process. As the first step, CBSL can fine tune the current FX (foreign exchange) benchmark rate which is an indicative rate, calculated based on the volume based weighted average of all the interbank foreign exchange spot transactions executed throughout the previous working day. Instead of this indicative benchmark rate with a one day lag, introduction of a standard FX benchmark to the domestic foreign exchange market would support to bring more liquidity and a robust and competitive pricing mechanism to the market.

Then, CBSL can draft the guidelines on DNDF transactions for the market participants in the form of rules and regulations. It is also important to decide on the reporting requirements to be imposed on the banks

relating to DNDF and the supervisory role of CBSL in the DNDF market. CBSL may have continuous discussions with market groups in finalizing the regulations. It is also important to take the existing regulations on foreign exchange market operations and derivative transactions issued by CBSL into consideration in forming the new regulations in order to make sure that regulations are in line or to make amendments if required.

Once the regulatory reforms are identified, CBSL should pay greater devotion to the required policy reforms to ensure the smooth functioning and the stability of the domestic FX market in general which should essentially cater to the objectives of CBSL and the economy. This could be developed as a policy mix covering monetary policy, exchange rate policy, financial system stability policy, CBSL intervention policy etc. ensuring the consistency and credibility of those policies.

In line with the above reforms, CBSL may design the market architecture for the execution of DNDF product effectively along with the required systems facilitating DNDF trading, fixing rate calculation and DNDF transactions settlements. In doing so, CBSL can develop or purchase the required IT systems or trading platforms. This might be through an auction system or a bilateral trading mechanism depending on the market situation and the preference of CBSL. It is also important to decide on how to facilitate the reporting requirements imposed on the banks through identified IT systems.

Finally, the market participants, including banks, major corporate clients, relevant officers of CBSL and even the foreign investors if possible should be made well aware of the DNDF product, related rules and regulations, market infrastructure, how to trade with DNDF and the benefits of this product through trainings, one to one discussions, educational materials, and press releases or via CBSL website. With the experience from other central banks in the region, it was understood that the key to the success of DNDF markets lies in the clarity of the rules of the game and clear communication through consistent strategies among all the market players■

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Macroprudential Policy

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The prime objective of macroprudential policy is maintaining financial stability. It is envisaged to limit the build-up of system-wide (systemic) financial risks that would have severe negative consequences for the real economy while identifying and addressing risks emerged from interconnectedness (Borio and Drehmann 2009). In other words, it attempts to minimize macroeconomic costs arising from the instability of the financial system by mitigating the systemic risk[1]. Accordingly, set of policies which deal with managing the downside of systemic risk in a financial system is defined as macroprudential policies in the literature.

Macroprudential policy is implemented through prudential tools to limit systemic risk, thereby minimizing the incidence of disruptions in the provision of key financial services that can have serious consequences for the real economy (Galati and Moessner 2011;IMF 2011). Systemic risk can be broadly assessed through the early warning indicators, stress tests and network analysis by using financial sector data and market intelligence. Two dimensions are used to identify the systemic risks, namely: the time dimension and cross-sectional dimension. Time dimension of systemic risk factors pro-cyclicality while cross sectional dimension of systemic risks entails risks emanating from inter-dependence and common exposures of financial institutions. Systemic event, an event that could trigger severe instability or collapse an entire system, has two components, viz. shocks (idiosyncratic and systemic) and propagation mechanisms. Idiosyncratic shocks can harm a single financial institution, while systemic shocks are spreading over the entire economy, producing imbalances in all financial institutions simultaneously (eg. Dot com bubbles vs Lehman Brothers). Propagation mechanism refers to the contagious failure through inter-linkages of the financial system resulting from a shock.

Macroprudential policy complements both monetary policy and microprudential policy by bridging the gap between the conventional regulatory supervision of individual institutions and monetary policy. In fact, monetary policy affects all sectors of the economy (like chemotherapy for cancer) but macroprudential policy can be used to curb the unhealthy developments in a particular sector of the economy (like a radiotherapy for cancer). Hence, the effective policy coordination is required to minimize unwarranted spillovers to the financial system and macro-economy considering the interaction of macroprudential policies with other policies. Major features of the macroprudential policies and microprudential policies are given in Table1.

1. Systemic Risk is also defined as risk of disruptions to the financial services that is caused by an impairment of all or parts of the financial system, and can have serious negative consequences for the real economy.

Table 1: Key features of Macroprudential Policies and Microprudential Policies

	Macroprudential Policies	Microprudential Policies
Policy objective	Limit financial system – wide distress	Limit distress of individual firms
Ultimate goal	Avoid output (GDP) costs linked to financial instability	Consumer (depositor/investor/ policyholder) protection
Characterization of risk	Dependent on collective behaviour; endogenous	Independent of individual agents' behaviour; exogenous
Correlations and common exposures across firms	Important	Irrelevant
Calibration of prudential controls	In terms of system-wide risk: top - down	In terms of firm risk; bottom - up

Source: Borio (2003)

Importance of Macroprudential Policy

Financial system is intimately connected with real economy as it plays an important role in optimising resource allocation while enhancing the market efficiencies. However, this process could lead to undue risk taking by market participants which can lead to the build-up of systemic risk. In recent years, leading up to the last global financial crisis, international financial system experienced extremely rapid and unsustainable growth which led to a series of macroeconomic and financial imbalances. The global financial crisis showed that a risk in one institution can be contagious to related institutions and across sectors heightening systemic vulnerabilities. It is also proven that microprudential supervision[2] and monetary policy were not sufficient to sustain the financial stability. Accordingly, the European Central Bank, Bank of International Settlements and some other Central Banks recognized the importance of a more comprehensive macroprudential approach, which goes beyond supervision at the individual firm level to surveillance of broad market and economic factors. These broad factors could have a material impact on the overall financial stability as the financial system has become more interconnected and complex than ever before, making the impact of a crisis, in turn, greater than ever.

Macroprudential Tools

In this backdrop, setting up of a framework to help predicting the potential imbalances is essential, both in terms of micro and macro perspectives. Macroprudential policy framework includes indicators which demonstrate the degree of vulnerability to financial stability. These macroprudential indicators provide information for policy actions while macroprudential tools operationalize actions on a selective basis, in order to mitigate the risks or vulnerabilities. The macroprudential measures do not fit for all and hence those can be tailored for an economy considering the phase of business/financial cycle, economic conditions and dynamics in financial sector (Table 2,3 & 4). Some of the macroprudential tools which have been used by Central Banks and other finance sector regulators are given below:

i. Capital Conservation Buffer

Motive of this buffer is to promote conservation of capital and build-up of adequate buffers above the minimum level that can be drawn down by financial institutions in the period of stress. The buffer should in the form of common equity.

2. Conventionally it was considered that taking appropriate action for individual institutions was sufficient to prevent systemic risk which is a fallacy of composition (Individually rational but collectively irrational) acknowledging that the actions roofed by this, is not appropriate for the entire financial system.

ii. Countercyclical Buffer

Countercyclical buffer was introduced with the intention of achieving broader macroprudential goals of protecting financial sector in periods of excessive credit growth. National authorities need to assess whether credit growth is excessive and decide whether to impose a national countercyclical buffer. The buffer requirement will vary between 0% and 2.5% of the risk weighted assets and will be met with common equity.

iii. Leverage Ratio limits

Objective of this measure is to constrain build-up of leverage in financial sector.

iv. Liquidity Coverage Ratio (LCR)

Objective is to promote short term resilience of financial institutions by ensuring that the banks maintain sufficient high-quality liquid assets to meet liquidity needs for a period of 30 days under a significantly severe liquidity stress scenario.

v. Net stable funding ratio (NSFR)

Objective of this ratio is to promote resilience of financial institutions over a longer time horizon by creating incentives to fund activities with more stable sources of funding on an ongoing basis.

vi. Sectoral capital requirements/risk weights.

Objective of this instrument is to have an additional cushion for lending to selected sectors by maintaining higher risk weight or capital requirement.

vii. Capital surcharges on systematically important Financial Institutions (SIFIs).

Objective of this is to make government bailouts of SIFIs less likely by having SIFIs self-insure themselves against severe financial crises.

viii. Exposure limits/Time varying limits

Objective of this limit is to avoid the concentration risk by having limits for unproductive sectors or sectors which are moving away from the fundamentals. Examples: Debt-to-income, Loan- to –income, Loan-to-value, Margins, hair-cuts, Foreign Exchange mismatches, levy/tax, Lending to sectors and credit growth.

ix. Constraints on foreign currency borrowing

This reduces excessive capital flows and increase stability of funding.

x. Net open foreign currency positions

This is intended to limit the foreign currency exposure of financial institutions and to manage the liquidity in the foreign exchange market.

Table 2: Macroprudential Measures to be taken during Expansionary Phase of Financial Cycle

	Customer / Instrument Centric Measures	Assets & Liabilities Related Measures	Countercyclical Measures	Fiscal Related Measures	Institutional Infrastructure Related Measures
Expansionary Phase	**Time varying caps/ limits/rules on:** -Debt-to-income (DTI) -Loan-to-value (LTV) -Margins, hair-cuts -Lending to sectors -Credit growth	**Time varying caps/limits/rules on:** -Mismatches (FX, interest rate) -Reserve requirements	-Countercyclical capital requirements -Leverage restrictions -General (dynamic) provisioning -Increase of risk weights of exposures	-Levy/tax on specific assets and/ or liabilities	-Accounting (varying rules on mark-to-market) -Changes to compensation, market discipline, and governance

Table 3: Macroprudential Measures to be taken during Contractionary Phase of Financial Cycle					
	Customer / Instrument Centric Measures	**Assets & Liabilities Related Measures**	**Countercyclical Measures**	**Fiscal Related Measures**	**Institutional Infrastructure Related Measures**
Contractionary Phase	Adjustment to specific loan-loss provisioning, margins or hair-cuts (e.g., through the cycle)	-Lowering of liquidity limits (e.g., Net Stable Funding Ratio, Liquidity Coverage Ratio) - Relaxing limits on mismatches	- Releasing countercyclical capital requirements -General (dynamic) provisioning -Reducing of risk weights of exposures	-Relaxing levy/ tax (e.g., on non-core liabilities) - Fiscal Support	-Standardized products -OTC vs. on exchange -Safety net (Central Bank/ Treasury liquidity)

Table 4: Macroprudential Measures to be taken to mitigate Contagion Risks

	Customer / Instrument Centric Measures	**Assets & Liabilities Related Measures**	**Systemically important financial Institutes related Measures**	**Fiscal Related Measures**	**Institutional Infrastructure Related Measures**
Contagion or shock propagation from SIFIs or network	-Varying restrictions on assets composition, -Varying restrictions on activities	-Institutional specific limits on (bilateral) financial exposures, -Other balance sheet measures	-Capital surcharges linked to systemic risk	-Tax/levy varying by externalities (network)	-Institutional infrastructure (e.g., Central Counter Parties – (CCPs) -Resolution (e.g., living wills) -Varying information, disclosure

Conclusion

The recent global financial crises have led to a greater recognition for macroprudential surveillance as microprudential supervision itself is not sufficient to maintain the financial system stability. Monetary policy and macroprudential policy complement each other and therefore policy making should be coordinated among respective authorities to assess and reduce the systemic risk originating from extreme financial procyclicality, interconnectedness and other cross-sectional factors in timely manner. Further, literature highlights that, macroprudential policies will be more effective if synchronized with fiscal and other financial and structural policies.

In line with the changing global financial environment, emerging markets are becoming potential hotspots for capital flows. This necessitate strengthening of existing macroprudential framework to safeguard against risk emanating from cross–border capital flows. However, establishing an institutional framework for macroprudential surveillance upon a strong legal foundation is the key to achieve long term stability of the financial system. Continuous enhancements in the mechanism for systemic risk

detection and analysis is also vital for implementing a robust surveillance by overcoming constraints on data collection and information limitation.

Keeping up with the global trend in the area of macroprudential surveillance, Central Bank of Sri Lanka is in the process of strengthening its legal framework to achieve long term stability in the financial system. Proposed legal reforms will mandate to set a clear institutional framework for analysing system-wide risks in financial sector and formulate and implement macroprudential policy measures to address such systemic risks. Such framework would allocate roles and responsibilities for respective regulators in the financial system, mechanism for information exchange and coordination, degree of accountability, rules and guidelines for macroprudential policy formulation process.

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Leaning Against the Wind and Monetary and Macroprudential Policy Implications on Financial Stability

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1 Introduction

Leaning against the wind (LAW) is a widely discussed topic among monetary economists and policymakers as well as academics, particularly in the aftermath of the Global Financial Crisis (GFC) of 2007-2009. In monetary economics, LAW is essentially a monetary policy stance which advocates maintaining a somewhat higher policy interest rate than what is estimated to be sufficient to achieve the inflation target and stabilising the real economy, introduced with the aim of accomplishing financial system stability.[1]

Figure 1: Leaning against the wind – an artistic view

Source: https://storyweaver.org.in/illustrations/18246

1. Leaning against the wind in the foreign exchange market, on the other hand, is a strategy in which short-term fluctuations in exchange rates are reduced without adhering to any particular exchange rate over the long run Tosini P. A. (1977).

The recent global financial crisis and the associated economic recession forced monetary authorities to consider the dynamics of financial markets and asset price developments more seriously in designing monetary policy. In the buildup to the crisis, it has led economists to ask the question whether the Federal Reserve and other central banks have responded to the rapid increase in housing prices and in debt by raising interest rates more than would normally be, as pointed out by Walsh (2017). Accordingly, policymakers acknowledge the importance and responsibility of addressing crisis risk proactively. Policy discussions, therefore increasingly aim at crafting the optimal policy mix while minimising the risk of financial imbalances. As such, the ex post re-examination of policy decisions during the crisis period has led to a debate over whether, in the post-crisis era, policy should actively respond to credit growth by "leaning against the wind".

However, LAW has certain inherent disadvantages as well. In particular, it involves costs in terms of weaker economy with lower growth, higher unemployment and lower inflation emanating from high interest rate. Further, Svensson (2017) shows that there is a less obvious second cost, probably of higher magnitude overlooked by previous literature, which is a weaker economy, in case a crisis occurs. The above arguments, however, are not acknowledged by everyone. As such, among others, Bank for International Settlements (BIS) highlights that the systematic risk and the persistence

of the financial cycle, which could influence the long term effect on the real economy, were not properly accounted in Svensson's approach. Considering these elements, it is argued that it leads to a case for the use of more active LAW for macroprudential stability. For instance, BIS (2014, 2016) and Olsen (2015) justify LAW, based on possible benefits in the form of a lower probability or smaller magnitude of future financial crises. On a standard new-Keynesian model based framework, Gerdrup et al. (2017) show that the benefits of LAW in terms of a lower frequency of severe financial recessions exceed costs in terms of higher volatility in normal times when the severity of a crisis is endogenous.

Despite several studies and discussions, there is no common agreement as to whether monetary authorities should adopt LAW in conducting monetary policy while serving macroprudential concerns.

2. LAW and Macroprudential Policy Implications

Macroprudential policy can be identified as the use of primarily prudential tools to limit systemic risk, the risk of disruptions to the provision of financial services that is caused by an impairment of all or parts of the financial system, and it can cause serious negative consequences for the real economy.[2] It consists of a series of instruments, including measures to address sector-specific risks (such as loan-to-value (LTV) and debt-to-income (DTI) ratios), dynamic provisioning, counter-cyclical capital requirements, reserve requirements, liquidity tools, and measures to affect foreign currency-based or residency-based financial transactions. Macroprudential policies should help ensure that all stakeholders take a cautious approach to risks that could become systemic (i.e. risks related to the whole financial sphere). Thus, macroprudential policies can be put in place to prevent risks from affecting the financial system in a wide manner, or becoming systemic (ECB, 2017). As such, macroprudential policies in essence are introduced to promote financial stability and financial system soundness which will in turn help to withstand shocks and avoid the worst effects of financial crises.

2. The definition of the International Monetary Fund (for details see IMF, 2013)

Policymakers all over the world have increasingly recognized the importance of mitigating the risk of future crises. Accordingly, new prudential and regulatory measures have been developed to promote financial stability. However, there is no common agreement regarding whether financial stability concerns should play a role in determining the setting of monetary policy. Some argue that financial stability could be better delivered with an appropriate set of macroprudential policies, by making prudential and regulatory policies respond to the state of the economy, thus providing monetary policy more room to focus on its core objective of price stability. However, among others, Dudley (2015) maintains that it is often difficult to implement such a policy practically though the above segregation seems to be attractive. Many countries including the United States have a limited set of macroprudential tools, and suffer from a dispersion of regulatory authorities. In addition, the macroprudential tools have limitations such as slow adjustment, a narrow scope and substantially uncertain outcomes compared to monetary policy tools.

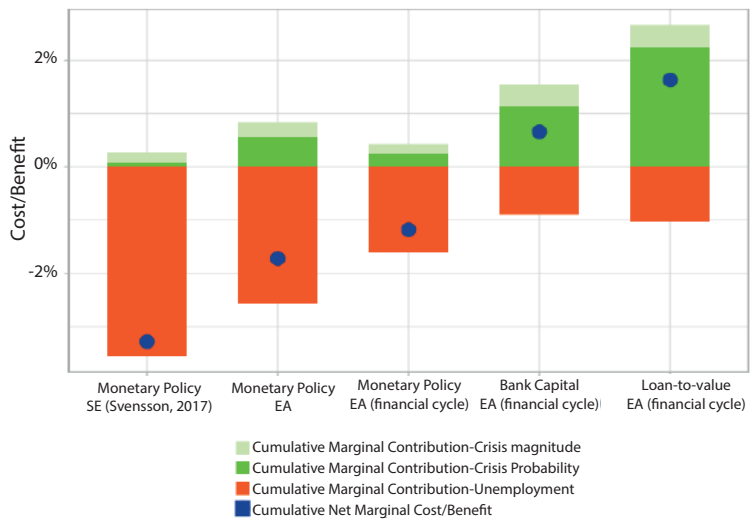
Recent studies conducted among central banks show that the use of macroprudential policy instruments benefit emerging market countries, particularly in South East Asia and Latin America. Galati and Moessner (2014), show that these countries applied macroprudential policies since the aftermath of the 1997 Asian financial crisis and the 1998 Russian financial crisis, in an effort to strengthen the resilience of their domestic financial systems. The instruments widely used by these countries include measures to curtail credit to specific sectors that demonstrated excessive credit growth (for instance, caps on LTV ratios or debt/income ratios aimed at restricting mortgage lending), and limits on net open currency positions and measures to avert the possible domestic macroeonomic imbalances arising from cross-border capital flows. The former could be found mostly in Asia, while the latter was used mostly in Latin American countries (Montoro and Moreno, 2011).

Contributing to this debate, in a recent paper,

Kockerols and Kok (2019)[3] evaluate the costs and benefits of LAW in the Euro area and they extend their model, taking into account the financial cycle. Further, they evaluate macroprudential and monetary policy using the extended framework with regard to the cost and benefits of addressing financial stability risks. The increase in unemployment following a monetary policy tightening is used to gauge the cost of LAW, while benefits are measured in terms of a lower probability and severity of financial crises, and the empirical results are based on a monetary policy shock in a DSGE model recalibrated to the Swedish economy.

Figure 2 sums up the key findings of Kockerols and Kok (2019). As such, the recalibration results imply the same conclusion for the Euro area (EA) as Svensson does for Sweden (SE) indicating that the LAW is associated with substantial net marginal costs (the original Svensson result is shown in the first bar from the left while the recalibrated result is shown in the second bar). Even if the financial cycle is taken into account, the effect of LAW continues to imply substantial marginal costs, as shown in the third bar. As indicated in the fourth and fifth bars of Figure 2, the paper considers two macroprudential policy measures: (1) a permanent 1 percentage point (pp) increase in bank capital requirements and (2) a permanent 1 pp tightening in loan-to-value (LTV) requirements. With these modifications to the model, it is observed (fourth and fifth bar) that these measures are much better in tapering the probability and severity of financial crises, implying higher marginal benefits.

Figure 2: The cost and benefits of monetary and macroprudential policies



Source: Kockerols and Kok (2019)

Further, the negative impact on unemployment is lower (i.e. lower marginal costs), than in the case where monetary policy tries to deal with financial stability risks. As such, the marginal benefits of macroprudential policy prevail over the marginal costs. Accordingly, these findings have important implications since they suggest a meaningful role for macroprudential policies in complementing monetary policy and helping to ease the burden on monetary policy to lean against financial stability risks.

Following GFC, many countries have increasingly adopted macroprudential measures to safeguard financial stability, in particular to deal with the credit and asset price cycles driven by global capital flows. Accordingly, Zhang and Zoli (2016) provide new evidence on the use of macroprudential policy and its

3. Based on the theoretical framework of Svensson (2017), this paper uses a dynamic stochastic general equilibrium (DSGE) model underlying the cost benefit framework with a built-in inflation-targeting central bank.

effectiveness in dampening pro-cyclical behavior in financial markets as well as associated systemic risks in the context of Asia. The authors, thus argue that certain macroprudential instruments can be useful tools in mitigating risks in the booming phase of the financial and economic cycle. Further, using case studies, Se (2013) shows that some Asian emerging economies are successful in applying housing-related macroprudential instruments, particularly LTV instruments to decelerate house prices. Using a panel regression with data from 13 countries, Wong et al. (2011) argue that maximum LTV ratios are effective in curtailing systemic risk emanating from the business cycles of property markets, where the effect on household leverage is more apparent compared to the effect on property market activity. In a related study which uses data on individual banks' loan books, risk exposures, and interbank linkages including OTC derivatives, Gauthier et al. (2012) state that macroprudential capital allocation devices lower default risks of individual banks as well as the possibility of occurring systemic crisis significantly. This finding indicates that macroprudential capital buffers can strengthen financial stability to a greater extent.

3. Concerns of LAW and the Timing of Monetary Policy

As discussed above, LAW promotes central banks to maintain interest rates higher than those required for price stability. If this continues persistently, inflation expectations could decline, and as such, it can even lead to a loss of credibility in the central bank, particularly with respect to the inflation-targeting regime. Further, given the lower frequency of the crisis events and difficulty in predicting the severity of the crisis, justifying tight monetary policy throughout the period would be challenging.[4] On the other hand, a crisis can be triggered at any time, and the cost of a crisis under LAW could be larger if the economy had been weaker from the beginning. For instance, if the unemployment rate is higher when a crisis occurs, the unemployment rate during the crisis will be much higher, and thus it could exacerbate the cost of a crisis.

Another view against LAW highlights the fact that the inflation stabilizing interest rate under inflation targeting framework is sufficient to stabilise the macroeconomy. It elaborates that even if there is a tradeoff, the ability of monetary policy to influence the likelihood of financial crisis is limited, and further a sizable effect on financial system stability requires a significant interest rate hike at the cost of economic growth and inflation.[5] Further, tight monetary policy could affect debt dynamics since raising interest rates to reduce the credit-to-GDP level can have contradictory effects due to the possibility of falling GDP growth faster and stronger than credit (Svensson, 2017). However, the recent GFC displayed that monetary or economic policy has limitations when it comes to cleaning up after a crisis that has occurred and accordingly, LAW would still be useful, if leaning against excessive financial stability risks could lower the probability and severity of crises in the future.

Many claim that persistently accommodative monetary policies with low interest rate regimes encourage risk-taking incentives among the financial intermediaries which were the key to the recent financial crisis. As such, it triggered the need for a monetary policy that accounts for both bank risk taking and financial stability. Agur and Demertzis (2013) specify the main mechanisms through which the risk-taking channel of monetary policy is thought to work:

- Valuation effects such as collateral which gain value from expansive policy, encouraging riskier profiles
- A search-for-yield that is driven by institutional factors leading some fund managers to seek higher risk to maintain yields after rates on safer assets decline and,
- Cheaper short-term debt, which raises levering incentives, and through interaction with banks' limited liability consequently also asset risk incentives

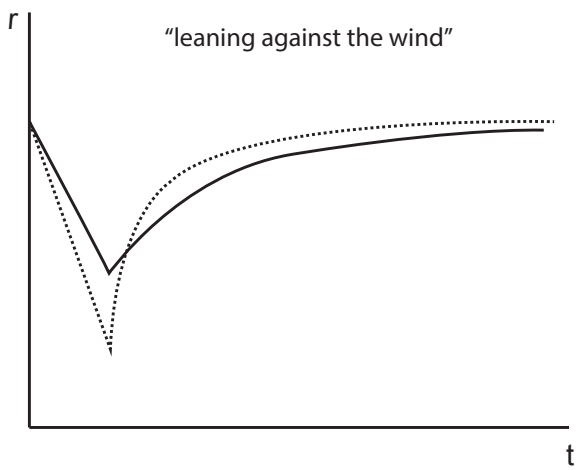
Accordingly, to address the question of how monetary policy would change if it is to aim at financial stability, Agur and Demertzis (2013) develop

4. Financial crises are rare events and historically they have occurred every fifteen to twenty years on average (Taylor, 2015).

5. For details, see Bennanke and Gertler, (1999).

a general form framework. They show that there are two main effects on optimal policy rates following a shock: the first is upon impact, and the second refers to the dynamic path of interest rates. They further explain that financial stability objectives are shown to make monetary policy more aggressive such that in reaction to negative shocks, cuts are deeper, but shorter-lived, rather than the absence of a financial objective. By limiting rate cuts for a shorter period, monetary policy starts to tighten as soon as bank risk appetite tends to rise. As such, within this shorter time span, rate cuts must be deeper than usual to achieve standard objectives as well. This result is summarised in Figure 3 given below. The figure also shows that the LAW path advocates for a higher interest rate in the periods where there are no any negative shocks, thus facilitating financial system stability.

Figure 3: The timing of monetary policy



Source: Agur and Demertzis (2013)

However, using micro-level data from the US banking sector, Delis et al. (2011) empirically examine the relationship between policy rates and risk taking and they find that low interest rate regimes strengthen banks' incentives to take on risky assets substantially. Further, they notice that this is particularly true for prolonged rate cuts. Similarly, Altunbas et al. (2010), using quarterly balance sheet information on listed banks in the European Union and the United States, find that keeping rates low for a significantly long period of time raises risk profiles of banks considerably. Supporting the above evidence, based on a Euro area bank lending survey, Maddaloni and Peydro (2011) show that lower overnight rates soften lending standards. Further, they argue that keeping rates "low for too long" tends to reduce credit standards even further.

4. Concluding Remarks

The GFC has reaffirmed the importance of taking financial factors into consideration in macroeconomic stabilisation. The conventional pre-crisis paradigm that central banks would not pay attention to financial variables over and above their effects on inflation seems to have evolved gradually, given various frictions in financial intermediation. Accordingly, conducting monetary policy while maintaining financial stability has become a challenging task.

In the aftermath of the GFC, many countries have increasingly adopted macroprudential policy as a device to safeguard financial stability, especially to deal with the credit and asset price cycles. It is revealed that LAW has costs with reference to a weaker economy and higher unemployment, although it has benefits in respect of a lower probability and smaller magnitude of a crisis. Further, the implementation of LAW could complicate the conduct of monetary policy[6] and undermine the independence of a central bank. It could also make it difficult to hold the central bank accountable for its actions. Recent findings indicate that macroprudential policy could be used to achieve financial stability without compromising economic growth.[7] In addition, macroprudential policy helps neutralise possible financial vulnerabilities that could result from monetary easing.

Accordingly, strengthening macroprudential policies to promote financial stability and financial system soundness while allowing more room for independent conduct of monetary policy, except for occasional volatile circumstances where LAW can play an effective role in curtailing financial imbalances, seems to be a more sensible approach for the central bankers.

6. Including a financial cycle variable in the monetary policy rule as a means of implementing LAW, for instance, would complicate the conduct of monetary policy since it increases the number of objectives to trade-off with only one policy instrument.

7. For details, see Krug S. (2018).

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Central Bank Communications in Changing World: Experience of Bank of England

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1. Introduction

The central bank communications have evolved over the decades from "say little as possible to greater transparency" which can be traced through revolution in thinking of central bank communications. Long time back, Karl Brunner (1981) stated that the insights of central banking are impossible to communicate in explicit and intelligible words and sentences. After two decades, Michael Woodford (2001) explained that the effective monetary policy implementation requires to set the inflation expectations on target via building-up public trust on central banking with greater transparency. These two statements revealed the paradigm shift in the policy makers thoughts on central bank communications.

Most economists and central bankers believe that a country's long-run rate of inflation is determined by monetary policy (Ragan, 2007). In recent decades, many countries changed their monetary policy strategies into inflation targeting (Samarina, 2014). The main feature of inflation targeting that distinguishes it from other monetary policy strategies is the central bank's commitment to a unique numerical target for inflation. By setting an inflation target, the central banks gradually gain credibility and with time, are able to anchor inflation expectations by convincing the public of its commitment to a low and stable inflation rate.

Accordingly, central bank communications are getting prominence in formulation of monetary policy framework. The effective communications lead to greater awareness about central bank and its forward-looking policy announcement. While the economic agents adjust their behavior better with open and clear communications, the central bank itself can improve its evaluation process on effectiveness of its communications strategy and correct itself for future policy actions. In line with the growing demand for highly transparent central bank policy decisions globally, the Bank of England regularly improves its monetary policy communications framework to become a leader among its peer central banks. The new legislation introduced in 2012 noted as Financial Services Act 2012 in response to financial crisis 2008 has given high priority to bank's transparency and communications

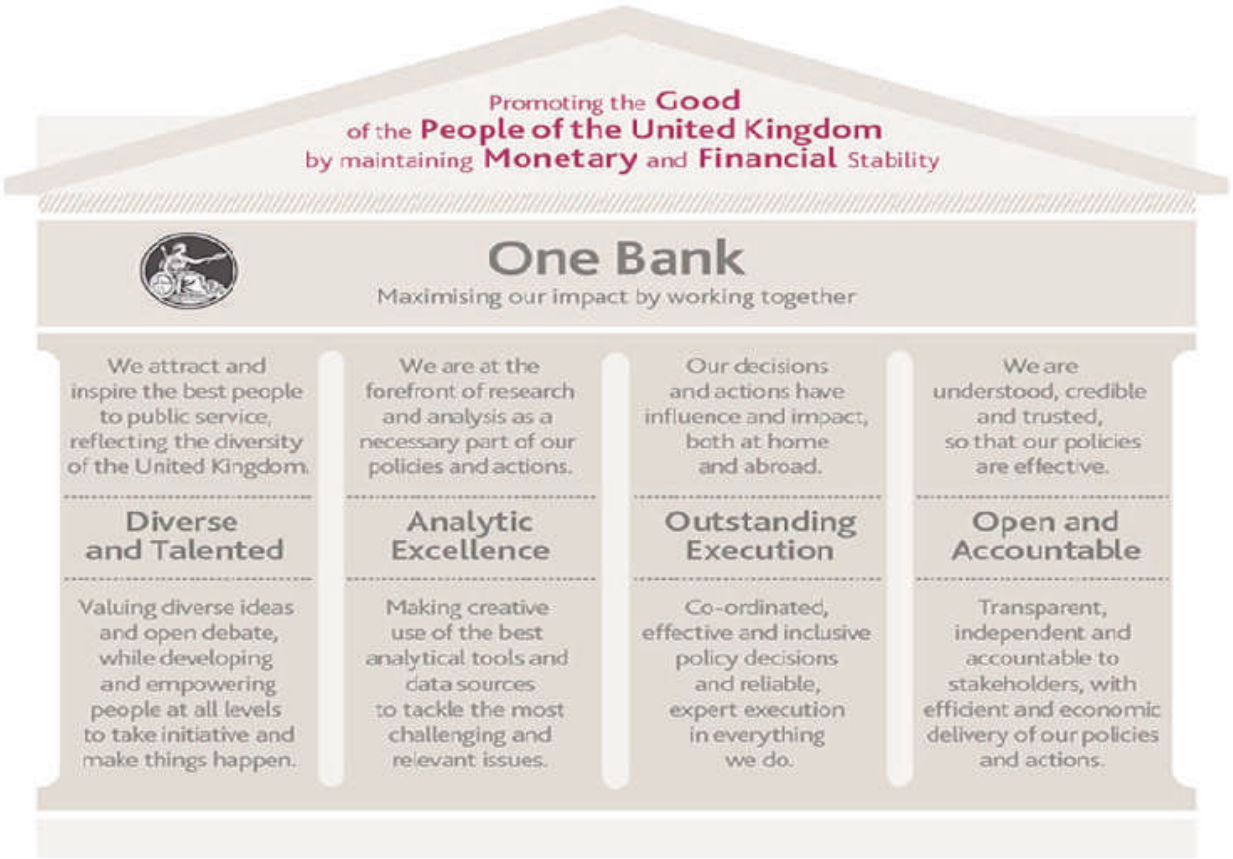
strategy. Therefore, a comprehensive review of communications strategy of Bank of England and its way of implementation are vital for all stakeholders for better policy outcomes.

2. The Bank of England's Strategic Plan

The strategic objective of the Bank of England is to "promote the good of the people of the United Kingdom by maintaining monetary and financial stability". This strategic objective of the bank has four pillars namely (i) diverse and talented, (ii) analytic excellence (iii) outstanding execution and (iv) open and accountable. As reflected in the strategic plan's open and accountable pillar, the communications plays a key role in supporting the bank's mission. While the bank's communications is grounded in its remit, it has framed three strategic goals that are, as in banks's words (i) enhanced central bank transparency, (ii) accountability and (iii) engaged and approachable.

The "enhanced central bank transparency" initiative requires making central bank transparency more effective, so that the bank is trusted to be credible and to make difficult decisions, as predictably as possible. The "accountable" initiative encourages the bank to be perceived as accountable to stakeholders. The "engaged and approachable" focuses on building and maintaining support for the importance of its mission, as well as its role in achieving it and to maximize its effectiveness and legitimacy. The strategic plan of the Bank of England as displayed in every corner of the bank's premises is as follows. Figure 1.

Figure 1: Display of the Strategic Plan - Bank of England



Source: Bank of England. (2016).

3. The Bank of England's communications strategies

The Bank of England's communications strategies are:

- To promote public trust and understanding to achieve the best policy outcomes.
- To make the bank a world leader among its peers in effective transparency.
- To reinforce the bank's independence in all we do, while being fully accountable to parliament.
- To fully engage bank staff and build support amongst them for strategic plan and policy initiatives.

3.1 Build Trust and Public Understanding

The Bank of England has taken several initiatives to enhance public understanding about bank. The actions taken by the bank include profiling communities, target campaigns, heavy usage of digital and social media, engaging contents and strategic alliance, Figure 2.

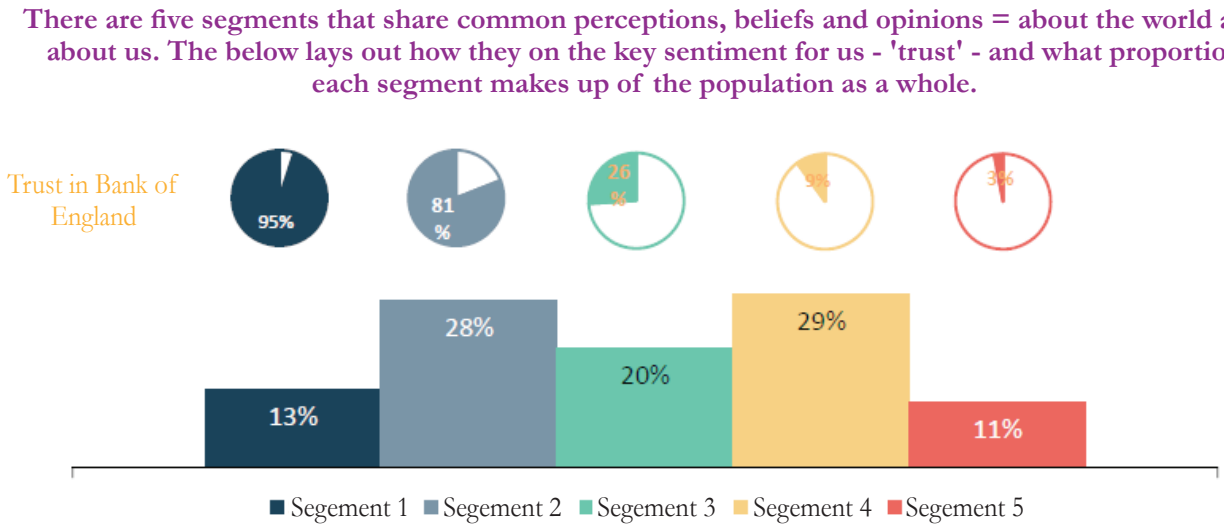
Figure 2: The Bank of England's Effort to Build Trust and Understanding

Source: Jenny Scott. (2016).

Profiling communities

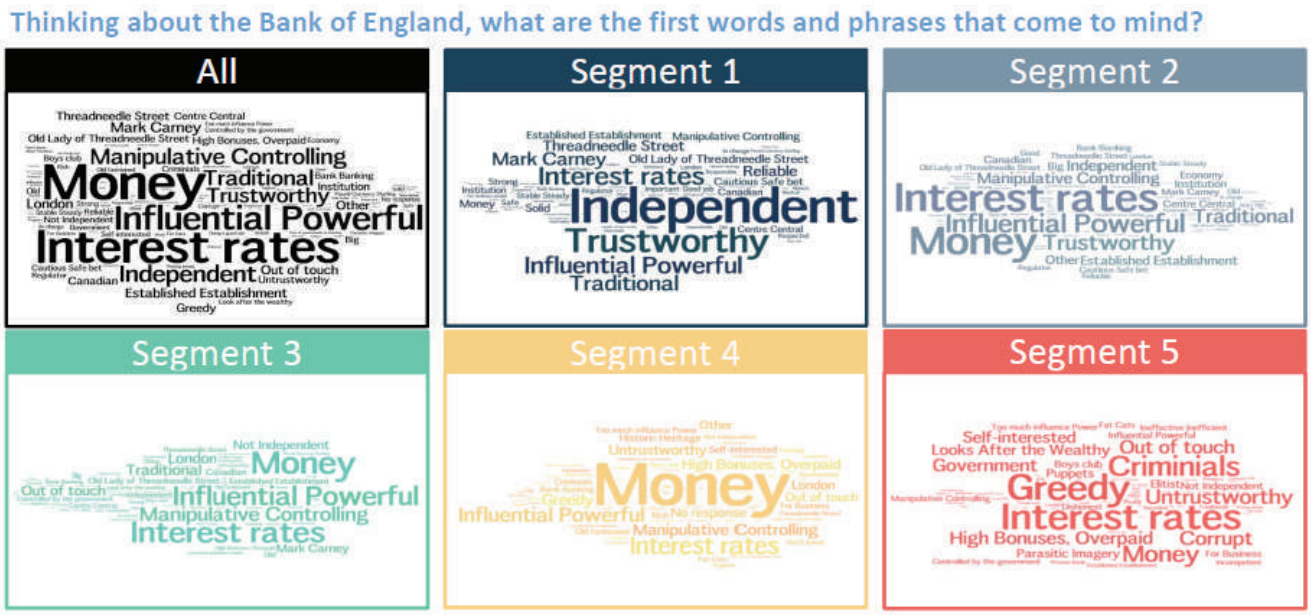
The bank conducted polling for profiling communities and it has identified groups of public where the bank can make the most progress in improving the trust and understanding in the bank. It has identified the channels to reach them, the language they prefer and the issues that matter to them. The followings are the key results of the polling, Figure 3, Figure 4 and Figure 5.

Figure 3: The outcome of the polling for profiling communities



Source: Jenny Scott. (2016).

Figure 4: The segments divisions of the polling for reading minds

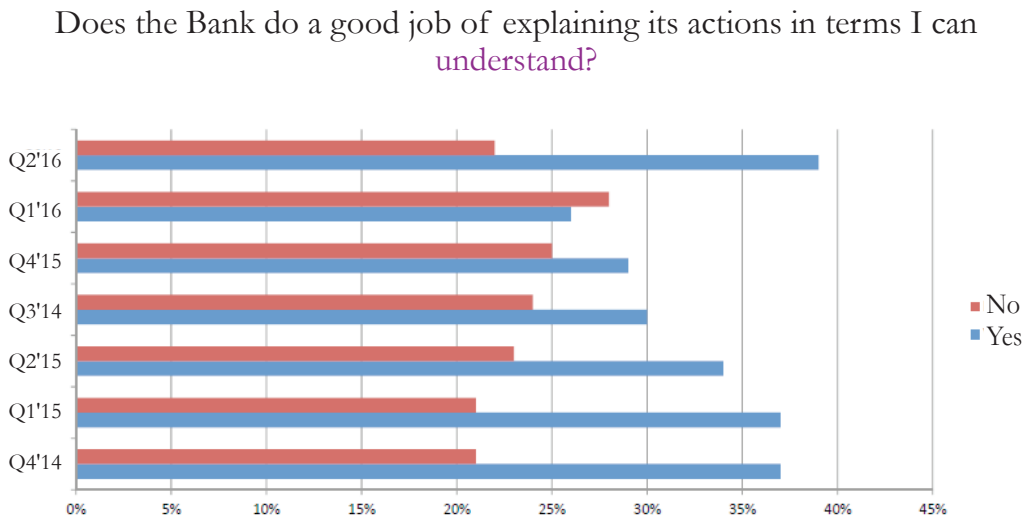


Source: Jenny Scott. (2016).

Targeted campaigns

The bank is working together across communications and local areas to focus on a small number of key campaigns each year. The bank holds several discussions to build understanding around financial stability that are called mini town halls or regional visits. It also highlights the role of financial markets through short seminars which are called Open Forum. In addition, the bank releases simple articles such as how interest rates affect people's lives (e.g. public understanding content on the August 2016 Monetary Policy Committee actions).

Figure 5: The outcome of the polling on communications effectiveness



Source: Jenny Scott. (2016).

Digital and Social media

The bank launched new separate public understanding website called Knowledge Bank in addition to the bank's main website in 2016. In addition, redesign of the bank's website with the contents of "right information, right for me, right now" has been done in 2017. Further, all publications are digitized and become bolder in the use of social media.

Engaging content

The bank never hesitates to bring in skills from outside on financial journalism, graphic design, animation, social media etc. to produce its own simple write ups, visually engaging contents and not just push a message out the door. The bank also produces interactive guides such as Knowledge Bank, a website with simple practical explanations. In addition, it continuously builds a suite of educational resources for high school students and improves offering in the museum.

Strategic alliances

The bank is building strategic alliances with other public education organizations such as BBC learning, Money Advice Service and tutor2u to enhance its reach and learn best practices. It also searches opportunities to partner with media outlets more generally such as Guardian Big Read and BBC online etc.

3.2 Ensure Effective Transparency

The Bank of England is striving to become a world leader among its peers in effective transparency. It assumes that many of the public understanding initiatives will also make the bank more transparent. It also reviews its proactive data releases and processes to respond requests made under Freedom of Information which are fit for purpose. The bank also started to roll out the email journaling project which supports retaining information in electronic contents which sent through emails and other means.

In addition, bank established the Stakeholder Relations Group, delivering a coherent approach to communicating with external experts as part of the bank's strategic plan in 2014. The aim of this is to make central bank transparency more

effective, so that it is trusted to be credible. This group is targeting technical experts and building relationships for exploring innovative ways to engage with those stakeholders.

The group is expected to develop tailored strategies to maximize the impact and understanding of the bank's work and provide external challenge to bank thinking. The major events conducted by the group are called Open Forum, Minimum Requirement for Own Funds and Eligible Liabilities (MREL) Conference and Inflation Report Briefing.

3.3 Reinforce the bank's independence in all actions, while being fully accountable to Parliament

The bank makes regular appearances at committees including the ECON committee of the European Parliament and the Lords Economic Affairs Committee. The Parliamentary Affairs team of the bank will be more strategic and proactive and disseminate explanatory material to inform parliamentary debate and research. This team also facilitates effective meetings between parliamentarians and senior colleagues of the bank and maintains relationships with those who work at Parliament.

3.4 Greater engagement of staff

The Bank of England's internal communications strategy aims to build greater engagement to help everyone understand the part they play in supporting the bank's mission. The priorities are given for the following.

- Effective local communications.
- Improve senior leadership communications.
- Increase leadership visibility and engagement.
- Focus on policy and research.

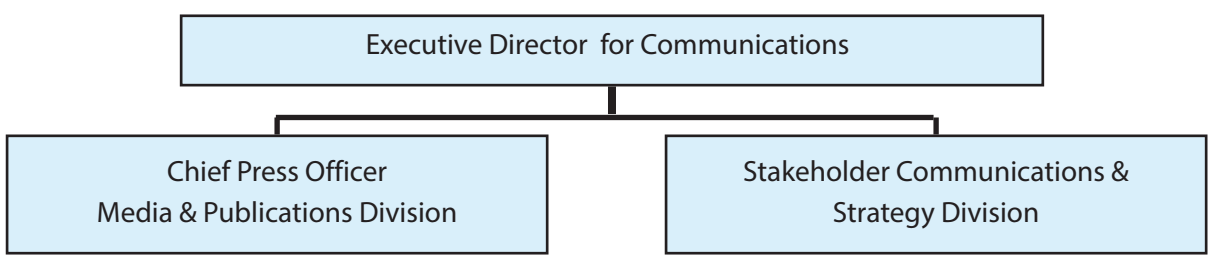
It is also observed that the internal communications also play an important role in its strategic plan implementation and development.

4. Organization structure of the Communications Department of Bank of England

The Bank of England's communications strategy is to be open and accountable. The communications of entire bank is managed by a separate department with the focus on higher level of transparency. The department functions underpinning two principles in all their works. Those are a drive to professionalize and to improve continually the Directorate's reputation.

This department is headed by an Executive Director with two divisional heads responsible for media & publications and stakeholder communications & strategy. The department hierarchy is as follows, Figure 6.

Figure 6: The Bank of England Communications Department's hierarchy



Source: Jenny Scott. (2016).

Media and Publications Division

The Media and Publications division is responsible for Press Office, Digital Media, Creative & Social Media and Publications. These responsibilities are entrusted with the effective communications of monetary policy, financial stability information, prudential regulation, corporate communications and banknotes. This division further acts as Governor's press.

Stakeholder Communications & Strategy Division

This division focuses on two distinguished group of stakeholders namely external and internal and it seriously works on improving public understanding. The division provides maximum information for the access of external stakeholder and handles parliamentary affairs. It also maintains strong stakeholder's relations via various ways and means. Further, the division maintains access to information for internal stakeholders and provides recommendations to the communications strategy of the bank.

In addition, this division ensures that the contents carried by the bank's communications are understandable by general public. Several educational programs to promote awareness on the Bank of England's activities are conducted and public enquiries also attended effectively.

5. Conclusion

The increasing importance of central bank communications makes it worthwhile to explore it in detail. The main role of central bank communications is to building-up public trust which enhance market efficiency and reduce market volatility (Blinder et al., 2008). Therefore, operations and policy implementations have been performed with greater transparency than in the past. Accordingly, central banks publish information to the mass on its activities such as rationales behind policy decisions, economic outlook, and monetary policy stands etc. However, the emerging and developing economies are well behind in making effective communications strategies compared to developed economies. Therefore, it is necessary to learn best practices in central bank communications around the globe specially in developed economies, e.g. Bank of England which could help to redefine the communications strategy to suit local economic environment.

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Credit Risk Measurement and Management

What it is, challenges and role of the regulator

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'Credit risk analysis is an art as well as a science. It is a science because the analysis is based upon established principles emanating from body of knowledge and sound logic. Individual skill and the way the principles are applied constitute the art element' (Joseph, 2013: Advanced Credit Risk Analysis and Management)

1. Introduction

Credit risk is the probability of loss that will arise by counterparty to a contract failing to honor its obligations in a timely manner. Substantial part of the risk faced by financial institutions emanate from credit risk. Therefore, the effective management of the loan portfolio and the credit function is fundamental to a financial institution's safety and soundness.

This article aims to provide an overview to the credit risk measurement and management in financial entities, challenges and the role of the regulators of such entities.

2. Credit Risk Measurement

The objective of credit risk measurement is to determine whether a new credit is to be granted or the existing credit facility given to a customer is to be withdrawn or whether to diversify the credit portfolio by varying categories. The first defense against credit risk should be the credit-granting process; that is, proper approval process, standard of collaterals, underwriting standards and knowledgeable lending staff. Hence, Knowing the Customer (KYC) is the foundation of all succeeding steps in the credit risk management process. In such, following aspects shall be considered;

5Cs of credit

a. **Character**: This refers to the borrower's credit history or the track record for repaying debts on time.

b. **Capacity**: The ability of the borrower to repay the loan should be measured using the financial position.

c. **Capital**: The lender should ensure the borrower holds a sufficient share in the business. Higher the capital contribution by the borrower, minimum the risk of non-recoverability.

d. **Condition**: This refers to the legally enforceable terms and covenants included in the loan agreements.

e. **Collaterals**: This means the assets provided by the borrower to secure the loan. High quality creditworthy customers with higher rating, need not provide any collateral in most instances.

There are many credit risk measurement and valuation techniques such as Probability of Default, Expected Loss, Credit Value at Risk and rating methodologies.

Probability of Default (PD) estimates the likelihood of a default over a given period of time. Generally, it is an empirically based estimation of the long-run average of one year default rate, considering various economic conditions. If the borrower assumes to have a high probability of default, the lender will probably charge a higher rate to cover the risk.

When there is a likelihood of a default, the lender should recognize the loss and create provisions. For this purpose, the lender should estimate the Expected Loss (EL). EL is computed using the Exposure At Default (EAD) i.e. the value of the loan and the probability that the default may occur i.e.PD. The lender should also consider the Loss Given Default (LGD) into the calculation as there can be a part of the default amount that could be recovered, through the process of law. Therefore, EL is calculated as follows;

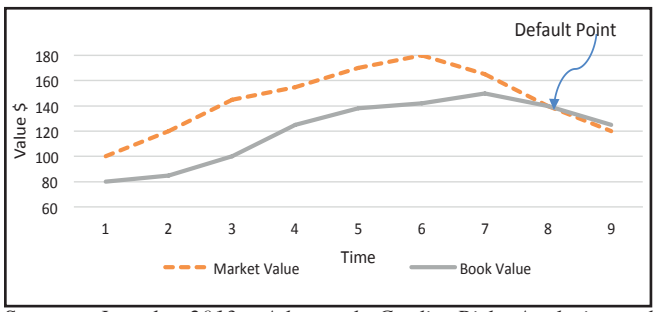
EL = EAD x PD x LGD

Credit Value-at-Risk (CVAR) is the worst possible loss that can arise due to a default by a borrower over a given period of time, expressed with a confident interval. For an example, a lender estimate CVAR over 30 days to be Rs. 10 million with a confident interval of 95 per cent. This indicates, there is a 5 per cent chance of loss more than Rs. 10 million, in the next 30 days.

Credit rating can be categorized into two types. Namely, external rating and internal rating. External rating refers to the rating conducted by agencies such as Moody's, Fitch and S & P. Internal rating systems differ from organization to organization, however the fundamental approaches and the ultimate objective remains same. The institution's internal risk rating definitions should be consistent with regulatory definitions. The risk rating is derived through model based analysis or judgmental approach. Borrowers fundamentals (5Cs), external and industrial factors, growth possibilities and technological factors, need to be mapped to suitable internal credit risk classification and probability of Default (PD).

There are many quantitative credit risk models and the Merton Model is one of the structured model. The model states that, there is a higher possibility of default when the market value of the asset falls below the book value of the liability. It is better when the distance is greater between market value of the asset and the default point during the credit period, (Figure 1).

Figure 1: Fundamental of the Merton Model – Market Value of Assets and Value of Liability over the credit period.



Source: *Joseph, 2013: Advanced Credit Risk Analysis and Management, Figure 10.3*

Credit scoring systems are univariate or multivariate. In univariate scoring system, key accounting ratios of the borrower are compared with the industry standards. In multivariate approach, key accounting variables are combined and weighted. This generates a credit risk score or a probability, which will then be compared with a benchmark.

3. Credit Risk Management

Managing the credit risk is a continuous process, by way of proper loan structuring and adequate monitoring. A profitable contract may turn into an unprofitable one within a very short time period, and the value of collaterals may deteriorate over time. Therefore, periodic reviews, risk ratings and audits should be carried out regularly to ensure that the credit risk of the client is managed to an acceptable level.

Credit risk management has evolved over the last three decades in response to many global changes which made credit risk management more important than earlier. In response to such changes, practitioners and academics have responded by developing sophisticated risk rating and credit scoring systems, developing methods of

measuring credit concentration risk i.e. portfolio risk, models to price credit risk and measures to assess credit risk of off-balance sheet items. Moreover, the importance of credit policy, credit information and the knowledge of personnel who handle credit have also been recognized.

a. Role of Credit Policy and Credit Exposure Measurement Standards

The loan policy should provide adequate coverage to control the credit risk. The approval process, portfolio and counterparty limits, loan quality monitoring and evaluation process should be clearly described and defined in the policy. Clear lines of authority and responsibility for monitoring the adherence to policies, procedures, and limits should be established by the board and senior management. At the same time, policy exceptions should be identified and the potential impact of such on the quantity of risk should be recognized.

It is important for the lender to have limits and standards demarcated and documented, based on the risk profiles of counterparties. Counterparty credit limits should be defined and each counterparty segment should detail out the types of transactions the lender can enter into, credit limits, collateral requirements, tenors of loans, rates applicable and special approval requirements. These limits should be reviewed periodically.

b. Internal Loan Review & Risk Management Function to Mitigate Risk

A financial institution should have an independent loan review and risk management function, which perform tasks including, credit risk assessment on loans, loan structuring, management of problem loans and detection of early warning signals; and suggest remedial actions.

Risk management department or the middle office should operate independent of the trading and operational departments of the organization. Credit limits should be monitored by the risk management officers and reported promptly to an independent authority. Instances where an exceeded limits should be dealt with, as per the documented policies and standards.

It is the responsibility of the senior management to keep the loan review and risk management function fully equipped with necessary resources and budgets.

c. Importance of 'Personnel' in Prudent Credit Decision and the Use of 'Management Information System (MIS)'

Financial institutions should have skilled staff in credit analysis and granting process as they are the first to 'Know the Customer' who the institution would acquiring in to their lending portfolio. That includes, loan officers, credit analysts, loan committee members etc. Staffing levels in the lending and loan control areas should be matched to the size, complexity and level of risk of the loan portfolio. Continuous training of staff and performance evaluation based on the quality of the portfolio the officers manage, are required.

A key area of an effective credit risk management is a strong credit management information system. That allows loan related data to generate analytical reports for senior management and the loan officers to use, in arriving at credit risk related decisions. An adequate MIS should provide accurate and timely information with sufficient details in clear formats. Basically, a risk manager expects information such as Value at Risk calculation, exposure levels of counterparties and to perform scenario analysis and stress testing of aggregate portfolio, product wise and groups of counterparties, from a MIS. The databases need to be updated on real time to avoid decisions being taken with outdated information. Although the risk management models and system produces valuable information, a blind belief in any such system is not advisable. Healthy skepticism on existing procedures is required to keep pace with the dramatically changing risk environment over the times.

Elimination of credit risk is impossible as the credit risk emerge from several factors including macro-economic factors. The duty of the entity is to manage

the credit risk in such a manner that the risk does not go out of control. An effective and strong credit culture is an essential element in credit risk management and ultimate responsibility of such lies with the top management. A strong credit culture is essential for prudent credit decision making. Because, it enables the decision maker to take effective and intelligent risk decisions, which are guided by set of values, written policies and procedures. Therefore, the entity must have a disciplined and well-articulated credit culture, which is supported by its Board of Directors to protect themselves from risk emanating from dynamic business environments.

4. Challenges

In recent past, bank and financial institutions have collapsed due to many factors, among which the poor credit risk management takes the lead. Failure of top management in understanding the challenges of credit risk and failing to manage such risks, can be identified as a common characteristic in relation to such failures. The role of the regulator and the sufficiency of the scope of the regulatory examinations are also questioned, when the failures occur in regulated entities.

a. Reliability and quality of data has a vast impact on the credit risk analysis. Intentional misrepresentation may not occur in financial statements, but, the inadequacy of further notes and disclosures may restrict the predictability of information. The financial institutions mostly rely on internal management data and audited data of other entities in obtaining information for analysis, however, the collapse of world leading institutions such as Enron Corporation, Lehman Brothers, companies which are audited by top audit firms such as Arthur Anderson and Ernest & Young, prompted skepticisms even on audited accounts. The questions to be raised are whether the auditors were negligent, or the scope of the external audit is too narrow or the scope of the audit does not fit the regulatory requirements.

   Further, the use of risk models to measure risk was questioned with the Global Credit Crisis in 2008 and the reliability of such models lessened due to the number of assumptions they use and to the complexity of such tools.

b. The major objective of conducting a commercial establishment, is to generate required returns for its shareholders. Often, the incentives schemes for senior management are also linked to profits of the entity. In general, low risk decisions or investments have low potential for high returns. Sometimes, focusing on profitability of the business blinds the decisions on risk taking, which may result in greater losses. Therefore, the conflicting objective between the return and the risk is a major challenge in credit risk measurement.

c. An attempt to forecast the future risk is more likely an attempt to predict the unpredictable. Forecasts or stochastic models are based on the historic information and it assumes that the past will provide a rough guidance to the future trends. Such forecasts become worthless if the entity is operating in a continuously changing environment. Further, accurate forecasts require skill and the experience of the officers involved in forecasting and budgeting.

5. Role of the Regulators

a. Regardless of the nature of the audit, i.e. whether it is a Statutory Audit, Regulatory Examination or an Internal Audit, audit quality should be a key consideration. High quality audit works reduces the risk of auditors issuing an inappropriate opinion. Periodic reviews by the regulatory authorities on the work performed by audit firms and issuing stringent directions are necessary to maintain the quality of audits and to bind the audit firms by ethical and regulatory requirements, in performing audits. Assessing the knowledge of the auditor (regardless of the size of the audit firm) on the high-risk areas of a specific industry is the responsibility of the regulator of the industry concerned. For example, regulator of a primary dealer entity may improve the knowledge of the auditors (especially

Internal Auditors) of the importance of checks on sufficiency of collateral securities allocated for investments under their custody. Such measures ensure the auditors being highly vigilant on risk areas and auditors may make a change to the traditional sample basis approach which shall in turn, improve the reliability of audited information and thereby, enhance the decisions taken based on such information. Therefore, scope of the external audit must be brought in line with the regularity scope or regular independent internal audits must be performed to cover any gaps.

b. Encouraging the establishment of the compliance and the middle office risk monitoring functions are mandatory to overcome the conflicting objectives between risk management and profit making. Often, in profit making entities, the compliance and the risk management functions are not popular functions and the voice of such functions are barely attended to, unless it is monitored by the regulator. For example, in most instances, the chief executive officer of security dealing entities, is armed with dealing experience, and may not consider the risk management or the compliance function as an important element under his preview. The regulator, therefore, should impose regulations mandating the risk management and compliance function, which in turn would benefit the entity in safeguarding its own assets and of the industry they operate in. The compliance and risk management teams directly reporting to the Board shall make them more independent form operations. Further, availability of a quality credit risk analysis methodology allows assessing the real risk in a more structured way rather than taking the chance of a bet and therefore, the risk can be priced adequately.

   Entities small in size and resources, may not have the affordability to maintain a fully equipped compliance and risk monitoring function. Merge of small or weaker institutions with stronger large-scale institutions shall be a prudent action which enable the risk monitoring function to operate to its maximum efficiency, whilst safeguarding the assets of both the entities.

   Unlike in audits of frauds, an external audit or regulatory audits are mostly conducted on sample check basis, unless it is decided by the auditor/ regulator to perform a complete check. If the auditor shall prove that they have complied the generally accepted auditing standards they will not be held negligent, since the standards conceal auditor/regulator from frauds or intentional misrepresentation by the entity. Therefore, the prime responsibility of proper risk management should rest with the senior management of an entity. Further, the ultimate credit risk stem from several factors of systematic (political, economic or social) and company specific reasons, such as poor management, unsuitable products, etc. Therefore, the regulator should have specific directions on the whole risk management framework, which lay the ultimate responsibility of credit risk and other risk management, on the senior management. Expressed penalties should be introduced in law for breaches of such directions and professional negligence by the management instead of relying on clauses of the Criminal Act.

c. Periodic offsite reviews and onsite examinations are to be conducted by the regulator, especially in risk management areas, with sufficient resources and expertise. Such risk based supervision will compel entities enforcing controls and proper risk management functions. Therefore, it is the responsibility of the top management of the regulator to empower the examination teams with sufficient staff, provide sufficient training to review the process with strategic and operational guidance in order to conduct examinations with sufficient focus and in required frequency.

d. In most of the regulated financial entities key personnel are assessed for fitness and propriety by the regulator. Therefore, some part of the responsibility of placing suitable persons for the key positions, lies with the regulator. Credit risk

analysis needs skills and requires top management commitment for it to be properly implemented. In such case, the risk officers (and their reporting lines) need to be sufficiently qualified and the regulators may prescribe the level of qualification and ethically and legally bind such functions through prudential regulations.

6. Conclusion

Many factors cause financial institutions to fail, among which the inadequate attention on credit risk management accounts for a considerable part. A risk manager should not rely too much on rating models or analysis, but should evaluate skeptically and such models should be used rationally. The misplaced belief of 'too big to fail' should be eliminated, when acquiring a customer of more diversified business and large in operations. How big the client is, grant of credit should follow the proper review process, as failure of such customers may have larger impact on the loan portfolio of the entity.

Possibilities of one taking advantage of 'probability of detection' should be minimized. Though the sample verification is the generally accepted auditing method, introduction of full verification (or verifying a substantial part) through the legal framework to minimize the credit risk (and other risks) will caution even the top management of entities as well as the auditors.

Further, a close monitoring on the risk emanating from new and existing customers and derivative instruments, are mandatory for proper credit risk management. The regulator on the other hand, should have stringent regulations on credit risk management of entities and regulatory audits should be conducted in sufficient frequency with a clear focus on high risk areas like credit.

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