© International Academic Research Journal of
Economics and Finance
Vol. No.5, Issue No 2, December 2017, Page no.01-08 ISSN Number: 2227-6254

Systemic Risk and Global Financial Stability

Chirongo Moses Keregero
Glorious Sun School of Business and Management,
Donghua University, Shanghai, China. 200051.
kchirongo@yahoo.com.

Abstract

The recent worldwide financial crisis has triggered an ongoing discussion of what caused the crisis to happen and what measures should be done to prevent the crisis to happen again. Scholars and policy makers consider that global financial crisis was brought about by market and financial institutions failures, so any regulatory framework for managing systemic risk must address markets as well as financial institutions. Based on that, the present paper attempts to discuss issues related to systemic risk and global financial stability. The discussion includes both the regulatory mechanism explained by the financial stability board and expert opinions of the author. Since the systemic risk is caused by the interlinkage and the interdependence in the financial system, the author believes that the regulation of the financial system should be focused on the whole system rather than individual financial institution.

Key words: Systemic risk, financial system, financial stability.

Received 27th October 2017
Accepted 27th November 2017
Published 2nd January 2018

INTRODUCTION

The recent worldwide global crisis has triggered an ongoing assessment of what went wrong and what can be done in order to prevent similar crisis to happen. The crisis showed that the defaults of large banks can propagate a chain of insolvencies in the financial market causing distress of some key institutions in the financial system which would result to systemic crisis. Systemic risks is considered as the main factor for assessing the financial stability and it is still a new concept in the central banks, policy makers and regulators of the financial system. Acharya (2009) defines a financial crisis being systemic risk in nature if many banks fail together or if one bank propagates a contagion causing the failure of many banks. From this definition, it can be seen that financial institutions are the main sources of the systemic crisis due to their size as explained by the theories of “Unstable banking hypothesis”, “too-big-to-fail hypothesis” and “agency cost hypothesis” (Keregero & Fan, 2016). The direct interconnections between financial institutions pose systemic risk through the interbank market. Though non-monotonic, increasing interconnectedness tends to be associated with increasing levels of systemic risk and banks’ contribution to it and thus the interbank market deserves high attention in any systemic risk analysis

Experts also consider that the global financial crisis was brought by both market failures and financial institutions failures, thus any approach to tackle this problem must address markets and financial institutions. Because systemic risk is a form of financial risk, efficiency should be a central goal in its regulation. Without regulation, the externalities caused by systemic risk would not be prevented or internalized because systemic risk pertains to risks to the financial system itself (Chitiba, 2012).

The present paper provides an overview of systemic risk and global financial stability with special attention on the regulatory issues pertaining to systemic risk. Since, systemic risk affect the whole financial system, this paper would be beneficial to financial regulators, scholars and policy makers.

METHODOLOGY

This paper describes the issues related to systemic risk and global financial stability. Therefore secondary sources of data has been used in this study, literatures concerning the regulatory framework for systemic have been gathered from the financial stability board and research scholars, moreover the paper includes the author opinions on systemic risk management.

LITERATURE REVIEW

Systemic risk measures

For any risk to be managed, it should first be measured. Literatures on measuring the systemic risk are divided into two parts namely stock market based and network based models.

Stock market based model

Stock market measures derive their data from stock returns. Most of the measures under this dimension evolved from the concept of VaR and ES. Value at risk (VaR) as a quantitative measure of systemic risk is used for liquid positions operating under normal market conditions over a short period of time. VaR and expected shortfall measures are less useful and potentially dangerous when trying to measure risk in non-normal circumstances in illiquid positions and over a long period of time. A number of articles developed here are extended from these measures. Acharya et al. (2010) define Systemic Expected Shortfall (SES) as the average return of a bank stock conditional on the worst stock returns of the market. This measure estimates the level by which a financial institution is undercapitalized when the whole financial system suffers from an aggregate shortage of capital. Acharya et al. (2012) and Brownlees and Engle (2012) define SRISK for measuring systemic risk. SRISK is defined using a simulation approach or future stock returns using an asymmetric GARCH volatility process. Adrian and Brunnermeier (2016) propose CoVaR as a measure for systemic risk. They define CoVaR as the VaR of the financial system as a whole conditional on an institution experiencing a financial distress. This measure confirms that using VaR, as one of the major tools for micro prudential stress testing is not sufficient for assessing financial stability. In another approach, Billio et al. (2012) measure systemic risk based on the interconnectedness of the institutions in the financial system. In order to capture the connectedness they use two econometric tools namely Granger-causality tests and principal components analysis and thus study the monthly returns of brokers, hedge funds, insurance companies, and publicly traded banks.

Network models

Applications of network theory are quickly becoming increasingly present in finance, with network analysis providing answers to questions where traditional analysis methods are weak, leading to improved models across wide types of risks. The network models examine the interbank network as a contagion channel. When some banks are not able to honor their promises in the interbank market they might push other banks into insolvency which might again lead to defaults of other banks.

Upper (2011) describes that the possibility for contagion depends on the precise structure of the interbank market, for the same shocks some structures would result in contagion while others would not, a complete structure of claims,

in which every bank has symmetric exposures to all other banks is much more stable than an incomplete structure, where banks are linked only to one neighbor. Disconnected structures are more prone to contagion than complete structures, but they prevent contagion from spreading to all banks. Finally, show that the possibility for contagion in a system with money-centre banks, where the institutions on the periphery are linked to banks at the centre but not to each other, crucially depends on the precise values of the model's parameters (see figure 1).

Financial networks are "robust-yet-fragile Acemoglu et al., (2015), or Glasserman and Young, (2015), which means that they are capable to absorb smaller shocks to the system but might show contagion and cascade defaults once exposed to a large enough shock. A number of the studies are based on Eisenberg and Noe (2001) who define a clearing payment process for interbank networks considering all possible contagion effects. Elsinger et al. (2006) include bankruptcy costs in their simulation of the Austrian banking system and show that the system is able to absorb shocks well for small bankruptcy costs while large dead weight losses can wipe out the banking system. Rogers and Veraart (2013) formally model clearing in interbank networks with bankruptcy costs. Moreover researchers use correlated assets portfolio to examine the consequences of macroeconomic shocks on banking networks. This means that, upon a bank default, when the threat of contagion looms, other banks might be in a weak position as well, making them more susceptible to contagion. Gauthier et al. (2012)model loan losses of banks using detailed information on banks' loan books and common industry exposures, Elsinger et al. (2006) use loan registry data to model common shocks to loan books and banks' foreign exchange and stock market exposures to model shocks from financial markets. Caccioli et al. (2015) study common shocks emanating from overlapping securities portfolios. Frisellet al. (2007) use detailed Swedish data to model common shock

To sum up, network models are important dimension to study systemic risk in the interbank market. Understanding how these networks function as complex adaptive systems enables to make better investment and risk management decisions, and also allows us to protect these systems from collapse .However these measures are challenged by the fact that nearly all numerical illustrations of systemic importance measures in the existing research are based on market data, and therefore on market participants' perception of risk exposures and of how banks are connected. It is not always true that regulation should be based on market perceptions, not only because that perception may easily be misguided, but also because the market perception will depend on the regulation imposed and on the market expectations of how different classes of stakeholders will be protected in case of failure. Since the regulation and resolution regimes are changing, historical market prices will become less relevant.

DISCUSSIONS RELATED TO REGULATORY FRAMEWORK.

This section encompasses the regulatory measures established by the regulatory authorities and some suggestions expressed by the author. Application of these measures will tackle the systemic risk and thus ensure the general global financial stability.

Regulators approach to measurement.

There have been ongoing discussions by the FSB and Basel Committee on bank supervision to reform the financial regulation, including the discussion on the measures of systemic

importance of financial institutions. The BCBS (2011a) issued the criteria's to identify the global systemically important banks (G-SIBs) which comprise (a) size (b) interconnectedness (c) substitutability (d) complexity (e) cross-jurisdictional activity of a bank. Based on these criteria, the BCBS has identified 30 banks to be identified as global systemically important banks in 2016; the list is updated annually depending on the new data (see tab.1). The extent of systemic risk relevance is expressed as a score which is given to a bank as the sum of its sub-scores in the five categories. One or more indicators are chosen to quantify the characteristic, with values largely being determined by dividing the individual bank amount by the aggregate amount for all banks in the sample.

Macroprudential policies and its approach to financial stability.

Despite the fact that the policy makers, academics and regulators have not yet achieved the consensus on the objective of macroprudential policy, but it is believed that the main theme of it is to mitigate the systemic risk and its aggregate cost for the real economy. Borio (2011b) and Caruana (2009,2010a) explain that the aggregate risk in the financial system should be tackled with respect to two criteria's, firstly, the time dimension, the dynamic of aggregate accumulation of risk in the financial system over time, Secondly, the cross-section dimension, that is the distribution of the risk across financial institutions at a point in time. Thus the macroprudential should address the common exposures and interlinkage between financial institutions so as to downsize the systemic risk in the cross-section dimension and the procyclicality of the financial system to reduce systemic risk in the time dimension.

Until now, the FSB is developing measures to identify and monitor systemic risk for both regulated and shadow banking system. FSB(2011a) provides tools to be used by countries to address systemic risk which fall into different categories that is (a) tools to tackle financial stability from rapid credit expansion (b) tools to tackle amplification mechanisms of systemic risk like leverage and maturity mismatch (c) tools to limit spillover effects from the failure of G-SIFs.

On the other hand, the Central banks macro-prudential policies of different countries are primarily concerned with maintaining financial stability. The central banks prepare specific analyses to assess and monitor systemic risk , the analyses contain all system components, namely markets, institutions, infrastructures, interlinkage between the financial system and the real economy and ongoing market evolution and financial system innovation. The analytical tools for macroprudential policies includes regular stress-test exercises, early warning exercises , qualitative and quantitative analyses based on econometric techniques.

Therefore macroprudential regulation is the correct approach to ensure the long run stability of the financial system (Ebrahimi Kahou & Lehar, 2017). Instead of focusing only on the individual banks as a single entity, regulators must see the system as a whole so as to limit threats to financial stability .Despite all these effort, this area of macroprudential is still in its early stage and therefore requires more work (Arnold et al, 2012 &Ellis et al (2014).

Based on the above views, the paper proposes that if the following regulatory approaches are properly designed and implemented may reduce financial markets systemic risk and its consequences to the economy, therefore

enhancing the general financial stability. The possible regulatory approaches are as:

Identification of international and regional important banks. This is one of the most important issues to consider while addressing the systemic risk problem. The Basel Committee on Bank Supervision adopted a score based valuation approach for globally systematically important banks and selected the following as the evaluation criteria: size, interconnectedness, lack of readily available substitutes, global (cross-jurisdictional) activity and complexity. Therefore the local authorities should identify whether a large domestic bank is systemically important from a domestic perspective.

Rescue programs. Programs such as bailouts should be taken by the regulatory authorities of the government to protect the banks with largest market share. Governments should not use harsh policies or distress the functioning of these institutions. For example, the German federal government and Great Britain's Treasury subsidized both Commerzbank AG and Northern Rock respectively to survive (Schrors and Luttmer, 2010).The challenge with this is that most banks would invest in risky assets and multiple activities which might lead to systemic risk.

Forestall panics. Panics is the main cause of the bank runs, as depositors panic and withdraw their money causing a banking crisis, even the worldwide financial crisis itself was initially triggered by financial market panic. Therefore the supervisory authorities should ensure the customers about the going concern of the financial institutions. The main challenge here is that even when identified, panics cannot always be prevented easily because investors are not always rational.

Ensuring Liquidity. This would ensure stability by providing liquidity to prevent financial institutions from defaulting. Central Bank as a lender of last resort may take the role of providing liquidity to prevent financial institutions from defaulting, by acting as a lender of last resort. More attention should also be placed on providing liquidity to capital markets to keep them functioning. A market liquidity provider of last resort, especially if it acts at the beginning of a market panic, can profitably invest in securities at a deep discount from the market price. This would have the best chance of preventing a systemic collapse.

Increased financial risk Disclosure. Disclosing risks in the annual accounts has been viewed as the primary market-regulatory mechanism. It reduces, if not eliminating, asymmetric information among market players, making the risks transparent to all stakeholders. For systemic risk, however, individual market participants who fully understand that risk will be motivated to protect themselves but not the system as a whole. Moreover, the efficacy of disclosure is limited as it increases complexity of transactions and markets. Therefore increased disclosure would do little to reduce systemic risk.

Bank governance. As an important pillar of effective reform of regulatory regime it has yet largely untouched. Some studies have mentioned governance as an important aspect in the financial crisis and that there is a strong link between governance and risk taking especially for financial firms (Beltratti and Stulz, 2009, Ferreira et al 2012, Laeven and Levine, 2009). If reform can act on these incentives at source it reduces the chances of regulators chasing risk around the system .This is to say that effective governance reform can be used to curb risk taking without generating regulatory arbitrage.

Imposing Financial Exposure Limits. The interaction of financial institutions in the interbank market has played a big role in the propagation of systemic risk. Thus financial institutions need to place limits on an institutions financial exposure. These limits could be imposed in diverse ways, such as: Limiting an institution′s leverage which could reduce the likelihood of transmitting financial contagion between institutions, Interinstitutional financial exposure limits that would facilitate stability of the interbank market by diversifying risk, in effect by reducing the losses of any given contractual counterparty and thus the probability that such losses would cause the counterparty to fail. Moreover Limiting Financial Institution Size so as to avoid financial institutions to engage in risky projects.

CONCLUSION

The purpose of this paper was to discuss some of the issues related to systemic risk and financial stability. The paper discusses systemic risk as the risk which is created by both market failures and financial institutions failure. The interbank market has also played part in the propagation of systemic risk that is when some banks are not able to honor their promises in the interbank market they might push other banks into insolvency which might again lead to defaults of other banks.

The recent global financial turmoil has encouraged policy makers, financial regulators and researchers to find strategies which could mitigate the impact of systemic risk. Based on that, this paper discussed various regulatory framework expressed by the Basel Committee on Bank supervision, one of them being macroprudential regulation. The paper proposes that instead of focusing only on the individual banks as a single entity, regulators must see the system as a whole so as to limit threats to financial stability. Moreover, among all strategies, the establishment of a market liquidity provider of last resort is important for stability of the financial system. This one would have the best chance of minimizing a systemic collapse under different circumstances.

REFERENCES

Acemoglu, D., Ozdaglar, A., Tahbaz-Salehi, A., (2015).Systemic risk and stability in financial networks. American Economic Review. 105, 564–608.

Acharya, V. V. (2009).A Theory of Systemic Risk and Design of Prudential Bank Regulation. Journal of financial stability.5, 224-255

Acharya, V., Santos, J.A.C., Yorulmazer, T., (2010). Systemic risk and deposit insurance premiums. Federal Reserve Bank N. Y. Economic Policy Review 16, 89–99.

Acharya, V.V., Engle, R.F., Richardson, M. (2012). Capital shortfall: a new approach to ranking and regulating systemic risks. American Economic Review 102, 59–64.

Adrian, T., Brunnermeier, M.K. ,(2016). CoVaR. American Economic Review 106, 1705–1741.

Arnold, B., Borio, C., Ellis, L. & Moshirian, F. (2012). Systemic risk, macroprudential policy frameworks, monitoring financial systems and the evolution of capital adequacy. Journal of Banking and Finance, 36(12):3125-3132

Beltratti, A., Stulz, R.M.(2009). Why did Some Banks Perform Better during the Credit Crisis? A Cross-country Study of the Impact of Governance and Regulation. NBER Working Paper Series No. 15180.

Billio, M., Getmansky, M., Lo, A.W., Pelizzon, L. (2012). Econometric measures of connectedness and

systemic risk in the finance and insurance sectors. Journal of Financial Economics 104, 525–559.

Borio, C. (2011b). Implementing a macroprudential framework: blending boldness and realism. Capital. Soc. 6, 1–24.

Brownlees, C.T., Engle, R.F. (2012). Volatility, correlation and tails for systemic risk measurement. NYU Stern School of Business Working Paper

Caccioli, F., Farmer, J.D., Foti, N., Rockmore, D., (2015). Overlapping portfolios, contagion, and financial stability. Journal of Economics Dynamic Control 51, 50–63.

Caruana, J.,(2009). The international policy response to financial crises: making the macroprudential approach operational. In: Panel Remarks, Jackson Hole,21–22 August.

Caruana, J.,(2010a). Macroprudential policy: working towards a new consensus. In: Speech delivered at the High-Level Meeting on “The Emerging Framework for Financial Regulation and Monetary Policy” jointly organized by the BIS’s Financial Stability Institute and the IMF Institute, Washington, DC, 23 April.

Chitiba, C. (2012). Managing Systemic Risk, Knowledge Horizons, 4:3-4

Eisenberg, L., Noe, T.H., (2001). Systemic risk in financial networks. Management Science. 47,236–249

Ellis, L., Haldane, A., Moshirian, F., 2014.Systemic risk, governance and global financial stability. Journal of Banking and Finance 45, 175–181.

Elsinger, H., Lehar, A., Summer, M., (2006). Using market information for banking system risk assessment. International Journal of Central Bank. 2, 137–165.

Ferreira, D., Kershaw, D., Kirchmaier, T., Schuster, E.-P., (2012). Shareholder empowerment and Bank Bailouts. London School of Economics Financial Markets Group Discussion Paper No. 714

Financial Stability Board, (2011). Macroprudential policy tools and frameworks. In: Update to G20 Finance Ministers and Central Bank Governors, 14 February.

Frisell, L., Holmfeld, M., Larsson, O., Omberg, M., Persson, M.,(2007).State-Dependent Contagion Risk: Using Micro Data from Swedish Banks. Mimeo.

Gauthier, Céline, Lehar, A., Souissi, M., (2012). Macroprudential capital requirements and systemic risk. Journal of Financial Intermediation. 21, 594–618.

Glasserman, P., Young, H.P.,(2015). How likely is contagion in financial networks? Journal of Banking and Finance 50, 383–399.

Keregero, C.M., Fan, H, (2016). An Evaluation and Management of the Systemic Risk of the Banking System -A Literature Review. European journal of business and management.

Laeven, L., Levine, R., (2009). Bank governance, regulation and risk taking. Journal of Financial Economics 93: 259–275

Rogers, L.C.G., Veraart, L.A.M., (2013). Failure and rescue in an interbank network. Management Science. 59, 882–898.

Schrors, M, Luttmer, N, (2010). Radikale Einschite: Bofinger will Banken entflechten, Financial Times Deutschland, 06August 2010, 17

Upper, C. (2011). Simulation methods to assess the danger of contagion in interbank markets. Journal of Financial Stability, 7(3), 111-125.

Appendix

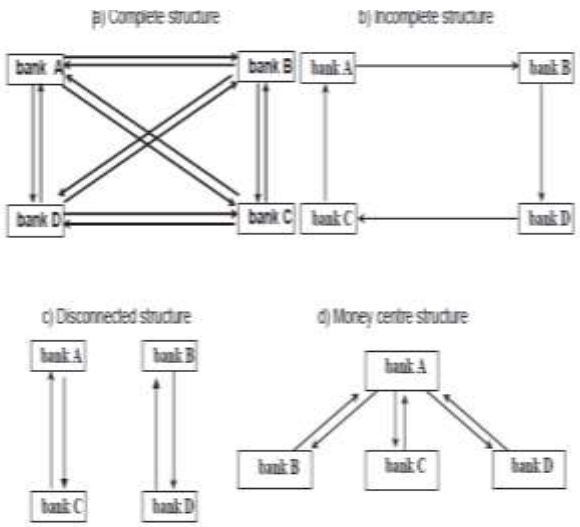

Fig. 1.Stylised network structures of the interbank market in different structures.

Bucket	G-SIBs within each bucket
(3.5%)	(Empty)
(2.5%)	Citigroup JP Morgan Chase
(2.0%)	Bank of America BNP Paribas Deutsche Bank HSBC
(1.5%)	Barclays Credit Suisse Goldman Sachs Industrial and Commercial Bank of China Limited Mitsubishi UFJ FG Wells Fargo
(1.0%)	Agricultural Bank of China Bank of China Bank of New York Mellon China Construction Bank Groupe BPCE Groupe Crédit Agricole ING Bank Mizuho FG Morgan Stanley Nordea Royal Bank of Scotland Santander Société Générale Standard Chartered State Street Sumitomo Mitsui FG UBS Unicredit Group

Table 1. List of global systemically important banks as in 2016. The numbers in parentheses are the required level of additional common equity loss absorbency as a percentage of risk-weighted assets that applies to each G-SIB