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Aspects of Regional Financial Stability: A Policy Approach

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Abstract

The sovereign debt crisis in Europe and the withdrawal of funds from the Asian markets (similar to capital outflows from Asia after the collapse of the Lehman Brothers) have highlighted the importance of more resilient regional and national financial systems in Asia. Regional architectures such as ASEAN, ASEAN plus six and the East Asia Summit are part of the process that may contribute to the emergence of a more resilient financial system in Asia. This paper analyses some of the financial issues that could contribute to the development of a more resilient global financial system and contribute to regional financial stability.

Keywords: Global Financial Stability, Regional Financial Stability and Systemic Risk

JEL Classification: G12, G15, G2, G29

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1. Introduction

The insights gained from the Global Financial Crisis (GFC) have underpinned global attempts to redress some of the shortcomings of the current global financial system. Under the aegis of the G20,¹ the Financial Stability Board ('FSB') has coordinated international standard-setters and policy makers to formulate proposals to improve the resilience and stability of international financial systems by addressing the issues underlying systemic risks. These developments include the identification and regulation of global systemically important financial institutions ('G-SIFIs'), and more recently domestic systemically important banks ('D-SIBs'), which have attracted regulatory due to their importance to national and global financial systems because of their size, complexity and/or interconnectedness (Moshirian, 2011, 2012, 2015 and Arnold, Borio, Ellis and Moshirian, 2013). There has also been increased regulatory attention on developing macroprudential frameworks to complement the traditional microprudential approach to regulation. Amongst the challenges facing the international finance community is how to implement some of the policy proposals associated with the macro-prudential tools proposed by the major international institutions and others. Furthermore, the rise of shadow banking has raised concerns regarding policies that could be more inclusive when it comes to coordination and supervision of all major financial institutions around the world. Shadow banking in Asia, particularly in China, is becoming a prominent feature of the Asian capital markets.

¹ As of October 2014, the membership of the Group of 20 Nations (G20) comprised 19 countries plus the European Union. While not formally a member, Spain has participated in all G20 meetings thus far. The current membership includes: Argentina, Australia, Brazil, Canada, the People's Republic of China, the European Union, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, the Russian Federation, Saudi Arabia, South Africa, Turkey, the United Kingdom, and the United States.

Given the increasing interdependence of the global financial system, regional financial stability for Asia is becoming an important aspect of ensuring sustained economic growth and regional financial prosperity. Regional architectures such as ASEAN, ASEAN plus 6 and the East Asia Summit are amongst those forums that attempt to create a more resilient regional block with respect to trade, finance and mobility of resources. Asian capital markets have become more resilient since the global financial crisis and yet global forces continue their influence on the development of Asian financial markets. Understanding and applying, where appropriate, new financial tools such as macroprudential policies is one of the new challenges facing policy makers in this region. Similarly, being able to manage regional and national banking systems and strengthen the foundation of regional financial stability are amongst other major challenges facing policy makers and market participants.

The purpose of this study is to highlight some of the global policies associated with macroprudential policies that have implications for the Asian financial markets over time. In doing so, the paper intends to analyse issues associated with systemic risk for large banks in China, India and Japan. Furthermore, given the growing importance of shadow banks in China, the paper also discusses aspects of shadow banking (Moshirian, 2015) for China in the context of banks systemic risk. To this end, the purpose of this paper is to discuss some of the issues related to global and regional financial stability.. Section 2 of the paper discusses a number of policy issues associated with macro-prudential policies, Section 3 presents a conceptual framework for measuring systemic risk, based on the NYU model of systemic risk, Section 4 reports the latest information and data on banks systemic risk for Asia with a focus on large banks in China, India and Japan and Section 5 concludes.

2- Macro-Prudential Policies

The FSB has identified G-SIFIs as financial institutions whose distress would significantly impact the wider financial system, including other financial institutions as well as domestic and international economies. Systemic risk from G-SIFIs arise from the spill-over effects of the actions of one financial institution on another or the distress of an institution causing fire-sale liquidations that may lead to system-wide losses or runs on solvent institutions.

The Basel Committee also recognised that there are banks which are significant to the domestic economy, while not being considered as a G-SIFI. The Basel Committee set out the framework whereby domestic authorities can evaluate whether a local bank is a D-SIB. This is based on a set of principles, including the assessment methodology and higher loss absorbency standards. The domestic scheme is advantageous as domestic authorities are better placed to determine the status of a domestic institution and have the power to determine additional capital adequacy requirements.

Identifying G-SIFIs and D-SIBs allows for further insulation of the global financial system from shocks. The G-SIFI framework explicitly prevents banks from taking too much risk by specifying capital adequacy requirements beyond Basel III. The D-SIB framework provides greater assurance, capturing domestic institutions that may have been missed under G-SIFIs and still subject these institutions to additional supervision and capital requirements.

Over and above the recent developments in the context of the GSIFs and D-SIBs, the international institutions, including the Financial Stability Board (FSB) and the Basel Committee have promoted macro-prudential policies that could potentially assist in contributing to national, regional and international financial stability.

As highlighted by the Financial Stability Board (2011a), macroprudential policy has three defining elements. First, its objective should be to limit systemic risk. This is defined by the Financial Stability Board as the risk of “widespread disruptions to the provision of financial services that have serious negative consequences for the economy at large.” That is, systemic risks are risks to the financial system as a whole. Second, the focus of macroprudential policy is on ensuring the stability of the financial system as a whole, as opposed to focussing on ensuring the stability of the individual components of the financial system. Third, macroprudential policy primarily uses prudential tools designed to address systemic risk.

While these three elements provide a clear conceptual foundation for macroprudential policy, it is difficult to translate these elements into practical policies. This is highlighted by discussions within policy and academic circles. Some of the questions revolve around the terms in the above statement. What prudential tools? How should they be used? There is currently no consensus on such issues (Galati and Moessner, 2011). Further, there are other important issues raised in the literature. These include issues relating to the institutional arrangements of macroprudential policy. What institutions should be established to oversee macroprudential policy? How should they be structured? What objectives should such a body or bodies have? What about international cooperation to address the international aspects of macroprudential policy?

The remainder of this section will seek to provide an overview of these issues. It will focus on issues relating to the institutional arrangements and infrastructure underpinning macroprudential policy, as well as relating to international aspects of macroprudential policy. This section of the paper will draw mainly on papers from official bodies such as the

Financial Stability Board ('FSB'), the Basel Committee for Banking Supervision ('Basel Committee') and the International Monetary Fund ('IMF').

2.1 The Rationale for Macroprudential Policy

The financial crisis demonstrated that macroeconomic stability and microprudential regulation were insufficient to secure financial stability (Claessens, Ghosh & Mihet, 2013). Financial regulation before the crisis failed to identify and address systemic risks, with devastating consequences for the real economy. As a result, there has been increasing interest in macroprudential policy, which aims to limit systemic risk (Bennani et al, 2014), and thus the chance of future financial crises.

There are two key dimensions to systemic risk – a time dimension and a cross-sectional dimension (Bennani, Despres, Dujardin, Duprey & Kelber, 2014). First, systemic risks can build up over time as a result of the procyclicality of the financial system (see Claessens, Ghosh & Mihet, 2013). Second, the cross-sectional dimension of systemic risk arises from the interconnectedness between financial institutions in financial markets (Bennani et al., 2014). As a result of this interconnectedness, disruptions in one part of the financial market may propagate through the financial system to have broader implications for the stability of the financial system. Macroprudential policy aims to address these two aspects (Claessens, Ghosh & Mihet, 2013). The next section will now seek to discuss the specific instruments used to address these two aspects.

2.2 Macroprudential Tools

Policymakers and regulators have developed various tools for macroprudential purposes. Often, these have been adapted from traditional microprudential tools (Claessens, Ghosh & Mihet, 2013). A standard set of macroprudential tools has yet to emerge, in comparison to

other policies such as monetary policy that has a well-settled selection of instruments (Galati and Moessner, 2011; Bennani et al., 2014). There are two good reasons to believe that there will not be a standard set of tools, nor should there be. First, since manifestations of systemic risk often depend on country and context-specific factors, no specific set of tools can be identified as “best practice” (IMF, 2013). Second, financial innovation will give rise to new risks, which requires flexibility in the choice of tools to address those risks (FSB, 2011a).

With this in mind, the next sub-section will now discuss current macroprudential tools being used. They can be categorised according to their function, whether they are intended to primarily address the “time” dimension of systemic risk, or to address the “cross-sectional” dimension of systemic risk (although it is noted many of these instruments serve to address both dimensions of systemic risk).

2.2.1 The Time Dimension

In the time dimension, macroprudential tools include capital-based instruments, liquidity-based instruments and asset-side instruments (Bennani et al., 2014). Capital-based instruments consist of (a) The Countercyclical Capital Buffer (‘CCB’); (b) Sectoral Capital Requirements ; and (c) The Leverage Ratio. Liquidity-based instruments consists the Liquidity Coverage Ratio. Asset-side instruments consist of (a) Loan-to-value Ratio Caps; and (b) Loan-to-income and Debt-service-to-income Ratio Caps.

2.2.2 The Cross-sectional Dimension

Measures addressing the cross-sectional dimension of systemic risk aim to address structural risks arising from interconnectedness and complexity in the financial system (IMF, 2013). These instruments do this through 1) seeking to limit spill overs to other financial institutions and the wider economy from the distress of a systemically important financial institution, 2)

reduce similarities between banks and 3) reduce their risk-taking behaviours (Bennani et al., 2014).

There are two important types of measures aimed at addressing the cross-sectional dimension. The first are structural measures aimed at separating risky speculative activities from banking activities, such as the Volcker Rule in the United States that became effective in April 2014, which restricts banks from undertaking riskier proprietary trading activities and investing in hedge funds and private equity funds (Bennani et al., 2014).

The second are additional capital surcharges for systemically important financial institutions ('SIFIs') that are over-and-above the capital requirements under the Basel III standards (Bennani et al, 2014). SIFIs are financial institutions whose distress or collapse would trigger wider negative repercussions in the financial system due to factors such as their size, interconnectedness or systemic importance. This additional capital surcharge increases their resilience, subsequently reducing the likelihood of distress or default, and thus reducing the likelihood and/or severity of systemic consequences of distress or default (Bennani et al., 2014).

Currently, official international institutions have developed frameworks for addressing the risks posed by SIFIs. Under the Basel Committee's framework adopted by the Basel Committee and the FSB to address the risks posed by global systemically important banks, global systemically important banks identified as such are required to hold an additional buffer of common equity of 1% to 2.5% of RWAs, with the level of the surcharge depending on the systemic importance of the global bank (Basel Committee, 2011). The Basel Committee and the FSB have also provided broad guidelines for addressing the risks posed by domestic systemically important banks (Basel Committee, 2012). A similar framework has been developed for global systemically important insurers by the International

Association of Insurance Supervisors ('IAIS'), and the FSB and the International Organisation of Securities Commissions are working on a framework to apply to systemically important non-bank non-insurance financial institutions (Bennani et al, 2014)

2.3 Institutional Framework

This section will discuss issues related to design of the institutional framework for macroprudential policy. This includes issues relating to whether an explicit mandate should be set, and whether the central bank should play a key role.

2.3.1 Mandate

It is logical that the body responsible for overseeing macroprudential policy should be given a clear mandate. This would involve setting out well-defined objectives, powers and tools, as well as how it intends to achieve its objectives (IMF, 2013). The benefits of a clear mandate would include ensuring the body's role is clear to the public, the expectations of what the body can achieve are realistic, and the macroprudential body can be held accountable for its actions (or lack of action) (Ingves, 2011).

However, views currently differ as to whether there should be an explicit mandate for macroprudential policy for the body tasked with macroprudential regulation (FSB, 2011a), as opposed to a general financial stability mandate. The Financial Stability Board (2011) highlights that such an explicit mandate is uncommon. A survey by Nier, Osinski, Jacome and Madrid (2011) indicates that out of the 60 surveyed countries, only 21 countries had a macroprudential mandate. This was often implicit.

Those in favour of explicit mandates argue that an explicit mandate gives legitimacy to the macroprudential body to take unpopular actions that may be costly in the short-term (Domanski and Ng, 2011). Further, it would help avoid inaction and policy paralysis (FSB, 2011a). An explicit mandate would also help policy objectives to be ranked where policy trade-offs exist (Ingves, 2011). Moreover, it should give the designated macroprudential authority adequate powers to carry out its mandate (Bennani et al., 2014). However, Ingves (2011) warns that a potential disadvantage is if explicit mandates or objectives are set in law, the formula of words used may inadvertently constrain policy actions.

2.3.2 The Involvement of the Central Bank

Previously there appeared to be a lack of consensus on whether central bank functions should be kept separate from banking regulation and supervision functions, which Galati and Moessner (2011) concluded after a broad literature review. However works published after Galati and Moessner (2011) have tended to highlight the benefit of the central bank playing an important role in macroprudential institutional arrangements (Nier et al., 2011; IMF, 2013; Bennani et al., 2014).

At least at an official level, it is considered desirable for the central bank to conduct or play an important role in macroprudential supervision (IMF, 2013). The IMF (2013) highlights that this would harness the central bank's expertise in systemic risk management in operating macroprudential policy. Further, it would harness the central bank's strong incentives to address systemic risk due to the high cost of inaction a strong role for the central bank can also help establish greater independence for macroprudential policy, preventing political interference.. Furthermore, there are significant overlapping interactions between macroprudential policy and monetary policy, which suggests that the involvement of the central bank is necessary to avoid conflicting policies (Turner, 2012). From another

perspective, central bank involvement can assure more effective coordination across policy functions, depending on the degree of institutional integration of central bank and financial regulatory functions (Nier et al., 2011).

In a significant number of countries though, there is an institutional separation between the central bank and supervisory bodies, suggesting that such an arrangement is considered valid in these countries. A survey by Nier et al. (2011) indicates that out of 50 countries surveyed, the central bank had responsibility for banking supervision in only 31 countries. They highlight this arrangement is present in two-thirds of emerging economies surveyed, while in advanced economies this arrangement is present in just over half of the relevant countries surveyed. Also in these countries, both the identification and mitigation of systemic risk, and the use of macroprudential tools, is a multi-agency affair with “distributed decision-making” in relation to macroprudential policy rather than decision-making by a central body or committee (Nier et al., 2011). Though Nier et al. (2011) recognise that country and context-specific factors means “one size does not fit all”, they highlight numerous conceptual disadvantages to such an institutional arrangement, as well as empirical evidence of its potential to negatively affect financial stability.

2.4 International Co-operation

Globalisation has resulted in a high level of integration between national financial markets. This means that developments in one financial market may have broad implications for other national financial markets. The IMF (2013) highlights that the conduct of macroprudential policies in the financial market can raise international issues, including the imposition of negative externalities on other countries as a result of a lack of macroprudential policy action, cross-border regulatory arbitrage, “leakage” effects, and home-host authority conflicts arising

from the supervision of financial institutions that operate in multiple jurisdictions. This section will focus on the last two issues.

2.4.1 “Leakage Effects”

A key element of the Basel III standards is the Countercyclical Capital Buffer (CCB).. For the CCB to be effective in leaning against the credit cycle, it must affect the loan supply of regulated banks and this effect must not be offset by unregulated sources of credit (Aiyar, Calomiris & Wieladek, 2012). However, large offsetting unregulated credit flows typically exist, and arise from sources such as cross-border lending, lending by foreign branches, or capital markets (IMF, 2013; Aiyar, Calomiris & Wieladek, 2012).

The reciprocity mechanism in the CCB can curtail some leakage effects (IMF, 2013). The reciprocity principle requires cooperation among supervisory authorities in ensuring that credit exposures to a given country are all subject to the same capital requirement imposed by the CCB. This is so regardless of whether the credit is provided by a domestic or a foreign entity. This avoids any incentive to circumvent the CCB through cross-border lending or lending by foreign branches. The reciprocity principle is a cornerstone of the Basel III capital standards, and requires full cooperation by home authorities such that when the CCB is activated in any country, all supervisory authorities in other countries are to apply the capital requirement to credit exposures to that country (IMF, 2013).

However, as the IMF (2013) highlights, there remains work to be done to further address these leakage effects. They highlight how there is currently no international agreement to implement the reciprocity principle in relation to other macroprudential instruments such as sectoral measures (e.g. LTV and DTI ratios) to address risks in particular sectors in a country. They also highlight that the reciprocity mechanism remains untested. The possibility of extending the reciprocity principle should be further explored (Bennani et al., 2014).

2.4.2 Home-Host Conflicts

There are immanent conflicts of interest between home and host authorities arising primarily from each national supervisor's mandate to ensure financial stability in their own country (FSB, 2011b). As a result, home authorities are naturally cautious about sharing information with host authorities regarding adverse changes in the financial condition of banking groups (FSB, 2011b; D'Hulster, 2012). The absence of such information may undermine domestic systemic risk assessment in the host country (IMF, 2013).

The issues resulting from an absence of information about parent banks is particularly acute in the context of emerging countries. Foreign banks account for a significant portion of activity in emerging countries, and are often systemically important in the host emerging country (FSB, 2011b). The FSB (2011b) highlights that foreign banks account for 70% or more of total financial assets in many countries in Central and Eastern Europe; over 40% in Caribbean and Latin American countries; and up to 50% in Asian countries. Given the systemic importance of foreign banks in many emerging economies, the absence of information from home supervisors on banking groups may adversely impact domestic systemic risk assessment in emerging countries including in most countries in the Asia Pacific region (IMF, 2013).

International cooperation may be able to address information sharing issues. The IMF (2013) suggests that supervisory colleges can facilitate information exchange. Other official institutions such as the G20, the FSB and the Basel Committee have also advocated their use (D'Hulster, 2012). However, there are limitations to relying on supervisory colleges to adequately inform supervisors in the setting of macroprudential policy. D'Hulster (2012) highlights supervisory colleges face incentive problems in the sharing of information between home and host authorities, such that in the absence of an internationally agreed resolution or

burden sharing mechanism “supervisory cooperation cannot be fully effective”. This lends greater weight to the importance of the FSB’s current work in developing and implementing resolution regimes for systemically important financial institutions.

3 – Measuring Systemic Risk²

In the first instance, we focus on individual measures of systemic risk which predict how much the value a stock is expected to decline by in a market downturn. Acharya and Richardson (2009); Acharya, Pedersen, Philippon, and Richardson (2010); and Acharya, Engle and Richardson (2012), lay the theoretical foundations of such an approach. In a downturn, financial institutions may fall short of capital, which can either lead to a shut down, (possibly) causing contagion, or the regulator will need to replenish capital. On an ex-ante basis, a regulator is concerned with minimizing this payout, which the authors show to be a function of size, leverage and expected equity losses during a crisis. While the first two components are easily available, one could use three different econometric techniques to predict the expected equity loss in a crisis. Acharya, Pedersen, Philippon, and Richardson, (2010); and Acharya, Engle and Richardson (2012) propose a simple historical estimator. Brownlees and Engle (2010) suggest a bivariate model of returns which uses asymmetric Generalized AutoRegressive Conditional Heteroskedasticity (GARCH) for volatility and an asymmetric Dynamic Conditional Correction (DCC) model for correlation. The third method eschews modeling the entire return process and only models the tail as in De Jonghe (2010) and Hartmann, Straetmans and Vries (2005).

² Moshirian (2015) has discussed a number of issues with respect to NYU systemic risk and the related literature and section 3 of this article is heavily drawn from that article.

3.1 Description of a few quantitative measures of systemic risk

The theoretical foundations of the systemic risk measures we consider are well articulated by Acharya and Richardson (2009) and more importantly by Acharya, Pedersen, Philippon, and Richardson (2010) and Acharya, Engle and Richardson (2012) who propose Systemic Expected Shortfall (SES) as the shortfall one can expect from an individual financial institution in the midst of a crisis. The sum of all the individual shortfalls is the total expected shortfall of the financial sector. *SES* is taken to be sum of two components shown in the equation below:

$$\frac{SES^i}{w_o} = \frac{za^i}{w_0} - 1 - E\left[\frac{w_1}{w_0} - 1 \mid W_1 < zA\right]$$

The first part, $za^i/w_0 - 1$ measures whether the initial leverage $a^i(\text{assets})/w_0^i(\text{equity})$ is already too high. z is the initial target level of assets to be maintained by the financial institution. The second term is the expected equity return conditional on the occurrence of the crisis. Given that an actual crisis may not necessarily be available, tail events that we observe during regular times are extrapolated to measure the capital shortfall during an actual crisis. This second term is the key pointer to which firms will be at risk in the midst of a crisis. Regulators and market participants will be able to either impose policy changes or market discipline respectively on these weak firms which will not be able to withstand a systemic crisis.

The expected equity return component is calculated using three different techniques to determine which will perform better. The first technique is a simple historical estimator

proposed by Acharya, Pedersen, Philippon, and Richardson (2010) where tail events are defined to be the worst 5% market outcomes at a daily frequency which is denoted by $I_{5\%}$.

$$MES_{5\%}^i \equiv -E\left[\frac{w_1^i}{w_0^i} - 1 \mid I_{5\%}\right]$$

The second technique is based on Brownlees and Engle (2010) who rely on a multistage modeling approach where the bivariate process of firm and market returns are described by Marginal Expected Shortfall or *MES* (the expected equity losses for a firm from a modest decline in overall returns):

$$MES_{it-1} = E_{t-1}(r_{it} \mid r_{mt} < C)$$

$$r_{mt} = \sigma_{mt} \varepsilon_{mt}$$

$$r_{it} = \sigma_{it} \rho_{it} \varepsilon_{mt} + \sqrt{1 - \rho_{it}^2} \xi_{it}$$

The standard deviations σ_{it} and σ_{mt} are modeled using asymmetric GARCH while the ρ_{it} is modeled by asymmetric DCC.

- Brownlees and Engle (2010) and Acharya, Pedersen, Philipson, and Richardson (2010) propose the use of market data to estimate systemic risk contributions of firms. One of the key questions is – How much capital would a firm need if we have another financial crisis? This could be supplied by taxpayers or spill into the economy with all the externalities that a failure causes. One could estimate for each firm the expected capital shortfall in a future crisis. As one finds little data on crises, it is

necessary to carefully structure the problem. This is done by estimating MES ie the expected equity losses for a firm from a modest decline in overall returns. From MES, long term MES (LRMES) can be measured which captures the full financial crisis. On this basis, the New York Univeristy Volatility-Laboratory calculates capital shortage based on liabilities, which is called SRISK. As equity values fall in a crisis, leverage increases until the firm is in distress. Nominal debt is taken from Bloomberg and does not vary significantly over time. It is from 10-K and 10-Q filings. $SRISK = kD - (1 - k)(1 - LRMES)E$ where SRISK is capital shortages based on liabilities and k is a prudential standard ratio of equity to assets = 8%

The third technique (*Tail-β*) is based on a systemic risk measures used by De Jonghe (2010) and initially proposed by the current head of research at the ECB, Hartmann et al. (2005). It is based on a semi parametric probability estimator by de Haan (1994).

$$Tail - \beta = \frac{\frac{m}{n} (z_{n-m,n})^\alpha}{p^{1-\alpha}}$$

Here Z is the minimum return series between the return series of an individual firm and the market. α is the tail index which captures the decay in the probability with which ever more extreme events occur (jointly) and is computed using a modified Hill Estimator methodology first proposed by Huisman et al. (2001). This probability estimator can then be used to calculate expected equity return in the midst of a crisis.

In this paper, we only use the measures of sytemic risk based on SRISK. We do not report a comparision of MES or SRISK with other measures of systemic risk, including Tail-β, in this particular research work, as our focus is on the NYU model of systemic risk. The intention is not to survey the literature of systemic risk and list all the existing metholodigies proposed in

this area of research. The next section intends to provide the micro-foundation of the studies by Acharya, Pedersen, Philippon, and Richardson (2010) and Acharya, Engle and Richardson (2012).

3.2 A Framework for SRISK

The financial sector imposes real costs only when it is under-capitalized as a whole. The magnitude of these costs is linearly related to the extent of the under-capitalization of the financial sector. Therefore each firm's contribution to the real-sector costs is directly related to its own under-capitalization only in those states of the world where the financial sector is under-capitalized as a whole. SRISK calculates this contribution, proxying for the relevant "states" of the world as a -40% shock to the global market economy.

What matters in the proposed model of Acharya, Pedersen, Philippon, and Richardson (2010) and Acharya, Engle and Richardson (2012) is when the financial sector is unable to intermediate all of its service provisions to the real economy. One can assume that this is when it finds itself strapped of private funding capital, in a world without any interventions. In turn, private markets will not lend to financial firms when their market equity as a whole (regardless of whether it is called enterprise value or asset value) is not high enough to raise other sources of funding, and also not high enough to ensure that monies lent will be well-managed by the bankers/shareholders. Agency problems may arise as agents, who have little at stake in distressed situations, may gamble for resurrection rather than go for Net Present Value (NPV) accretive projects.

Therefore, one could argue that the market value of a financial firm is not just the market value of assets but also of intangible assets, including issues such as working relationships etc. However, what matters in the model proposed by Acharya, Pedersen, Philippon, and Richardson(2010) and Acharya, Engle and Richardson (2012) is the market value of financial

firm is what determines banker/shareholder incentives, and in turn, the private funding capacity of the financial firm. In Acharya, Engle and Richardson's (2012) model, factors such as the nature of assets, the nature of bank intangibles and relationships, monopoly rents, etc., are all captured in market value and in turn also in their market-value based measure of downside risk. It should be noted that in Acharya, Engle and Richardson's (2012) model, "local" downside risk measures based on -2% shocks, may not capture all of the "global" downside risk in the case of -40% shocks, but this is still likely to be superior to pure book-value accounting.

It should be noted that shifts in pricing kernels are relevant to the downside risk of a financial firm if they affect the firm's funding capacity in private markets. A CEO or a regulator cannot blame the market value of equity collapse on risk premium and let the financial firm be run aground due to bankruptcy and let a credit crunch ensue when this happens to many financial firms. So risk premium fluctuations are something regulators should guard the system against as they can cause financial firms to fail or be strapped of private funding.

Furthermore, it should be noted that while it is true that some may like early warning signals of crises, other factors should also be considered as part of the process of identifying financial risk in the system. For instance the recent studies at NYU including the recent work by Acharya, Engle and Pierret (2013) attempt to identify under what kind of market shock the financial sector would become under-capitalized as a whole (rather than defining this scenario to be a -40% shock to the market). Nevertheless, regulators and researchers would like to ensure that capital requirements at a minimum react to concurrent signals. For instance, if we had recapitalized the banking sector in March of 2008, it would have been far better than after the failure of Lehman Brothers. If we had recapitalized European banks in 2010 or in the summer of 2011, it would have been far better than not at all. Therefore, while

the model in Acharya, Pedersen, Philippon, and Richardson (2010) and Acharya, Engle and Richardson (2012) attempts to develop early warning signals, it is equally important to pick up when regulatory capital is far short of the market assessment of capitalization of banks, and when the latter is ignored, the financial system may run the risk of letting insolvent banks continue operating in the economy. The importance of timeliness of market value signals in recapitalizing banks - relative to current regulatory methods such as risk weights - can be found in the recent study by Acharya, Engle and Pierret, (2013).

4 – Empirical Results of Banks Systemic Risk for Asia

As stated earlier, regional architectures such as ASEAN, ASEAN plus 6 and the East Asia Summit are amongst those forums that attempt to create a more resilient regional block with respect to trade, finance and mobility of resources. Asian capital markets have become more resilient since the global financial crisis and yet global forces continue their influence on the development of Asian financial markets. Similarly, being able to manage regional and national banking systems and strengthen the foundation of regional financial stability are amongst other major challenges facing policy makers and market participants.

In this section, we present the SRISK measures for the top 20 Asian banks as well as individual empirical results for China, India and Japan that are part of ASEAN plus six and the East Asia Summit.

Table 1 presents the top 20 banks in Asia ranked according to SRISK. We see the Japanese banks remain among the largest contributors to systemic risk in Asia. As Table 1 shows, three of the top five contributors are the Mitsubishi UFJ FG, the Mizuho FG and the Sumitomo Mitsui FG, which collectively account for 33.43% of systemic risk in Asia. These three Japanese banks were also identified as G-SIFIs by the Basel Committee, with the Bank of China being the only other G-SIFI identified in Asia. Japanese banks have large holdings

of Japanese government debt. Potential explanations of the higher SRISK for these banks could be concerns about the sustainability of the Japanese government's borrowing given its weak economic conditions and the rising yen.

Table 1 Global Systemic Risk by Country: Asia SRISK Top 20 (October 2014)

Systemic Risk Rankings for 2014-10-03 View changes

| Institution | SRISK% | RNK ▲ | SRISK (\$ m) | MES | Beta | Cor | Vol | Lvg |
|---|--------|-------|--------------|-------|-------|-------|------|-------|
| Mitsubishi UFJ Financial Group Inc | 14.29 | 1 | 138,382 | 1.47 | 0.57 | 0.05 | 21.8 | 32.09 |
| Mizuho Financial Group Inc | 10.80 | 2 | 104,578 | 1.11 | 0.43 | -0.01 | 17.0 | 40.82 |
| Bank of China Ltd | 10.71 | 3 | 103,679 | 1.77 | 0.68 | 0.21 | 20.6 | 19.83 |
| China Construction Bank Corp | 9.35 | 4 | 90,551 | 2.33 | 0.90 | 0.30 | 24.1 | 15.00 |
| Sumitomo Mitsui Financial Group Inc | 8.34 | 5 | 80,787 | 1.41 | 0.54 | 0.06 | 19.4 | 27.81 |
| Bank of Communications Co Ltd | 4.59 | 6 | 44,434 | 2.44 | 0.94 | 0.22 | 31.5 | 19.07 |
| China CITIC Bank Corp Ltd | 3.45 | 7 | 33,391 | 2.54 | 0.99 | 0.18 | 21.8 | 21.05 |
| Resona Holdings Inc | 2.57 | 8 | 24,857 | 1.32 | 0.51 | 0.04 | 25.2 | 34.86 |
| Sumitomo Mitsui Trust Holdings Inc | 2.19 | 9 | 21,231 | 2.19 | 0.84 | 0.09 | 27.6 | 25.68 |
| Dai-ichi Life Insurance Co Ltd/The | 2.05 | 10 | 19,898 | 3.13 | 1.18 | 0.05 | 36.2 | 22.31 |
| Nomura Holdings Inc | 2.04 | 11 | 19,760 | 2.44 | 0.94 | 0.07 | 27.0 | 19.73 |
| National Australia Bank Ltd | 1.89 | 12 | 18,278 | 2.33 | 0.90 | 0.22 | 23.7 | 11.94 |
| Shinkin Central Bank | 1.73 | 13 | 16,742 | -0.43 | -0.17 | -0.17 | 15.6 | 37.02 |
| State Bank of India | 1.19 | 14 | 11,486 | 2.10 | 0.83 | 0.23 | 39.0 | 13.78 |
| Industrial Bank of Korea | 1.11 | 15 | 10,710 | 2.88 | 1.11 | 0.17 | 60.9 | 23.96 |
| Ping An Insurance Group Co of China Ltd | 1.06 | 16 | 10,264 | 2.10 | 0.81 | 0.19 | 23.6 | 11.16 |
| Daiwa Securities Group Inc | 0.89 | 17 | 8,583 | 2.44 | 0.94 | 0.07 | 28.3 | 16.53 |
| Fukuoka Financial Group Inc | 0.86 | 18 | 8,334 | 1.60 | 0.62 | 0.09 | 28.5 | 36.17 |
| Hokuhoku Financial Group Inc | 0.70 | 19 | 6,745 | 1.49 | 0.57 | 0.04 | 33.0 | 42.71 |
| Bank of India | 0.62 | 20 | 6,021 | 3.04 | 1.19 | 0.22 | 68.6 | 38.75 |

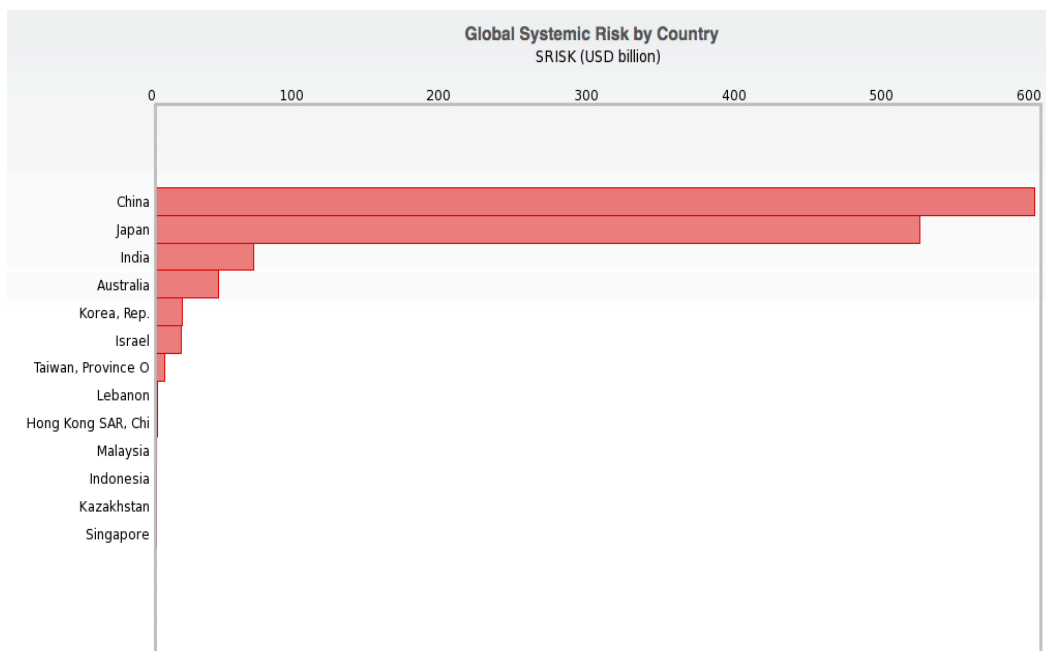
Source: Estimated by NYU V-Lab.

4.1 – Empirical Results of Banks Systemic Risk for China, Japan, and India

In this section, we present the most recent figures showing the systemic risk of banks domiciled in China, Japan, India using the NYU V-Lab data and measures of systemic risk for September and October 2014. These three countries are some of the largest economies in Asia. Figure 1 shows that China, Japan and India's banks contribute the most to systemic risk

from the Asian region. China and Japan contribute the most to systemic risk in the region out of the three countries. Together, Chinese and Japanese banks account for the top eleven financial institutions ranked according to systemic risk in the Asian region, as shown in Table 1. India's systemic risk is far lower at around USD70 billion.

Figure 1 Asia SRISK: Global Systemic Risk by Country



Source: Estimated by NYU V-Lab.

Japanese banks collectively form the largest contribution to systemic risk in Asia. As Table 1 shows, three of the top five contributors are the Mitsubishi UFJ FG, the Mizuho FG and the Sumitomo Mitsui FG, which collectively account for 33.43% of systemic risk in Asia. These three Japanese banks were also identified as G-SIFIs by the Basel Committee, with the Bank of China being the only other G-SIFI identified in Asia. These three banks are also the largest

contributors to global systemic risk, with Mitsubishi UFJ FG ranked 1st, Mizuho FG ranked 2nd, and Sumitomo Mitsui FG ranked 9th globally in terms of SRISK. It is also interesting to note the State Bank of India, which is the largest contributor to national systemic risk in India, is ranked 14th in Asia.

The following subsections will now examine contributions to national bank systemic risk in Japan, China, India, Indonesia and the Republic of Korea.

4.2 Japanese Banks

In Japan, its largest banks, the Mitsubishi UFJ FG, Mizuho FG and Sumitomo Mitsui FG are respectively the top contributors to national systemic risk. The other Japanese financial institutions in the top ten ranked according to systemic risk are Resona Holdings, Sumitomo Mitsui Trust Holdings, Dai-Chi Life Insurance, Nomura Holdings, Shinkin Central Bank and Daiwa Securities Group respectively, as shown in Table 2.

Table 2 Global Systemic Risk by Country: Japan SRISK (Oct 2014)

Systemic Risk Rankings for 2014-10-03 View changes

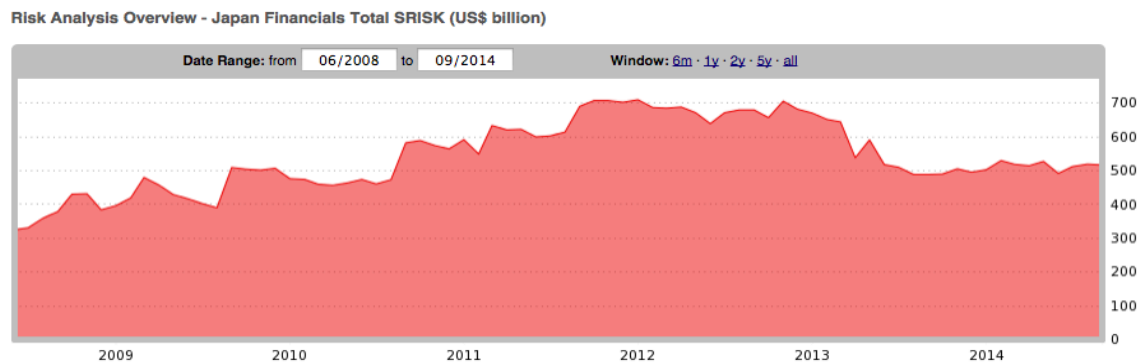
| Institution | SRISK% | RNK ▲ | SRISK (\$ m) | MES | Beta | Cor | Vol | Lvg |
|-------------------------------------|--------|-------|--------------|-------|-------|-------|------|-------|
| Mitsubishi UFJ Financial Group Inc | 26.49 | 1 | 138,382 | 1.47 | 0.57 | 0.05 | 21.8 | 32.09 |
| Mizuho Financial Group Inc | 20.02 | 2 | 104,578 | 1.11 | 0.43 | -0.01 | 17.0 | 40.82 |
| Sumitomo Mitsui Financial Group Inc | 15.47 | 3 | 80,787 | 1.41 | 0.54 | 0.06 | 19.4 | 27.81 |
| Resona Holdings Inc | 4.76 | 4 | 24,857 | 1.32 | 0.51 | 0.04 | 25.2 | 34.86 |
| Sumitomo Mitsui Trust Holdings Inc | 4.06 | 5 | 21,231 | 2.19 | 0.84 | 0.09 | 27.6 | 25.68 |
| Dai-ichi Life Insurance Co Ltd/The | 3.81 | 6 | 19,898 | 3.13 | 1.18 | 0.05 | 36.2 | 22.31 |
| Nomura Holdings Inc | 3.78 | 7 | 19,760 | 2.44 | 0.94 | 0.07 | 27.0 | 19.73 |
| Shinkin Central Bank | 3.21 | 8 | 16,742 | -0.43 | -0.17 | -0.17 | 15.6 | 37.02 |
| Daiwa Securities Group Inc | 1.64 | 9 | 8,583 | 2.44 | 0.94 | 0.07 | 28.3 | 16.53 |
| Fukuoka Financial Group Inc | 1.60 | 10 | 8,334 | 1.60 | 0.62 | 0.09 | 28.5 | 36.17 |
| Hokuhoku Financial Group Inc | 1.29 | 11 | 6,745 | 1.49 | 0.57 | 0.04 | 33.0 | 42.71 |
| Yamaguchi Financial Group Inc | 1.03 | 12 | 5,392 | 1.48 | 0.57 | -0.03 | 25.9 | 37.67 |
| T&D Holdings Inc | 1.02 | 13 | 5,314 | 2.33 | 0.89 | 0.03 | 32.3 | 16.59 |
| Bank of Yokohama Ltd/The | 0.97 | 14 | 5,046 | 1.27 | 0.49 | 0.07 | 25.4 | 19.39 |
| Chiba Bank Ltd/The | 0.95 | 15 | 4,963 | 1.60 | 0.62 | 0.05 | 28.2 | 20.17 |
| Nishi-Nippon City Bank Ltd/The | 0.90 | 16 | 4,725 | 1.25 | 0.48 | -0.01 | 34.9 | 39.36 |
| 77 Bank Ltd/The | 0.89 | 17 | 4,659 | 1.17 | 0.45 | 0.02 | 29.4 | 40.16 |
| Joyo Bank Ltd/The | 0.77 | 18 | 4,022 | 1.43 | 0.55 | 0.04 | 31.4 | 23.56 |
| Bank of Kyoto Ltd/The | 0.69 | 19 | 3,604 | 1.36 | 0.53 | 0.01 | 31.3 | 25.05 |
| Gunma Bank Ltd/The | 0.67 | 20 | 3,524 | 1.53 | 0.59 | 0.02 | 32.2 | 26.57 |

Source: Estimated by NYU V-Lab.

Since 2012, capital flight from Europe to Japan has driven the yen to post-war highs relative to the US dollar. Despite the Bank of Japan's (BOJ) efforts to depress the yen in 2012, persistent strengthening of the yen continues to stem Japan's economic growth and worsens the nation's trade deficit by undercutting export competitiveness. However positive downward influences have been felt recently as investors sell yen in favour of the dollar on the back of growing confidence in a U.S recovery (Harner, 2014). Furthermore the Bank of Japan, in pursuit of a 2% inflation target, purchased JPY 500 billion in short term Japanese government bonds (JGB's) in early September this year. The BOJ is the major bondholder of JGB's, now holding over 20%. Purchases of JGB's underscores the government's commitment to reducing concerns regarding concentrated sovereign debt ownership in Japan's domestic financial system. Simultaneously, aggressive quantitative easing policy

maintains low bond yields which keeps interest payments down and the systemic risk position of Japanese banks at bay (Ito, 2014).

Exhibit 1 National SRISK Time Series for Japan, 2008-14 (USD billion)



Source: NYU V-Lab.

4.3 Chinese Banks

In China, the state-owned commercial banks – the Bank of China, the Agricultural Bank of China, the China Construction Bank and the Industrial and Commercial Bank of China, based on the NYU V-Lab’s measures of systemic risk, are ranked 1st, 2nd, 3rd and 4th in terms of national systemic risk, as shown in Table 3. The Bank of Communications, ranked 5th, is a second-tier commercial bank, and caps off the top five. The next five financial institutions ranked in terms of systemic risk are second-tier commercial banks, and are China Citic Bank,

China Merchants Bank, Shanghai Pudong Development Bank, Industrial Bank, and China Minsheng Banking Corp.

Table 3 Global Systemic Risk by Country: China SRISK (Sept 2014)

Systemic Risk Rankings for Sep 26, 2014 View changes

| Institution | SRISK% | BNK ▲ | SRISK (\$ m) | MES | Beta | Cor | Vol | Lvg |
|---|--------|-------|--------------|------|------|------|------|-------|
| Bank of China Ltd | 17.75 | 1 | 105,695 | 1.94 | 0.76 | 0.21 | 18.8 | 19.72 |
| Agricultural Bank of China Ltd | 14.36 | 2 | 85,517 | 0.65 | 0.25 | 0.16 | 15.6 | 19.24 |
| China Construction Bank Corp | 14.10 | 3 | 83,992 | 2.17 | 0.85 | 0.23 | 21.7 | 14.59 |
| Industrial & Commercial Bank of China Ltd | 12.83 | 4 | 76,419 | 0.75 | 0.30 | 0.12 | 14.8 | 15.61 |
| Bank of Communications Co Ltd | 7.33 | 5 | 43,626 | 2.41 | 0.94 | 0.20 | 25.5 | 18.71 |
| China CITIC Bank Corp Ltd | 5.64 | 6 | 33,563 | 2.61 | 1.04 | 0.17 | 22.1 | 20.99 |
| China Merchants Bank Co Ltd | 4.95 | 7 | 29,502 | 1.27 | 0.50 | 0.18 | 20.9 | 18.68 |
| Shanghai Pudong Development Bank | 4.30 | 8 | 25,599 | 1.13 | 0.45 | 0.18 | 20.4 | 21.20 |
| Industrial Bank Co Ltd | 4.11 | 9 | 24,479 | 1.19 | 0.48 | 0.16 | 22.2 | 19.93 |
| China Minsheng Banking Corp Ltd | 2.88 | 10 | 17,143 | 1.04 | 0.41 | 0.18 | 21.2 | 16.84 |
| China Everbright Bank Co Ltd | 2.59 | 11 | 15,406 | 0.79 | 0.30 | 0.14 | 20.4 | 20.09 |
| Ping An Insurance Group Co of China Ltd | 2.04 | 12 | 12,128 | 2.47 | 0.97 | 0.20 | 23.1 | 11.05 |
| Huaxia Bank Co Ltd | 2.01 | 13 | 11,971 | 0.80 | 0.32 | 0.14 | 21.1 | 23.14 |
| Ping An Bank Co Ltd | 1.96 | 14 | 11,653 | 1.06 | 0.42 | 0.12 | 40.8 | 18.22 |
| Bank of Beijing Co Ltd | 1.21 | 15 | 7,224 | 0.94 | 0.38 | 0.09 | 26.8 | 17.29 |
| Chongqing Rural Commercial Bank | 0.82 | 16 | 4,911 | 3.16 | 1.21 | 0.20 | 30.3 | 21.70 |
| Bank of Nanjing Co Ltd | 0.50 | 17 | 2,982 | 0.94 | 0.38 | 0.14 | 18.7 | 19.58 |
| Bank of Ningbo Co Ltd | 0.46 | 18 | 2,730 | 0.91 | 0.37 | 0.12 | 20.8 | 18.06 |
| Evergrande Real Estate Group Ltd | 0.17 | 19 | 1,015 | 2.74 | 1.06 | 0.14 | 25.0 | 10.28 |
| Agile Property Holdings Ltd | 0.00 | 20 | -83 | 3.32 | 1.30 | 0.16 | 38.8 | 6.88 |

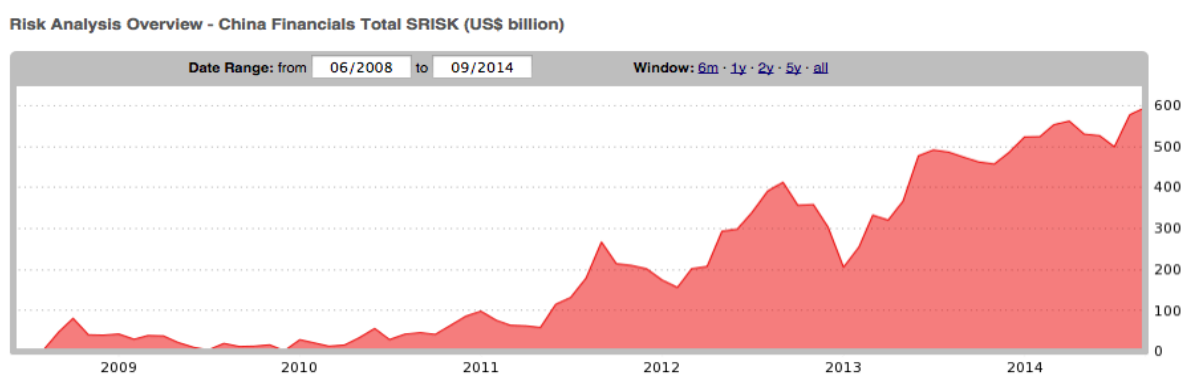
Source: Estimated by NYU V-Lab.

Notably in the first half of 2014, five of China's largest systemic risk contributors (Industrial & Commercial Bank of China, China Construction Bank, Agricultural Bank of China, Bank of China and Bank of Communications) wrote down a total of 46.91 billion yuan or \$7.57 billion (WSJ 2014). Furthermore these five state-owned banks reported over 400 billion yuan in non-performing loans at the start of July, representing 21% growth in the last 12 months. One notable regulatory development has been the approval of five local governments to establish institutions for the purpose of purchasing NPL's in provinces that suffer from the highest concentrations (Dow Jones, 2014). These provinces include Anhui, Guangdong,

Jiangsu and Zhejiang, all of which are home to private businesses focused in the steel trade and manufacturing sectors (Dow Jones, 2014).

As there have been some concerns regarding the growing importance of shadow banking in China and its contribution to possible systemic risk, it would be useful to briefly review some of the recent studies with respect to shadow banking in China, given the importance of regional financial stability in Asia.

Exhibit 2 National SRISK Time Series for China, 2008-14 (USD billion)



4.4 Origins of shadow banking in China

Shen (2013) points to the shadow banking system in China as a result of China's financial system, borne out of underground financing and unregulated off-balance sheet lending, led by China's state banks. Shen argues that the progenitors of much of China's shadow financing are state-owned enterprises (SOEs) which make up 90% of shadow lenders, and are a result of having the size and ability to avoid regulatory requirements.

Li (2013) attributes the recent growth of China's shadow banking sector to increased regulation and supervision of commercial banks following the GFC (Li 2013). Adrian et al (2013) also mentions increased regulation as a principal driver of shadow banking in China.

They point to higher interest rates, tougher reserve requirements, and more conservative credit quotas as factors incentivising banks to originate credit off balance sheets.

Ghosh et al (2012) place the exposure to market, credit and maturity/liquidity risk by trust companies as another risk factor of the Chinese SBS. They state that trust companies are vulnerable due to the “dependence on underlying asset prices, which are subject to potential correction and the often risky pricing behaviour undertaken to attract investment.”

Schuman (2014) argues that whilst China’s financial system is not as connected to the global economy as those of Europe or the US, a crisis in shadow banking in China would severely damage its growth prospects, which in turn would dampen global growth.

4.4.1 Regulation and Supervision

Adrian et al (2013) argue that shadow credit intermediation in China is less the result of financial innovation and more the result of responses to heightened restrictions on traditional intermediation activity. They also note that the Chinese SBS is more localised in recent years, but that global propagation risks are still present. They recommend that containment of global propagation of shocks can be implemented through enhanced monitoring of activities of the largest Chinese financial intermediaries.

In China, the Chinese Banking Regulatory Commission (CBRC) regulates banks and nonbank institutions, which includes trust companies. Brokerage firms and insurance companies are regulated by the China Securities Regulatory Commission and the China Insurance Regulatory Commission respectively. Other shadow banking institutions do not appear to be under any consistent regulatory framework.

Li (2013) also recommends stronger monitoring systems to regulate shadow banking activities, echoing recommendations made by the FSB in 2012. In 2011, the People’s Bank of

China began issuing “total social financing statistics” aimed at gauging the size of credit expansion. Li (2013) however argues that these statistics lack specificity and are unresponsive to the swift evolution of innovative credit intermediation methods.

Shen (2013) however, notes the tension between allowing the SBS to liberalise the financial sector and mitigating systemic risk and the potential for shocks to the economy. He argues that the Chinese government must reform the lending system to offer more investment incentives to lenders to create regulated bonds and other financial products. Other policy options include the introduction of properly functioning private sector long-term savings, mutual fund or pensions markets as well as a standardised and unified bond market.

4.5 Indian Banks

As noted from the NYU V-Lab measures of systemic risk, Indian banks have much less impact on regional systemic risk than their Japanese and Chinese counterparts (Table 4). The 20 banks that contribute most to national systemic risk in India are all nationalised as shown in Table 4.. The State Bank of India is by far the largest in terms of systemic risk, followed by the Bank of India, Canara Bank, Bank of Baroda and Punjab National Bank shown in Table 4.

Table 4 Global Systemic Risk by Country: India SRISK (October 2014)

Systemic Risk Rankings for 2014-10-03 View changes

| Institution | SRISK% | RNK ▲ | SRISK (\$ m) | MES | Beta | Cor | Vol | Lvg |
|---------------------------|--------|-------|--------------|------|------|------|------|-------|
| State Bank of India | 17.48 | 1 | 11,486 | 2.10 | 0.83 | 0.23 | 39.0 | 13.78 |
| Bank of India | 9.16 | 2 | 6,021 | 3.04 | 1.19 | 0.22 | 68.6 | 38.75 |
| Canara Bank | 7.15 | 3 | 4,696 | 2.37 | 0.93 | 0.17 | 53.1 | 30.69 |
| Bank of Baroda | 7.10 | 4 | 4,665 | 2.22 | 0.87 | 0.22 | 36.0 | 18.04 |
| Punjab National Bank | 6.58 | 5 | 4,324 | 2.85 | 1.12 | 0.22 | 46.3 | 18.36 |
| Union Bank of India | 5.13 | 6 | 3,374 | 2.67 | 1.06 | 0.23 | 68.9 | 29.58 |
| IDBI Bank Ltd | 4.98 | 7 | 3,270 | 3.24 | 1.28 | 0.23 | 77.0 | 33.45 |
| Central Bank of India | 4.30 | 8 | 2,825 | 2.33 | 0.92 | 0.20 | 41.1 | 34.17 |
| Indian Overseas Bank | 4.24 | 9 | 2,788 | 2.48 | 0.97 | 0.22 | 51.5 | 39.10 |
| Syndicate Bank | 3.95 | 10 | 2,593 | 2.79 | 1.11 | 0.20 | 68.3 | 37.41 |
| Allahabad Bank | 3.56 | 11 | 2,343 | 3.16 | 1.23 | 0.22 | 80.7 | 41.59 |
| Corp Bank | 3.46 | 12 | 2,275 | 1.96 | 0.77 | 0.21 | 39.1 | 42.16 |
| Oriental Bank of Commerce | 3.42 | 13 | 2,246 | 3.80 | 1.49 | 0.20 | 67.0 | 32.01 |
| UCO Bank | 3.33 | 14 | 2,189 | 1.97 | 0.77 | 0.20 | 51.7 | 29.73 |
| Andhra Bank | 2.84 | 15 | 1,867 | 3.94 | 1.55 | 0.19 | 83.0 | 44.50 |
| Indian Bank | 2.47 | 16 | 1,621 | 2.31 | 0.92 | 0.18 | 41.8 | 26.27 |
| Bank Of Maharashtra | 1.90 | 17 | 1,251 | 1.84 | 0.72 | 0.18 | 35.1 | 31.12 |
| Dena Bank | 1.88 | 18 | 1,234 | 1.80 | 0.71 | 0.19 | 45.1 | 39.59 |
| State Bank of Travancore | 1.60 | 19 | 1,049 | 1.61 | 0.63 | 0.16 | 37.7 | 40.59 |
| Punjab & Sind Bank | 1.56 | 20 | 1,025 | 1.66 | 0.65 | 0.19 | 39.0 | 60.99 |

Source: Estimated by NYU V-Lab.

It is interesting to observe that the composition of the Indian banking system is dominated by public-sector banks such as Punjab National Bank and the Central Bank of India, ranking 5th and 8th respectively in Table 4 (Michael, 2014). In contrast to Chinese public-sector banks Indian banks are burdened with a growing percentage of non-performing loans, reaching 4.2% of total loans in September 2013 (Acharya, 2014).

5. Conclusion

This paper has discussed aspects of global and regional financial systems. It has analysed a number of issues associated with emerging macro-prudential tools and policies and their

implications for the financial markets. Asian banks survived relatively well during the recent global financial crisis. However, the sovereign debt crisis in Europe and the withdrawal of funds from the Asian markets (similar to capital outflows from Asia after the collapse of the Lehman Brothers) have highlighted the importance of more resilient regional and national financial markets in Asia. While there are a number of methodologies and measures for capturing the potential systemic risk for a banking system, this paper has only focused on the NYU V-Lab technique to report the way systemic risk for large banks in three of the largest countries in Asia (China, India and Japan) are measured. We hope that this information is useful for both policy makers and market participants. While Asia has only four of the 29 GSIFs, nevertheless, it is important to have a regional financial system that is capable of increasingly better monitoring of the activities of shadow banks and other financial institutions. The increasingly prominent role of shadow banking in Asia, including in China, is becoming an important issue, when discussing elements of a holistic framework for systemic risk. There is no doubt that any sound regional financial system should have the capacity to apply an inclusive and coordinated approach to both banks and non-bank financial institutions. Borst (2014) also summarises the main problem facing regulators as one of monitoring and transparency. He argues that it is “critically important for regulators to have accurate data on the entire financial system, spanning the whole range of bank, quasibank, and nonbank financial activities.” He also notes that narrow approaches to measuring the shadow banking system adopted by the FSB among others will also lead to mis-measurement of the SBS in other emerging markets as they are also dominated by banks and as a result, approaches focusing on non-bank entities will fall short.

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