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Opinion

Perspective on Systemic Risk Measurement

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> *[T]here is broad agreement on the key principles of reform—widening the regulatory perimeter to include all systemically important institutions, bolstering supervision, improving the measurement and regulation of systemic risk, and strengthening crisis resolution mechanisms. (John Lipsky[2])*

Introduction

Institutions, markets and payments infrastructures are the main constituents of a financial system. Among Financial Institutions (FIs), banks occupy center stage. It is never enough to emphasize their importance as financial intermediaries transforming liquidity. They play a pivotal role in allocating resources efficiently. Therefore, soundness of banks, as individual entities, as well as a collection – industry – is of utmost importance in any debate on financial and macroeconomic stability. However, among many lessons learnt from recent financial crises (2007-09) it can be underlined that FIs work as a complex web and risks and vulnerabilities present in one part have the potential to damage rest of the financial system.

In fact, apart from banks, non-bank financial institutions like insurance companies, investment houses, hedge funds, mutual funds, money-market funds, fund-of-funds, venture capitals, mortgage houses, and brokers/dealers are of great importance to understand interdependence of FIs within a system. In addition, non-financial firms also play their part and add to the complexity of this web even further. Therefore, any risk management strategy or model focusing on a particular activity or single institution would not be able to cover the risks posed to the whole industry, irrespective of the fact that risk originated from macroeconomic factors or snowballed by domino effect or contagion. Thus, need for a system-wide model is immediate and undeniable.

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[2] Extract from speech by John Lipsky, First Deputy Managing Director, International Monetary Fund, talking at a seminar on 'Reshaping the Global Financial Landscape: Implications for Asia', Tokyo, Japan.

Given limited research on a vast idea like systemic risk, neither literature prescribes any standard definition of systemic risk nor any international standards-setting body (e.g. BIS) has recommended any standard tool/model for measuring and managing systemic risk. Trichet (2011) attempts to establish a link between the origins of systemic risk and financial stability by stating, "The crisis that we have experienced over the last three years is an overwhelming case of the materialization of systemic risk. Systemic financial risk can be defined as the risk that financial instability becomes so widespread that it impairs the functioning of a financial system to the point where economic growth and welfare suffer materially".

Before opening debate on the purpose and design of a systemic risk model, the fundamental question is whether we should try to eliminate financial risk completely, discarding risk management models in vogue, as they have not served their purpose during times of crises. To answer this question, Lo (2009)[3] says, "Attempting to eliminate all systemic risk is neither feasible nor desirable – risk is a necessary ingredient to real economic growth". Therefore purpose of this essay is not to argue that financial institutions should be prevented from taking part in risky activities, but it is an attempt to expand the debate on identifying, assessing and managing system-wide risks which are in addition to managing risk of individual activities and individual institutions. Instances like recent Global Financial Crisis (GFC) urge us to look at the damage caused to overall economies by a system-wide risk and the outlays expended so far on making repairs. Hence, it may be stated that systemic risk is just not a financial stability issue it is a public policy concern as well.

It is common knowledge that the failure of an institution entails substantial cost whether regulator/government helps it sail or let it drown. In case it is saved (by recapitalization or merger, for example, with a strong surviving institution) that exercise would involve allocation of funds and time while putting reputation at stake. However, if such an ailing institution is allowed to tumble that would involve the risk of losing significant investment – creditors and equity holders would suffer along with regulator which may face severe criticism from the public and media. Thinking in terms of stylized setting of financial industry's organization, among others, the choice of approach depends upon the size of the institution and its systemic importance.

With this theme in view the objective of this note is to highlight the importance of identifying and building an infrastructure (technology, human resources, and legal framework) which is capable of measuring systemic risks as posed to the banking system in particular and to the overall financial system in general. In the aftermath of GFC this is the biggest challenge facing the financial regulatory reforms. This exercise involves understanding the nature of financial innovations, international competition, complexities of

[3] For reference, see Lo (2009).

financial networks, and gains and pains of financial globalization. A comprehensive framework on managing systemic risk involves development of models for adequate assessments of risks posed to the system. This would be followed by critical evaluation of those models, and introduction of mutually agreed standards for introducing capital charge on individual institutions for creating systemic risk. This is an option available to monetary and regulatory authorities to proactively measure and manage system-wide risks by using forward-looking techniques like stress testing. Appreciating this direct correspondence between systemic risk and financial stability, the literature on system-wide risk management is gaining currency in academic as well as practical circles.

Identification of Systemic Risk

For individual players with homogeneous risk preferences, it may be argued that their incentives structure leads them to maximize gains even if this has to be done at the cost of other players in the system. This utilitarian philosophy, coupled with theorems of non-cooperative game theory, poses the challenge that individual institutions, excluding regulators/supervisors, would have little-to-nil motivation (and resources) to contain systemic risk.

Given that, financial institutions are unique in nature and their inherent business risk gives birth to financial risk and the latter aggregates into systemic risk. Due to this complexity it is difficult to assign a specific charge on an individual financial institution for creating negative externalities for other FIs when they are also playing by the same rules. Therefore, from an individualistic stand point, rent-seeking behavior of some or all the players is an optimal way to maximize their individual utility functions even when their activities potentially damage interests of other players. In such a setting with ‘n’ number of players business of nth player is subsidized by n-1 participants.

However a shift in focus from an individual to the market highlights aspects like herding, market concentration, mispricing of risks, and shadow banking[4] as main drivers of systemic risk. Herding is a behavioral aspect and results in asymmetrical distribution of risk appetite. When seen in a background of business cycle fluctuations, herding means a rise in risk aversion of one economic agent, quickly snowballs into risk aversion of the whole market. Market concentration helps exploit economies of scale and scope yet adds skewness in the market structure. Mispricing of risks is a technical lacuna and financial innovations, search

[4] Shadow banking refers to banking activity (mainly lending/borrowing) done by non-bank financial institutions (e.g. investment houses, pension funds, special investment vehicles, etc). These institutions take advantage of the fact that they are not deposit money institutions and as such they are not regulated like regular commercial banks. Therefore, their risk profile has similarities with risk taken by conventional banking business model, however, without any regulatory burden. Resultantly, risks in shadow banking remain hidden, go unchecked and not backed by any insurance arrangement (like creating capital buffer or reserves).

for yield and pay for performance are the background motives for hiding or mispricing risks. Lastly, shadow banking has roots in financial engineering, large scale mergers and acquisitions, spin-offs, and excessive leveraging of the financial sector. Recent financial crisis has shown that, along with others, mispricing of risk and shadow banking are the main challenges facing the regulators today.

In an academic sense, the issue of moral hazard, a consequence of asymmetry of information, works as a primary parameter when regulator/government has to decide if an institution should be saved or not. Moreover, the decision function of the regulatory body depends upon how important that institution is; if it is ‘too-big-to-fail’ or ‘too-connected-to-fail’ type, it is known as SIFI[5]. In such case domino effect emanating from such an institution would melt the whole market, which in turn would cause recession to set in. In economies where failure of this type of strategic institution imposes huge costs, the governments would tend to be more conservative and keep providing explicit or implicit guarantees. Therefore, the current debate on identification of SIFIs has gained strength. Regulators/governments are trying hard to bring forth a comprehensive framework to identify such potential sources of systemic risk. Efforts are being made to invent a set of regulations which helps avoid huge losses to the overall system; and in the worst case, if such a loss has occurred then the safety network helps in damage control.

Risk Assessment

Present risk analysis, whether done by a commercial financial institution or by the regulator, uses micro-prudential regulations and is limited to partial equilibrium analysis. That is, the idea of industry and system wide approach is in a nascent stage and needs knitting risk assessments of individual institutions together to get a coherent and enforceable prudential mechanism. The fundamental idea in calculating systemic risk is to treat institutions – individually as well as a collection thereof – as a portfolio of balance sheets. If and when we know that a particular balance sheet is strategically important for the overall system, it has to be saved should it face any crises – be of its own creation or they are exogenous to the system. In sum, adequate arrangements need to be there for ensuring sustainability of such institutions. However, this can promote moral hazard in the system. Hence, it is safe to say that discussion on awarding the status of SIFI to a financial institution and then enlisting it for extraordinary support in crisis times is still evolving and the likely determinants for grant of such a status include size of the institution, its interconnectedness, its substitutability, etc.

After acknowledging importance of systemic risk and potential damage it may cause to the overall system the discussion naturally flows to its objective measurement and management. Debate to this end is evolving and different models have been proposed to measure and

[5] For details see Husain (2010).

monitor systemic risk at national, regional and global scales. Furthermore, when it comes to containment of this risk – risk-regulation, one of the popular solutions to hedge against systemic risk, is gaining attention. For that matter national authorities and international agencies like International Monetary Fund (IMF), Bank for International Settlements (BIS), and the World Bank are promoting the idea that FIs should be charged an additional tax or risk premium as per their contribution to systemic risk. A list of ways and means is being prepared to calculate the contribution an individual institution makes to the systemic risk and then impose the risk premium accordingly. Subsequently an early warning system would be developed for systemic risk. The final stage would involve identification of methods to minimize the cost should such risk actually poses threats to multiple strategic institutions or to the system as a whole.

From a technical standpoint, it may be stated that models for measurement of multiple correlated defaults should have the capacity to detect hidden risks and those models should be able to deliver general equilibrium analysis of the economy – both static as well as dynamic. In fact any partial equilibrium analyses fail to account for externalities imposed by investment choices of one institution on the payoffs of other institution(s). However the challenge is that extending partial equilibrium analysis to general equilibrium framework involves understanding intricacies of underlying dynamics among institutions (working as a coherent network, presumably as a big consolidated balance sheet). This is acknowledgement of game theoretic situation[6] in which players interact and their collective output in the form of net payoffs to the society and the risk (cost) attached to it. In fact, analysis limited to individual banks fails to incorporate strategic Nash Equilibrium payoffs in which more than one agents identify their utility functions, choose their strategies from feasible strategy sets and minimize potential and actual risks to their payoffs keeping in view that outcomes for the rest of the players are already optimized.

From a macroeconomic angle the *raison d'etre* of regulatory bodies is to formulate and enforce prudential measures with an objective to ensure soundness of the overall financial system. For that matter, they are obliged to take steps to prevent domino effects and contagion emanating from failure of an institution spreading to the whole financial community. In the next stage calculation of such cost involves estimating nature and strength of externalities attached to the failure of a bank. Presently, capital adequacy standards are assumed to build and sustain buffers for absorbing individual risks like credit, market, operational, liquidity, etc. These risks, as stated elsewhere, are products of business model in the financial industry. However, with increased connectivity and interdependence among FIs – an indication of strong positive correlation of returns of the portfolios individual institutions have selected – banks may find it optimal to choose those strategies in which

[6] See Acharya (2009).

case their probability to survive together, or fail together, increases. This creates room for discussion that central banks and/or independent regulatory agencies, apart from using capital requirements and bank closure policies as instruments to save the system from potential and actual bank failure losses, should give benefit of diversification to financial institutions working in a network model and introduce capital requirements for newborn risks of those networks. It is being widely debated that capital adequacy standards should take care of correlations among balance sheet items of individual banks by taking an industry perspective. Likewise, it should force the banks to endogenize control mechanism at individual institution's level and create buffers to absorb costs arising from their inevitable interconnections.

Risk Measurement

Lo (2009) proposes a four step criteria for establishing a systemic risk measurement framework and then identifies seven parameters that need to be incorporated in any systemic risk measurement method. He states that first we need to have a clear cut definition of systemic risk so that we are able to measure and monitor systemic risk on a '*standardized, ongoing and regular basis*'. The second component is identification of SIFIs and designing set of special treatment they should be given in terms of frequency and level of information sharing with the regulator. Third element involves gathering firm level information and then data mining in a manner that information retrieval is quick and intelligent to draw meaningful conclusions. Fourth component, he proposes, is creating a dedicated body for handling different aspects – tracking, measuring and monitoring – of systemic risk. That systemic risk surveillance body should be staffed with highly qualified and trained individuals from a multitude of areas (economics, mathematics, law, information technology, etc). Apart from measuring and managing systemic risk, the terms of reference of those experts should include design a specialized regulatory framework and ensure its smooth implementation. Apart from that they should write and distribute technical research reports on systemic risk to a wider audience, and manage flow of 'bad-news' by setting communication channels with media both in normal and crises times, etc.

There are more questions than answers as to how systemic risk cascades itself from one institution or sector to others while having the potential to choke the whole system. The first part of developing a formal metric for systemic risk measurement is a challenge in itself; however the more difficult task is to integrate it in a macroeconomic model (e.g. DSGE) and identify the linkages and vulnerabilities of the overall economic system. Acknowledging the magnanimity of this task, scholars propose that any measure on systemic risk should cover seven basic components of a financial system, and they include (1) leverage, (2) liquidity, (3) correlation, (4) concentration, (5) sensitivities, (6) implicit guarantees and (7) connectedness.

Here, one may argue that these parameters are already being assessed and fed into the regulatory decision making process, however focus of our discussion is to find a way to analyze these parameters in an integrated model with clear cut objective of measuring and managing systemic risk. Therefore, at the outset, it must be clear that we are trying to build a risk measurement model which gives early warnings about the intricacies of multistage networks of financial institutions which are nested in such a way that default in one institution leads to the fall of others.

Measurement Philosophy

The in vogue risk assessment methodologies calculate maximum possible damage, in terms of a scalar value, to an individual institution for a given time window and at a pre-set confidence interval. The general risk management models cover risk creating activities which fall in independent domains of credit, treasury, or operations. In fact advent of computational and simulation technologies have created room for assuming very large number of potential scenarios. This approach, on the one hand, gave birth to techniques and specialized institutions for valuing and selling sophisticated financial products and on the other hand, added to the complexity of the business model in financial industry. Some argue that application of advanced mathematical methods have rendered underlying assumption of those models incomprehensible for ordinary investors, however there is hardly any alternate to this numerical dominance. Parallel to all that, efforts to standardize calculation of capital adequacy requirements, a regulatory approach to measure and manage risk, have given birth to accords like Basel I (1988, 1996), Basel II (2001) and Basel III (2010-11)[7].

The main issue here is that the aforementioned risk management approaches treat activities and institutions at individual level only. The difficulty faced in aggregation[8] of the risks in a unified 'enterprise risk management' model points towards inadequacy of these approaches to study systemic risk. Another objection to Basel-type capital adequacy standards is that they are inflexible to accommodate fairly diversified portfolios of big multinational banks operating mainly in developed economies. Likewise, it fails to assign higher capital requirements for financial institutions with less-to-nil diversified portfolios. Assuming that these mathematically sophisticated international standards capture inherent vulnerabilities arising from individual activities, however, these standards, in their present form, fail to account for risks emanating from default correlations and domino effects. The latter could result in failure of important institutions (e.g. SIFIs) and in the worst case, could trigger collapse of the overall financial system.

[7] Draft Basel III was made public in 2010-11 and it was scheduled to be introduced between 2013 and 2015. However BIS has extended its implementation till 2018.

[8] For reference see Jarrow and Turnbull (2000), Barnhill and Gleason (2002) and Barnhill and Maxwell (2002).

To explain further, challenge in assignment of capital for possible future losses is twofold. First, there is difference in incentives for individual financial institution and those for regulators to set aside big amounts to ensure that quality and quantity of capital buffers to safeguard against panic or crises. The stated purpose of those capital buffers is that institutions are able to absorb shocks individually as well as a collection in such a manner that minimum cost is passed onto the taxpayers. Secondly, as there is no universally accepted model for calculating risk, therefore, for the time being, we tend to go without any closed-form solution to decide magnitude of capital buffers.

System-wide risk measurement methods can be categorized into two types: bottom-up and top-down approaches. In the bottom-up approach, balance sheet components of an individual institution are analyzed and insolvency probabilities are estimated using gain/loss data. The next step involves generation of probability distribution of system-wide problem events is using historical data or by applying various simulation techniques. In top-down approach aggregate (industry-wide) banking data is considered as a synthetic portfolio of assets of one big financial institution and conventional risk measurement models are applied to calculate systemic risk. In the former approach, not only availability of data is a big challenge but also financial institutions are assumed to be homogeneous with respect to their size and products. However, in the latter approach, interaction among players can be captured to account for domino or contagion effects. In the latter approach, *ex ante* aggregation hides potential problems to the system and model design demands panel data to produce more meaningful results. Macroeconomic approach is another derivative of these models in which case effects of macroeconomic variables are also factored into the models.

Popular Models for Risk Measurement

Under the umbrella of the aforementioned approaches, two popular models for measuring risks (e.g. credit and market, etc) are further classified under *contingent claim models*[9] and *reduced-form models*[10]. Comparison of these two models highlights that former models are used to deal with corporate liabilities as a combination of options. In fact, they take firms and industries as big balance sheets and make use of the aggregate data. Under this approach it is easier to analyze mismatches in maturity of assets and liabilities. It also minimizes distortions in risk-return profiling, and in calculating vulnerabilities emanating from the public sector (e.g. sovereign risk rating).

[9] Black & Scholes (1973) and Merton (1974) proposed normal distribution based no-arbitrage framework for calculating option prices. Models like Moody's KMV and J.P. Morgran's CreditMetrics are based on this approach. McKinsey's CreditPortfolio View is another example in this regard and it uses time series data on macroeconomic parameters (e.g; unemployment and interest rates, etc.) to calculate default probabilities.

[10] Jarrow and Turnbull (1995) proposed the basic framework which makes use of market information, a difficulty which contingent claims model face. In fact there some parameters in contingent claim models which for parameters are hardly observable (e.g. firm value, market value of debt, etc).

Generally the latter models are designed in discrete settings and they characterize bankruptcy[11] as exogenous to banks' financials.[12] They use historical records to calculate transition probabilities and assign credit classes based on different recovery rate. Moreover, on a blueprint of multiple-scenarios they calculate credit spreads (in relation to risk-free rate over a given time window) and derive closed-form solutions to calculate credit and market risk in an integrated environment. Third generation models – simulation models – integrate features of both contingent claim models and reduced-form approach, and apply various simulation techniques to capture evolution of credit and market risk profiles simultaneously with changing macroeconomic environment (e.g. interest rates, exchange rate and spreads, etc. are simulated). A short discussion on some of the models popularly used in academic research followed by an example of systemic risk model used by the central bank of Austria is as below:

Contingent Claim Models

Individual risks (credit, market, etc.) are measured using metrics like *Value at Risk* (VaR) or *Expected Shortfall* (ES[13]). *A la* Merton (1974) equity is considered as call option on banks' assets with face value of debt taken as strike price; market value of banks' asset portfolio is calculated by taking time series of equity prices and information from balance sheets. This is a portfolio perspective of a system-wide risk in line with risk assessment of an individual institution. This technique relies on the idea that balance sheets of all the institutions in the sample set, taken together, are a portfolio of balance sheets and *correlation* between the individual banks assets are the most important factors. Therefore, high correlation of asset portfolio is an indication of high probability of multiple defaults should any major shock hit some institution(s). The immediate benefit of using such a technique is that the regulator can put a red flag on institutions with high and undesirable correlation. Moreover, avoiding dependence on proprietary data, another advantage of this method is to use publicly available information which makes it readily implementable at national, regional and international level. However, the main limitation of this approach comes from its construction; this methodology cannot capture second round effects of bank insolvencies which arise when banks have credit exposures through interbank market.

[11] Given that time series on credit ratings of a firm is available, bankruptcy may be considered as a finite-state Markov process and probability transition matrix can be constructed.
[12] Given that time-series on credit ratings of a firm is available bankruptcy may be considered as a finite-state Markov process and probability transition matrix can be constructed.
[13] Also known as 'conditional value at risk' (CoVaR) or 'expected tail loss' (ETL).

Portfolio Simulation Approach (PSA)

This model assesses credit and market risk in an integrated manner and uses information at portfolio level across different categories of business lines and geographical areas. It is based on pair-wise correlation[14] between assets of multiple financial institutions while taking care of interbank credit exposures and realized change in the quality of bank loans. [15] *Ex ante* it is assumed that interbank exposures are more important in systemic risk calculation (failure of one institution to honor its payments would cause loss to other). Then, in a simple setting which is free of asset-backed securitization or any other such financial engineering, it is further assumed that deterioration in loan quality of one or more institution(s) would be initially handled by financial institution(s) themselves. However, in case those financial institution(s) collapse completely then the regulatory body (central bank or insurer) would cover those losses. In this type of models simulated banks default rates are calculated and possibility of government default can also be calculated.[16] However a major shortcoming of these models is that some scenarios may under or over represent the actual events.

a. Game Theoretic Models

One popular approach in systemic risk measurement models is to apply game theory to analyze financial institutions – players in the financial industry. In such models, payoff functions of financial institutions are analyzed and their strategic interactions are studied in both the cooperative and non-cooperative settings. Some models have interesting feature of attribution of systemic risk to FIs based on their *contribution* to overall systemic risk. This approach allows for putting limits on systemic risk contribution, especially if FIs and macro-prudential policies together are analyzed together. Alternatively, other models based on application of actuarial models to calculate risk premia focus on *participation* in systemic events assuming such events have already happened. One such example is a model recently proposed by Tarashev, Borio and Tsatsaronis (2010) in which they have made use of *Shaply Values* to calculate contributions of individual institutions in the overall systemic risk. This novel method has useful implications for deciding systemic risk premia or prudential penalties. Their model is more focused on attribution procedures, a policy challenge facing the authorities these days.

[14] A popular method is Dynamic Conditional Correlation Approach proposed by Engle (2002). It refers to modeling of stochastic volatilities and correlations of consumer loan default rates separately from business loans. In particular, the more realistic modeling of stochastic volatilities and correlations should improve our ability to account for periodic financial shocks that might have important impacts on emerging economies. Huang, Zhou and Zhu (2009) assume homogeneity and treat pair-wise correlations for any two banks are same at a particular point in time. However, in Huang, Zhou and Zhu (2010) they have updated their model assuming that interconnectedness of banks is heterogeneous.

[15] Allen and Gale (2000).

[16] Barnhill and Kopits (2003).

SRM (Austrian National Bank's Framework for Assessing Systemic Risk)

The model simulates as to how portfolio value evolves for a given portfolio strategy in current period in combination with future realizations of the risk factors while assuming that changes in risk factors lead to situations/scenarios which are totally independent of and dissimilar to one another (non-IID). The model is applied on a system-wide basis and application of network theory incorporate network model of the banking system making analysis of correlated exposures and financial inter-linkages possible. The Systemic Risk Model [17] (SRM) integrates features of individual risk models taking account of their interrelations. In order to have aggregated data the model combines balance sheet information of all the financial institutions in the sample set – each portfolio in the portfolio system consists of assets related to market risk (stocks, bonds etc.), interbank credit exposures (lending to financial institutions) and non-interbank exposures (loans to corporations, households and government) are taken together as one big portfolio of assets. Based on historical records distributional assumption about gain/loss is formed and impacts of various risk factors (e.g. interest rate profile, exchange rate structure, stock market indices and other macroeconomic factors which potentially can impact the market value of assets) are estimated using SRM.

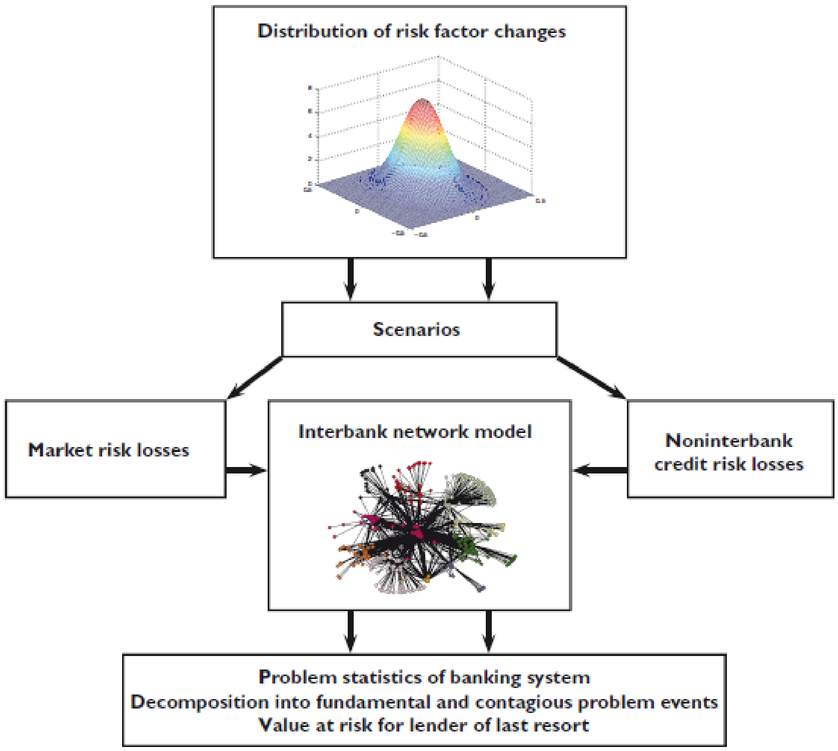
As shown in the **Figure I**, this technique makes use of marginal distributions of various risk factor, calculates their joint marginal distribution and then simulates for different scenarios (based upon changes in different risk factors using historical records), which are then mapped onto profit/loss function using a two-step procedure: changes in market value in different scenarios are assessed and then those changes in asset values taken together with the capital of the banks are combined with network model. Here interbank network model (middle box in Figure I) exposes, for given level of financial institutions' exposure to each other, the level and type of risks financial institutions entail and adequacy of their capital buffers in different scenarios. These simulations allow generating a probability distribution of problem events over a period of time.

Application of this model is straightforward for market risk related securities and factors but it is quite challenging to calculate impact of risk factors on nonbank loans. For that matter a model based on Credit Risk+[18] is used to estimate effect of macroeconomic factors on loan defaults. In this case, historical records of different industries/sectors are used to construct a probability distribution conditional on vectors of risk factors drawn from the macro economy.

[17] Developed by Austrian National Bank to analyze systemic financial stability. (For further reference visit http://www.oenb.at/en/img/fsr_11_tcm16-43708.pdf)
[18] Credit Suisse (1997).

The main assumption of this model is that the asset value is independent of behavioral aspects and as time horizon widens this assumption weakens the model. However, there are many advantages attached to this quantitative model: One, it allows calculation of both conditional and unconditional probabilities while assuming various hypothetical situations. It, therefore, allows for stress testing the whole system with respect to particular risk factor(s). Two, multivariate distribution of shocks (problem events) is generated using this network model in such a manner that distinction can be made between fundamental events (shocks to risk factors) and contagious problems. Three, problem events distributions allow their mapping to a homemade rating scale. That would be quite useful for the supervisor to see as to how ratings of financial institutions are changing and what happens to their loss absorbing capacity when system comes under stress due to change in one or many risk factors.

Figure 1



Note: Borrowed from Systemic Risk Monitor: A Model for Systemic Risk Analysis and Stress Testing of Banking Systems, Financial Stability Report II, 2006

Summary and Recommendations

Recent global financial crises disrupted national economies as well as international financial system so much so that it resulted in negative growth rates in most parts of the world. Among other things, important lesson to learn from these crises is to think on a system-wide basis and develop frameworks to safeguard against potential risks (emanating both from micro and macro environments) to the overall financial stability. Key objectives of such a system should be issuing early risk warnings, suggesting remedial measures, building mechanism to cooperate in terms of resources and expertise and integrating efforts to minimize deadweight cost.

Looking at the landscape of Pakistani financial system with banking sector as the most dominant part, regulator authority, apart from building in-house capabilities to adequately assess risk to the overall system, needs to set an incentives-compatible arrangement which is able to differentiate between low and high risk bank portfolios so that each individual financial institution pays as per contribution to the overall risk charge, if one is levied to augment existing capital buffers at an individual institution's level. The SBP, as a backstop, may create a pool where emergency credit lines, which are flexible in nature, may be set for institutions with strong risk management policies. This would supplement the incentives for banks to have better risk management systems in place.

A fully functional forum/department for systemic risk management, housed within or outside the regulatory authority, with state-of-the-art models for risk assessment would help in ongoing monitoring of the whole system. That forum would also improve coordination among different stakeholders, both in peace and crises times. Furthermore, possible reforms in SBP's supervisory and regulatory approaches may be explored, with special focus on SIFIs and regulation of quasi-banking institutions. For that matter macro-prudential supervision coupled with macroeconomic stabilization policies may work as important tools for containing systemic risk.

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