FINANCIAL SOUNDNESS INDICATORS FOR FINANCIAL SECTOR STABILITY

A TALE OF THREE ASIAN COUNTRIES

ASIAN DEVELOPMENT BANK

ADB

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Abbreviations

ADB	–	Asian Development Bank
AFC	–	Asia financial crisis
BB	–	Bank of Bangladesh
CAR	–	Capital adequate ratio
DMC	–	developing member country
FI	–	financial institutions
FSI	–	financial soundness indicators
GDP	–	gross domestic product
IMF	–	International Monetary Fund
MFI	–	microfinance institutions
PCB	–	private commercial banks
SBV	–	State Bank of Viet Nam
SOCB	–	state–owned commercial banks

Foreword

Since the outbreaks of the Asian financial crisis in the late 1990s and the global financial turmoil in 2007, assessing the strengths and weaknesses of a financial sector based on a set of financial indicators has increasingly become important. The assessment is needed to mainly identify any potential problems that may lead to vulnerability in the financial sector that can result in a financial crisis. It is expected that by doing so a set of strategic policies and regulations, as well as actions, can be implemented to prevent the crisis.

Shortly after the Asian financial crisis in 1997, the Asian Development Bank (ADB) helped central banks of selected developing member countries (DMCs) to identify, compile, and analyze about 30 monetary and financial statistics and macroprudential indicators to identify potential problems in the financial sector to prevent another crisis. This was followed by an initiative on an early warning system, with a prototype developed to detect the region-wide economic and financial vulnerabilities among members of the Association of Southeast Asian Nations (ASEAN), the People's Republic of China, Japan, and the Republic of Korea.

The development and analysis of a set of financial indicators should help policy makers to identify the strengths and vulnerabilities of a financial system so that they can take preventive actions to avert a crisis. The International Monetary Fund (IMF) has initiated a number of initiatives in this area. In 1999, it initiated the collection and assessment of financial stability indicators by the joint IMF–World Bank Financial Sector Assessment Program, which was mainly to monitor financial system fragility. Following broad consultations in 2000, the IMF, in collaboration with the International Accounting Standards Board (IASB), the Bank for International Settlements (BIS), the Basel Committee for Banking Supervision (BCBS), and other international and regional organizations, published a compilation guide on financial soundness indicators (FSIs), which were based on aggregate bank balance sheet and income statement information, and aggregate indicators of financial statements of nonfinancial firms and nonbank financial markets.

The FSIs consist of two sets of indicators: core and encouraged indicators. The core indicators consist of 12 indicators to measure potential vulnerabilities of deposit-taking institutions, which cover capital adequacy, asset quality, earnings and profitability, liquidity, and sensitivity to market risks. The encouraged indicators are collected on a country-by-country basis to assess the soundness of other financial sectors such as other players (other financial corporations), borrowers (households and nonfinancial corporations), and related markets (securities and real estate). Currently, about 96 countries have reported regularly their FSIs to IMF, which maintains the database.

This report is the outcome of the regional technical assistance project Strengthening Institutional Capacity to Compile and Analyze Financial Soundness Indicators for Investment Climate Assessment (RETA 7743), which is supported by the Investment Climate Facilitation Fund under the Regional

Cooperation and Integration Financing Facility. This report describes the development of FSIs in three countries and analyzes FSIs, to identify the key challenges faced by the financial sector that must be addressed to support financial sector stability in these countries. This synthesized report presents country case studies for Bangladesh, Georgia, and Viet Nam, out of 19 ADB member countries reporting to IMF. The report is based on available FSIs and highlights the problems associated with them. For instance, under Basel II regulations, banks and other deposit-takers are required to have on average a minimum capital of 8.0% of their risk-weighted assets. State-owned commercial banks in Bangladesh have not been able to meet this policy regulation since 2000, in contrast to the increasing number of compliant private commercial banks. From 2000 to 2010, the capital adequacy ratio of state banks of Bangladesh was an average of 5.0% while private banks registered an average of 10.4%. In contrast, the capital adequacy ratio of state banks in Viet Nam has always been higher than the minimum requirement, i.e., 12.0% on the average from 2008 to 2012. Meanwhile, Georgia's financial markets are plagued with related problems such as high cost of finance, prevalence of short-term financing, high dollarization of deposits and currency-induced credit risks, low level of financial depth, and underdeveloped capital markets. Evidence from the country reports shows that competitive behavior among banks should be supported by relatively low barriers to entry in the financial markets. Furthermore, introduction of deposit insurance and other protection measures for depositors may encourage more domestic savings that would be good for the development of banking institutions.

The report also discusses the development of tools to monitor the investment climate situation in the participating countries. Each participating country—Bangladesh, Georgia, and Viet Nam—is focused on different dimensions. Bangladesh developed a user-friendly framework to monitor the investment climate of select 40 ADB DMCs. The framework comprises six factors that are converted into a composite indicator of investment climate: (i) infrastructure, (ii) taxation, (iii) labor, (iv) business operation, (v) financing, and, (vi) stability. Accordingly, it provides performance and ranking indicators among countries based on the six investment climate components as well as aggregate investment climate indicators. Among others, the results show that infrastructure and labor factors rank the most common investment constraints to business.

For the purpose of assessing the investment climate in Georgia, a survey was conducted among large private firms and large commercial banks. The survey on firms focused on investment climate constraints, financing, business–government relationship and capacity, innovation and learning, and labor relations. The bank survey asked about constraints to investments faced by their clients and obstacles to issuing loans. The main results show moderate to severe constraints on quality of labor (ability to find skilled workers), cost of financing, access to financing, economic and regulatory policy, macroeconomic instability, tax rates, and labor costs.

For Viet Nam, an Excel-based monitoring framework was developed to show the relative performance of banks based on available FSIs. The easy-to-use tool covered 36 state-owned and commercial banks based on the banks' financial statements for the period 2008–2013. The analysis covered the banks' capital adequacy, asset equity, earnings and profitability, liquidity, and sensitivity to market risks.

Results of this study will help participating governments strengthen their institutional and statistical capacities to routinely collect, compile, analyze, and disseminate internationally comparable FSIs. The availability of better-quality FSIs will help improve financial surveillance, investment climate assessment, and policy-making process in the financial sector.

The insights contained in this report are the results of the collaborative efforts of many. In particular, we would like to express our appreciation to the following country experts for contributing to their respective country reports: from Bangladesh—Mohammad Syful Hoque, Dr. Selim Raihan, and Tahsin Ratul of South Asian Network on Economic Modeling; from Georgia— Yaroslava Babych, Grigolia Maya, and Nino Sharumahsvili of International School of Economics in Tblisi-Policy Institute in Georgia, Nana Aslamazishvili of National Bank of Georgia, and Gogita Todradze of Geo Statistics; and from Viet Nam—Nguyen Duc Thanh, Vu Minh Long, and Ngo Quoc Thai of Viet Nam Institute for Economic and Policy Research. They have prepared a comprehensive assessment of FSIs and investment climate in their country. Particular commendations should go to Maria Blessilda Corpuz for reviewing the country reports. Much appreciation also goes to the governments of the participating countries of Bangladesh, Georgia, and Viet Nam for their help and cooperation during the project implementation.

Guntur Sugiyarto, as the project leader, edited the report with the help of Josef T. Yap, John West, and country experts working under the project. Douglas Brooks, as the direct manager in preparing the report, provided overall guidance in the project implementation. Eric Suan helped organize the day-to-day project implementation and prepared this publication, while Modesta De Castro provided administrative assistance. ADB's Department of External Relations (DER) helped in publishing the report, while Joe Mark Ganaban did the design, layout, and typesetting of the publication.

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Executive Summary

A robust financial sector is a necessary condition for economic development since a sound financial system will support growth by pooling and mobilizing savings for productive use, providing information on potential and existing investments, exerting corporate governance, facilitating trading and risk management, and so on. Therefore, financial stability is a key and an integral part of financial development. An empirical study has also confirmed a positive correlation between financial sector development and economic growth, even if the direction of causation remains debatable.

The 1997 Asian financial crisis and the 2008 global financial and economic crisis further demonstrated the importance of financial stability. Both crises showed how balance sheets of financial institutions can negatively impact the financial sector in a manner that may lead to financial instability. Moreover, vulnerability of the financial institutions could exist hand-in-hand with robust macroeconomic indicators, calling for the importance of monitoring the balance sheets of financial institutions. Therefore, assessing macroeconomic performance alongside healthiness of financial institutions is very important.

Financial soundness is important for financial stability, and monitoring the soundness of financial institutions will help detect any possible buildup of systemic risk that could lead to a crisis. For this purpose, the financial soundness indicators (FSIs) were developed with the specific guidelines provided in the IMF's *Financial Soundness Indicators Compilation Guide* and its 2009 amendment. FSIs can also provide an additional set of indicators that investors can use to assess the investment climate condition before committing to investment strategies and decisions.

FSIs have two components: core indicators and encouraged indicators. The core set has 12 indicators to measure potential vulnerabilities of deposit-takers, while the encouraged set may be collected according to a country's need, including 13 additional indicators for deposit-takers, 5 for nonfinancial corporations, 2 for other financial corporations, 2 for households, 2 for market liquidity, and 4 for real estate markets.

The core set is based on the CAMELS framework.[1] Its capital-based indicators assess the sufficiency of capital to support possible asset-side losses, measured by risk-weighted assets or nonperforming loans. Asset quality ratios give a picture of the deposit-taker's asset composition, and show vulnerabilities in terms of potential losses from nonperforming loans and risks from lack of diversification. Earnings and profitability ratios assess the efficiency of deposit-takers in using their assets (return on assets) and capital (return on equity), and ability to generate interest income

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[1] CAMELS - (C)apital adequacy; (A)ssets; (M)anagement Capability; (E)arnings; (L)iquidity (also called asset liability management); (S)ensitivity (sensitivity to market risk, especially interest rate risk).

(interest margin to gross income) and minimize administrative costs (noninterest expenses to gross income). Liquidity indicators describe the deposit-takers' ability to meet sudden demand for cash, while sensitivity to market risk measures the ability of capital to cushion exchange rate volatility. While it is not mandatory, collecting data on encouraged indicators can further analyze the health of deposit-takers. In addition, it will also allow for assessing other aspects of the financial sector, such as for other players (other financial corporations), borrowers (households and nonfinancial corporations), and related markets (securities and real estate).

To assist its developing member countries to develop their FSIs, ADB launched a capacity development technical assistance (CDTA) project in November 2010 with the specific purpose to support some countries in strengthening their institutional capacity to compile and analyze internationally comparable FSIs. Bangladesh, Georgia, and Viet Nam participated in the project. In this research project, core FSIs have been computed for analysis, together with some encouraged FSIs that can be estimated. Bangladesh and Georgia conducted additional surveys to be able to compute some encouraged indicators to complete the analysis.

Macroeconomic Background

Since 2001, Bangladesh has maintained a healthy GDP growth of 5.9 per annum, but the growth was affected by the global financial crisis in 2008. Georgia and Viet Nam also experienced significant slowdowns of different magnitude. The effects of financial crisis are much more apparent in the external sector, which serves as an economy's link with the rest of the world. Bangladesh and Georgia have shown increasing trade deficits since the 1990s, which put downward pressure on their balance of payments. On the other hand, the trade deficit has been declining in Viet Nam since 2009, and the 2012 estimate even posted a positive trade balance. The annual growth of consumer prices in Bangladesh has gradually risen since 1997. On the other hand, prices in Georgia and Viet Nam have shown greater fluctuations consistent with the movement of their respective GDP growth rates.

Financial Soundness Indicator Analysis

The analysis shows the usefulness of FSIs for monitoring the soundness of the financial sector and the economy. The econometric results establish the contemporaneous relationship between core financial soundness indicators and probability of banking crises. This is done by estimating a multivariate logit model with core FSIs controlled by macroeconomic variables, income groups, and years. The results show that all core FSIs, except for nonperforming loans net of provisions to capital, are strongly correlated with the occurrence of a banking crisis.

FSIs of the three countries are very different and the financial vulnerabilities of each economy are different. For example, Georgia and Viet Nam have met capital adequacy standards but Bangladesh has faltered in this aspect for it requires an injection of capital into State Owned Commercial Banks that is contingent upon improved governance. On the other hand, Georgia and Viet Nam could have been more susceptible to global economic crises than Bangladesh. A significant amount of public and private debt in Georgia is denominated in foreign currency while Viet Nam's economic openness—largely because of rapid economic integration in East Asia—has made it vulnerable to global economic slowdowns.

Key Findings on Bangladesh

The state-owned commercial banks (SCBs) had suffered from large nonperforming loans (NPLs) in the early 2000s, as a result of ineffective procedures for identifying borrowers, poor risk management, weak collections, and pressures to make loans and reduce debt service payments by certain sectors. In response, measures such as reducing the pressure and restructuring the banks were implemented, resulting in the decline of NPLs particularly in the period 2006–2011. As indicated in the latest IMF report, however, the large percentage of NPLs of SCBs, continues to be a problem.

The key challenges are therefore to improve the governance and maintain a prudent credit growth limit. Another issue is to increase capitalization and to ensure that the undercapitalized banks work in line with the memoranda of understanding agreed with Bank of Bangladesh. This goes along with how to raise the resources to meet the additional recapitalization needs.

Key Findings on Georgia

Georgia is a country with one of the highest costs of finance in developing Europe and Central Asia, reflected in the large interest spreads and a high risk premium on private loans. The high cost of finance is puzzling since it is not consistent with the macroeconomic fundamentals of the country. Neither is it consistent with the conservative lending standards, high capitalization rates, and a relatively low percentage of nonperforming loans in the overall loan portfolio.

The phenomenon of a high interest rate spread in Georgia is a complex multifaceted contributing factors include (i) high perceived risk of doing business in Georgia, which is non-idiosyncratic (not firm-specific), and therefore cannot be hedged by the lender; (ii) low cost efficiency of Georgian banks; and (iii) high lending rates that are further perpetuated by the adverse selection problem, which leaves banks to choose from a more risky pool of clients—the type of clients who could offer high returns and operate with lower credit maturities.

Accordingly, the following medium-term policy actions are suggested: (i) deposit insurance and depositor protection mechanisms, (ii) improving the credit-sharing mechanism, (iii) facilitating property registration, and (iv) improving reporting standards for firms.

For the long term, these policy actions were identified: (i) developing capital markets, (ii) diversifying the industrial base, and (iii) deducing income inequality through job creation and inclusive growth.

Key Findings on Viet Nam

Viet Nam has been experiencing problems in high NPLs and sluggish credit growth, caused by governance and structural problems such as weak balance sheets, regulatory forbearance, connected lending and cross ownership (including between banks and state-owned enterprises), weak risk management, and special interest groups that have influenced credit to be channeled to unprofitable and unproductive use. The State Bank of Viet Nam (SBV) and individual banks have responded positively resulting in a recent significant decline in the NPLs. For example, the Viet Nam Asset Management Company (VAMC) was established to purchase NPLs from commercial banks and it plans to liquidate, restructure, and sell to dispose of them. In addition, most banks have been required to submit restructuring plans to the SBV.

The key challenges are to implement reforms in a comprehensive manner and to address the root causes of the banking sector problems convincingly. The key elements of an effective reform program include (i) assessing banks' recapitalization needs, (ii) revising classification criteria to guide resolution options, (iii) recapitalization and restructuration that may include foreign partnerships, (iv) strengthening the VAMC, (v) developing additional options to deal with NPLs, (vi) tightening supervision to ensure a sound lending practice, (vii) revamping the architecture and procedures for crisis management, (viii) strengthening financial safety nets during the reform process.

1. Introduction: Financial Soundness for Financial Sector Stability in Bangladesh, Georgia, and Viet Nam

A strong financial sector is a necessary condition for sustained economic growth since a sound financial system will support economic activities by pooling and mobilizing saving for productive use; providing information on potential and existing investments; exerting corporate governance; and facilitating trading, diversification, and risk management. Therefore, financial stability is a key and integral part of financial development as well as economic development in general. Furthermore, the empirical study has also confirmed the positive correlation between financial sector development and economic growth, even though the direction of causation remains challenging.

The 1997 Asian financial crisis and the 2008 global financial and economic crisis further highlighted the importance of financial stability in supporting economic growth. In addition to showing the costly effect of such crises, both crises demonstrated how balance sheets of financial institutions could negatively impact the financial sector and lead to financial sector crises. Moreover, vulnerability of the financial institutions could exist along with robust macroeconomic indicators. This calls for a systematic and regular monitoring of the financial institutions' balance sheets in addition to macroeconomic performance.

Financial soundness is key for financial stability and monitoring the soundness of financial institutions will help detect any possible buildup of systemic risk that may lead to a crisis. For this purpose, the financial soundness indicators (FSIs) were developed. In 2006, the International Monetary Fund (IMF) established the FSIs to examine the strengths and weaknesses of a financial system.[2] The development of FSIs is defined in the compilation guide—with its 2009 amendment—containing the list of core and encouraged FSIs. The guide also provides information, recommendations, and advice on the conceptual framework; concepts and definitions; and sources and techniques to use to compile and disseminate FSIs. It also defines the types of financial institutions, explains the accounting rules and instrument valuation, and provides conceptual guidance on individual line items in income and expenditure and balance sheet accounts, from which the FSIs can be calculated.

Concepts of preferred approaches to aggregation and consolidation are explained, and information on how to develop and disseminate FSIs including for cross-country comparisons is included. In addition, as each country has its unique financial structure that affects the range of FSIs that may be computed and their assessment, the guide outlines a list of structural indicators to be compiled in addition to the set of core and encouraged FSIs. The structural indicators provide some indication of the types of markets that exist in a country and their stage of development.

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[2] In 2013, amendments to the current FSI list and the introduction of new FSIs and the exclusion of certain FSIs in the revised FSI list was discussed by Luca Errico, Elena Loukoianova, Agus Firmansyah, Phousnith Khay, Renato Perez, Farid Talishli, and Xiu-Zhen Zhao in their 2013 background paper for the International Monetary Fund, *Modifications to the Current List of Financial Soundness Indicators.*

FSIs can also provide an additional set of indicators that investors can use to assess the investment climate condition before committing to investment strategies and decisions. FSIs have two components: core indicators and encouraged indicators. The core set has 12 indicators to measure potential vulnerabilities of deposit-takers, while the encouraged set may be collected according to the country's need, including 13 additional indicators for deposit-takers, 5 for nonfinancial corporations, 2 for other financial corporations, 2 for households, 2 for market liquidity, and 4 for real estate markets.

To assist its developing member countries to develop their FSIs, ADB launched a capacity development technical assistance (CDTA) project in November 2010 with the specific purpose of supporting some countries in strengthening their institutional capacity to compile and analyze internationally comparable FSIs. Bangladesh, Georgia, and Viet Nam participated in the project. Financial sector development is one of the five core areas in ADB's Strategy 2020. The development of high-quality and internationally comparable FSIs and their analysis in participating DMCs will help in monitoring the state of the finance sector in them and in ensuring that efforts to develop the sector are effective.

The project aims to help the countries to be able to regularly produce and disseminate FSIs and be able to assess their performance relative to their regional and development counterparts following the specific guideline provided in the IMF's *Financial Soundness Indicators Compilation Guide* and its 2009 amendment.

This synthesized report summarizes key findings and their policy implications derived from the country reports of Bangladesh, Georgia, and Viet Nam. The organization of the reports runs as follows: section 2 provides a justification on why the financial sector is important for economic development. Section 3 provides a general methodology of the research and background on the FSIs, including definitions and changes since its release. Section 4 establishes the macroeconomic context in Bangladesh, Georgia, and Viet Nam.

2. The Financial Sector in the Economy

The financial sector has been described as the brain of the economy as financial sector development plays a vital role in facilitating economic growth (Zhuang et al. 2009). A sound financial system supports growth through pooling and mobilizing savings; providing useful information about possible investments; monitoring investments and exerting corporate governance; facilitating the trading, diversification, and management of risks; and facilitating the exchange of goods and services.

The Importance of Financial Stability

Financial stability is a necessary condition for financial sector development. The 1997 Asian financial crisis (AFC) and the 2008 global financial and economic crisis (GFC) highlighted the importance of financial stability. For example, the AFC revealed weaknesses and vulnerable areas that prevented financial systems in Asia from performing their role effectively. The common financial weaknesses and vulnerable areas identified were as follows:[3]

- the banking sector's predominance in financial intermediation and the lack of long-term credit and underdevelopment of capital markets, especially of bond markets;
- lacks of a strong domestic credit and a rating system, and for domestic debt issuers a lack of competition in the domestic financial sector;
- a lack of skilled financial operatives and agents;
- a reliance on weak accounting and reporting standards; and
- weaknesses in regulatory and supervisory frameworks and poor corporate governance.

The AFC revealed a need to consider the problems in the financial sector due to its balance sheet effects, a sharp reversal of capital flows, a plunge in absorption, and a free fall of the exchange rate. Krugman (2002) discusses several variants of future models of balance of payment crises, but emphasizes the balance–sheet effects of currency depreciation.

A key lesson that can be derived from the AFC is related to the double mismatch problem of the banking system: a mismatch in terms of maturity and currency. A maturity mismatch is generally inherent in the banking industry, but this was amplified during the AFC because a significant amount of capital inflows into East Asia was short term. On the other hand, the currency mismatch was a result of substantial unhedged foreign borrowing.

A consolidated view of the main cause of the AFC can be derived from the distinction between weakness and vulnerability. It can be argued that the AFC was triggered by the collapse of the Thai baht due to weaknesses in the Thai financial system and a widening current account deficit that was deemed unsustainable. Overexposure to the real estate market and poor corporate governance

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[3] ADB (2008), page 112.

were the underlying causes of weaknesses in the financial system of Thailand. The widening current account deficit was due to a fixed dollar peg that led to an overvalued currency and a fall in local competitiveness. Eventually the baht had to depreciate and this transformed the vulnerabilities in bank balance sheets caused by the double mismatch problem into weaknesses.

Meanwhile, on 15 September 2008, the global investment bank Lehman Brothers filed for bankruptcy protection, sending shock waves across the international financial system. This was soon followed by other bankruptcies, bailouts, and takeovers of financial institutions in the US and Europe. Subsequently many economies—Germany; Japan; Singapore; and Hong Kong, China, among others—were declared to be in recession. The high point came when the National Bureau of Economic Research announced on 1 December 2008, that the US economy had been in recession since December 2007. The extent of the global financial and economic crisis (GFC) became clear when a synchronized recession in major industrialized countries—a rare event after the last world war—took place in 2009.

Brunschwig et al. (2011) studied the effects of the GFC and their policy responses in Asia. The GFC's immediate impact was a synchronized global slowdown starting in the second half of 2008. Transmissions through trade and financial channels increased output volatility and overall economic vulnerability in countries with strong links to international markets. The impact, however, differed among economies depending on the degree of dependency to external demand and credit. Asia in general was not excessively affected, especially compared with the AFC. However, many of the more export-dependent countries, such as the Republic of Korea and some countries in the Southeast Asia, experienced a marked slowdown in export demand that had negative spillover effects into the economy.

Financial Soundness and Financial Sector Stability

Financial sector stability depends a great deal on the health of the financial institutions. The latter is reflected in their certain balance sheets that are directly related to financial soundness. For example, the V-shaped recovery of GDP growth in most Asian economies during the AFC and GFC highlights the role of the financial sector in fomenting the crises. More specifically, despite the relatively strong macroeconomic fundamentals at that time, Asian economies were still drawn into the crises. Currency mismatch, contagion effects, and reversal of capital flows were crucial in the AFC. Meanwhile, in the GFC, a substantial part of the spillovers was due to a massive wave of investor pessimism that led to an abrupt swing in the mispricing of risk: from a large underpricing before the crisis to a significant overpricing after the Lehman bankruptcy. In other words, a large negative asset price bubble spilled over to Asia (Filardo, 2011).[4]

Therefore, even if macroeconomic fundamentals show no vulnerability, it is still important to monitor financial soundness. The experience with the AFC and GFC demonstrates the need to have macroprudential policies in support of prudent macroeconomic policies. The latter includes effective financial regulation and supervision. Kawai (2009) argues that if prudential supervisory cannot prevent a buildup of systemic risk, the central bank, as a macrofinancial overseer, should react to credit booms, rising leverage, sharp asset price increases, and the buildup of financial vulnerabilities by applying a tighter monetary policy. Each country should establish an effective "systemic stability regulator" that is in charge of crisis prevention, management, and resolution.

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[4] Positive asset price bubbles arise when market prices exceed the fundamental value and, analogously, negative ones when market prices fall below the fundamental value.

Even prior to the AFC, policy makers in Asia have undertaken significant efforts to strengthen their financial systems by expanding and deepening their scope. A typical agenda of reforms for building a resilient financial system includes (i) putting a strong prudential and regulatory framework into place, (ii) promoting depth and diversity in domestic capital markets to fill the funding gaps when needed, (iii) encouraging the development of local currency bond markets (LCBMs) to help reduce currency and maturity mismatches associated with external liabilities, (iv) ensuring that small borrowers that depend on banks for their funds can be served in times of crisis, and (v) permitting more active foreign participation to increase competition and introduce new products and best practices into the domestic market.[5] This discussion points to the need for monitoring the "buildup of systemic risk." That can be achieved by tracking the health of financial institutions. This is the primary role of FSIs.

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[5]   Devereux, et al. (2011), pages 8–9. Some recommended measures emanated from an analysis of the AFC.

3. Financial Soundness Indicators

The experience with the AFC and GFC shows how deterioration of balance sheets of banks can trigger an economy-wide slump. What should be prevented is therefore turning vulnerabilities of the financial sector into weaknesses. By monitoring FSIs, vulnerabilities of the financial sector can be detected early on and appropriate measures to reduce them can be implemented. This is essentially what is meant by "preventing the buildup of systemic risk."

Background and Framework

Because international financial markets are susceptible to turbulence, the IMF began an initiative to identify a list of internationally comparable indicators that can be used for financial sector surveillance. In 2000 the IMF launched a project on financial soundness indicators (FSI) to enable researchers to assess and compare the soundness of financial systems of various countries. After research activities and consultations with central banks, supervisory agencies, academia, and other stakeholders, the IMF released the *Financial Soundness Indicators: Compilation Guide 2006*, a publication that describes detailed definitions and procedures for compiling and calculating FSIs.

The IMF proposed two subsets of indicators: core indicators and encouraged indicators. The core set consists of 12 indicators (Table 1) measuring the deposit takers' soundness. All countries are expected to participate in the project by compiling and submitting core indicators to the IMF. The encouraged indicators comprise 28 indicators: 13 for deposit takers, 2 for other financial corporations, 5 for nonfinancial corporations, 2 for households, 2 for market liquidity, and 4 for real estate markets. Countries disseminate FSIs for different frequencies of reporting. Some countries have them quarterly and many have them monthly. Today, about 74 countries have reported their FSIs to the IMF, which disseminates the data on its website.

The core set of indicators are considered vital for analyzing financial sector stability by evaluating the financial soundness of deposit-takers in five dimensions, namely, capital adequacy, asset quality, earnings and profitability, liquidity, and sensitivity to market risk. As can be seen from Appendix 1, these indicators are defined based on line items in the balance sheet or income statement. Capital-based indicators assess the sufficiency of capital to support possible asset-side losses, measured by risk-weighted assets or nonperforming loans. Asset quality ratios give an indication of the composition of deposit-takers' assets and their vulnerabilities in terms of potential losses from nonperforming loans and risks from lack of sectoral diversification. Earnings and profitability ratios, from the viewpoint of financial soundness, assess the efficiency of deposit-takers in using their assets (return on assets) and capital (return on equity), and ability to generate interest income (interest margin to gross income) and minimize administrative costs (noninterest expenses to gross income). Liquidity indicators describe the deposit-takers' ability to meet sudden demand for cash, while sensitivity to market risk measures the ability of capital to cushion exchange rate volatility.

Table 1: Financial Soundness Indicators: The Core and Encouraged Sets

Core Set	
Deposit-Takers	
Capital adequacy	Regulatory capital to risk-weighted assets
	Regulatory Tier 1 capital to risk-weighted assets
	Nonperforming loans net of provisions to capital
Asset quality	Nonperforming loans to total gross loans
	Sectoral distribution of loans to total loans
Earnings and profitability	Return on assets
	Return on equity
	Interest margin to gross income
	Noninterest expenses to gross income
Liquidity	Liquid assets to total assets (liquid asset ratio)
	Liquid assets to short-term liabilities
Sensitivity to market risk	Net open position in foreign exchange to capital
Encouraged Set	
Deposit-takers	Capital to assets
	Large exposures to capital
	Geographical distribution of loans to total loans
	Gross asset position in financial derivatives to capital
	Gross liability position in financial derivatives to capital
	Trading income to total income
	Personnel expenses to noninterest expenses
	Spread between reference lending and deposit rates
	Spread between highest and lowest interbank rate
	Customer deposits to total (noninterbank) loans
	Foreign-currency-denominated loans to total loans
	Foreign-currency-denominated liabilities to total liabilities
	Net open position in equities to capital
Other financial corporations	Assets to total financial system assets
	Assets to gross domestic product
Nonfinancial corporations sector	Total debt to equity
	Return on equity
	Earnings to interest and principal expenses
	Net foreign exchange exposure to equity
	Number of applications for protection from creditors
Households	Household debt to gross domestic product
	Household debt service and principal payments to income
Market liquidity	Average bid–ask spread in the securities market
	Average daily turnover ratio in the securities market
Real estate markets	Residential real estate prices
	Commercial real estate prices
	Residential real estate loans to total loans
	Commercial real estate loans to total loans

Source: International Monetary Fund. 2006. Financial Soundness Indicators Compilation Guide.
www.imf.org/external/pubs/ft/fsi/guide/2006/index.htm

    While not mandatory, countries are urged to collect encouraged indicators to further analyze the health of deposit-takers. The encouraged indicators also allow for assessing other aspects of the financial sector, such as for other players (other financial corporations), borrowers (households, nonfinancial corporations), and related markets (securities, real estate). Appendix 2 provides the concepts and definitions of the FSIs. Since encouraged indicators are compiled based on the central banks' discretion, it is expected that fewer countries will report them to the IMF. Indeed, none of the 19 ADB developing member countries with available core indicators have reported a complete set of encouraged indicators to the IMF. Appendix 3 summarizes the availability of core and encouraged indicators on the FSI website (fsi.imf.org) for all ADB developing member countries, while tables A3.2 and A3.3 in Appendix 3 focus on the core and encouraged indicators of Georgia and Viet Nam.

After the release of the 2006 compilation guide, the FSIs underwent two major revisions in 2009 and 2013. The 2009 amendments to the compilation guide were to comply with International Accounting Standards and follow the compilation practice based on the guidance of the Basel Committee on Banking Supervision (Basel I and II). Some components of the FSI have also been redefined, including liquid assets, short-term liabilities, nonperforming loans, net income, and large exposures. For example, the changes in the list of indicators are reflected in Appendix 4 for Georgia. The 2013 modifications to the current list of FSIs adds 19 new indicators for financial soundness surveillance in response to the global financial crisis, and removes five from the list after limited reporting and comparability. The changes also consider the adoption of the new Basel III framework, which affects the definitions of regulatory capital and therefore capital-based ratios. Since these changes have not yet been implemented at the time of data compilation and publication, they are excluded in the discussion of the FSIs in this report.

Study Approach

The compilation of FSIs was conducted by three national consultants from three different research institutes, namely, South Asian Network on Economic Modeling (SANEM) for Bangladesh, the International School of Economics at Tbilisi State University (ISET) for Georgia, and the Viet Nam Centre for Economic Policy and Research (VEPR) for Viet Nam. The consultants were responsible for (i) compiling time-series data on the FSIs and the underlying data series and detailed metadata according to the guidelines and format of the IMF's reporting form for FSIs, (ii) computing and disseminating the FSIs, and (iii) sustaining the activity after TA completion. In the process, the consultants conducted an inventory on current practices in collecting, compiling, and disseminating FSIs.

Core FSIs have been constructed for analyzing the soundness of the financial sector, together with as many encouraged FSIs that can be computed. The FSI compilation was based on existing data sources, but Bangladesh and Georgia also conducted separate surveys to compute some encouraged indicators. There were no additional indicators introduced in the project, as the aim is to compile the core and encouraged indicators using the IMF guide.

The project has undertaken a number of workshops and in-country training programs. The first was an inception workshop to discuss activities and their timetables, inventory of current practices in the compilation of FSIs in the participating countries, conceptual framework for developing the FSIs, preparation for FSI compilation based on the underlying data series, and analysis. Because FSI compilation involves several national agencies, in-country training workshops were organized to train their key staff on how to compile and calculate FSIs according to the IMF guide and standard reporting. This is to ensure that the agencies can collect the data needed to compute the FSIs during the project implementation and after its completion. A series of country workshops were also conducted to promote the use and analysis of FSIs by inviting policy makers and other users. Toward the end of the project implementation, a concluding workshop was held to discuss its preliminary results.

FSIs and Financial Stability: Assessing the Role of FSIs

To establish a relationship between FSIs and financial stability in the context of verifying the role of FSIs in the macroprudential analysis, an econometric model was developed following Navajas and Thegeya (2013), in which macroeconomic variables and core FSIs are used as independent variables to explain the probability of a crisis.

The estimation is done in two stages. In the first stage, core FSIs are regressed with fixed effects against a time trend to obtain its residuals. This step ensures that the time-specific component of each FSI related to economic activity and/or macroprudential policy is minimized or eliminated in the second stage of regression. Country-specific effects are retained in the residuals. The second stage uses logistic regression of pooled data to test the effectiveness of the residuals, along with select macroeconomic variables, in predicting a crisis.

The incidence of a crisis is based on the systemic banking crisis database of Laeven and Valencia (2012), which defines the onset of a banking crisis based on the first signs of significant financial distress in the banking system, characterized by bank runs, losses, and/or liquidations. The database contains the month and year when a crisis begins for each country, and the appropriate quarter is assigned to fit the quarterly nature of data in this sample. All of the crisis periods that began in 2007– 2008 are still ongoing.

The base model restricts estimation to macroeconomic explanatory variables, namely real GDP growth and inflation. They are transformed into their year-on-year growth rates and lagged for one period. Some macroeconomic measures were not included in the analysis due to lack of data, especially for the EU where monetary aggregates are issued for the euro area instead of for each member country. These include private sector claims to GDP and broad money ratios (broad money to total reserves, broad money to GDP). Early attempts included a dummy variable for Europe to account specifically for these unobserved characteristics which may be common to EU countries, but the regressions resulted in completely determined crisis incidence, and hence, the elimination of these observations.

The base model is then extended to include core FSI residuals. Model 1 includes return on assets (ROA), regulatory capital to risk-weighted assets capital adequacy ratio (CAR), nonperforming loans to total gross loans (NPLGL), interest margin to gross income (IMGI), noninterest expenses to gross income (NIE), liquid assets to short-term liabilities (LAST), liquid asset ratio (LAR), and net open position in foreign exchange to capital (NOP). Model 2 replaces ROA and CAR with return on equity (ROE) and regulatory Tier 1 capital to risk-weighted assets (CART1), respectively, which were omitted in the first model since they are strongly correlated with ROA and CAR. NPLGL is also replaced with nonperforming loans net of provisions to capital (NPL) since including both in the same equation increases their correlation to more than 70.0%.

Table 2 provides the summary statistics for all of the variables involved in the models. The data span 31 time periods between 2006Q2 and 2014Q1. There are 54 individual countries included in the sample, of which 33 are high income and 14 are upper-middle income, and 20 of them experienced a crisis. There are a total of 461 crisis periods; the earliest occurring was in the United Kingdom in the third quarter of 2007. Real GDP and CPI are taken from the IMF International Financial Statistics Database, and their growth rates are calculated from indexes with 2005 as the base year. FSI are taken from the IMF FSIs database. It is advantageous to use a single database for core FSIs, to ensure uniformity in the definitions and minimize the potential for measurement error. FSI data mostly begin in 2005, so the analysis in this exercise will be limited to the recent global financial crisis only. Table 3 shows the correlations between all variables for models 1 and 2.

Country-specific dummy variables that measure individual country effects cannot be included in the model because some countries did not go through a banking crisis during the period under study. Doing so will result in dropped observations since those countries without crisis periods are perfectly predicted (all of the observations are zero). To work around this restriction, dummy

Table 2: Summary Statistics

Variables	Obs	Mean	Std. Dev.	Min	Max
Crisis	1,638	1	xxxx	xxxx	xxxx
Macroeconomic Variables					
Real gross domestic product (%, y-o-y, t-1)	1,638	2.64	4.59	−19.59	19.93
Consumer price index (%, y-o-y, t-1)*	1,638	10.99	756.78	−16.00	21,454.43
Core FSI (residuals)					
Interest margin to gross income	958	−0.68	18.68	−354.59	89.00
Liquid Asset ratio	965	−0.19	14.84	−24.92	45.27
Liquid Assets to short term liabilities	935	5.39	70.45	−55.06	622.61
Net open position in foreign exchange to capital	965	−0.19	14.84	−24.92	45.27
Noninterest expenses to gross income	958	0.28	18.98	−361.61	128.67
Nonperforming loans net of provisions to capital	943	−2.15	43.06	−508.19	351.23
Nonperforming loans to gross loans	921	−0.65	6.69	−6.59	53.32
Regulatory capital to risk-weighted assets	988	−0.89	3.06	−19.35	10.07
Regulatory Tier 1 capital to risk-weighted assets	988	−1.10	3.04	−17.81	9.93
Return on assets	957	−0.25	1.78	−10.77	37.85
Return on equity	942	−1.20	13.17	−180.86	29.91

y-o-y = year-on-year. Dummy Variables: year (2008–2012=1); income group (high and upper middle=1).
Source: Author's computation.

Table 3: Pairwise Correlations between Variables

	crisis	rgdp	cpi	reer	nplgl	imgi	nie	roa	roe	npl	car	cart1	last	lar	nop	year 08	year 09	year 10	year 11	year 12	incH	incUM
crisis	1																					
rgdp	−0.40	1																				
cpi	−0.04	0.01	1																			
reer	−0.13	0.30	0.01	1																		
nplgl	0.17	−0.12	0.01	−0.10	1																	
imgi	0.02	−0.06	0.00	0.01	0.11	1																
nie	0.16	−0.14	0.02	−0.07	0.08	−0.00	1															
roa	−0.28	0.47	0.03	0.21	−0.24	−0.14	−0.29	1														
roe	−0.14	0.38	0.02	0.17	−0.25	−0.13	−0.23	0.79	1													
npl	0.11	−0.10	−0.01	0.02	0.31	0.00	0.05	−0.02	0.28	1												
car	−0.22	0.18	0.02	0.09	−0.09	−0.17	0.01	0.43	0.22	−0.14	1											
cart1	−0.23	0.13	0.04	0.09	−0.08	−0.17	−0.02	0.42	0.21	−0.12	0.93	1										
last	0.08	0.12	−0.01	0.02	−0.02	0.04	0.05	0.06	−0.02	−0.04	0.20	0.15	1									
lar	−0.05	0.05	−0.07	−0.01	−0.02	0.06	−0.03	0.09	0.00	−0.05	0.17	0.18	0.27	1								
nop	−0.04	0.05	0.01	0.01	0.02	0.00	0.00	0.16	0.18	0.05	0.26	0.27	0.02	0.11	1							
year08	−0.04	0.14	0.05	0.19	−0.10	0.02	−0.01	0.05	0.01	−0.03	−0.05	−0.04	0.03	−0.06	0.00	1						
year09	0.09	−0.51	−0.02	−0.15	−0.04	0.05	0.00	−0.17	−0.11	−0.02	0.00	−0.01	0.02	0.00	−0.09	−0.12	1					
year10	0.10	−0.00	−0.08	−0.02	0.04	0.00	−0.01	−0.03	0.04	0.07	0.01	−0.01	0.04	0.06	−0.01	−0.12	−0.12	1				
year11	0.09	0.10	0.02	−0.01	−0.01	0.02	0.04	−0.03	−0.05	−0.02	−0.04	−0.04	−0.02	0.04	0.03	−0.12	−0.12	−0.12	1			
year12	0.09	−0.06	0.01	−0.10	−0.02	0.03	−0.00	0.03	0.02	−0.01	0.01	0.02	−0.01	0.05	0.05	−0.12	−0.12	−0.13	−0.13	1		
incH	0.25	−0.30	−0.03	−0.16	−0.21	−0.05	0.08	−0.26	−0.06	−0.01	−0.37	−0.34	−0.04	−0.01	−0.23	−0.00	0.01	0.01	−0.00	−0.00	1	
incUM	−0.10	0.18	0.04	0.04	0.01	−0.00	−0.10	0.06	0.02	−0.04	0.01	−0.03	0.02	−0.07	0.08	0.01	0.00	−0.00	−0.01	−0.01	−0.55	1

Note: rgdp = real gross domestic product; cpi = consumer price index; reer = real effective exchange rate; nplgl = nonperforming loans to total gross loans; imgi = interest margin to gross income; nie = nonintrest expenses to gross income; roa= return on assets; roe - return on equity; npl = nonperforming loans net of provisions to capital; car = regulatory capital risk-weighted assets; cart1 = regulatory Tier 1 capital risk-weighted assets; last = liquid assets to short-term liabilities; lar = liquid assets to total assets (liquid asset ratio); nop = net open position in foreign exchange to capital; year08–year12 = dummy variables for years 2008 to 2012; incH = dummy for high-income countries; incUM = dummy for upper-middle-income countries.

variables for income group and year are included as controls to account for common characteristics in similar-income countries and crisis events, especially starting periods that happened within the same year. The models include dummy variables for high-income and upper-middle-income countries and individual dummy variables for years the 2008–2012. Income groupings are based on the World Bank 2010 Analytical Classifications.

The regression results are shown in Table 4. In contrast with Navajas and Thegeya's results, real GDP growth is negative and significantly different from zero in all specifications. This result is consistent with the theory that the banking crisis has real sector effects. Inflation is also negative, albeit not significant. In models 1 and 2, all core FSIs take up the expected signs, and all are significantly different from zero except for nonperforming loans net of provisions to capital. Higher levels of deposit-takers' return on assets, return on equity, regulatory capital (and Tier 1 capital) to risk-weighted assets, and interest margin to gross income reduce the probability of a crisis. On the other hand, higher levels of nonperforming loans to total gross loans, liquidity asset ratio, liquid assets to short-term liabilities, net open position in exchange to capital, and noninterest expenses to gross income are associated with a higher banking crisis probability. In contrast with Navajas and Thegeya's results, nonperforming loans net of provisions to capital in these specifications is positive, albeit not significantly different from zero. The positive sign on both NPL-related ratios suggests that high levels of nonperforming loans adversely affect financial stability.

Table 5 shows the odds ratios for each model. In Model 1, the odds of a crisis decrease by about 60.0% and 50.0% with a unit increase in deposit-takers' return on assets and regulatory capital to risk-weighted assets, respectively. On the other hand, the odds of a crisis increase by about 18.0% and 12.0% with a unit increase in deposit-takers' noninterest expenses to gross income, and net open position in foreign exchange to capital. These results affirm the notion that efficient use of assets and healthy levels of capital reduce the probability of distress in the banking sector, while greater sensitivity to market risk

Table 4: Pooled Logit Regression Results

Dependent Variable: Crisis	Base Model			Model 1			Model 2		
	Coeff.	SE	Robust SE	Coeff.	SE	Robust SE	Coeff.	SE	Robust SE
Macroeconomic Variables									
Real gross domestic product (%, year-on-year, t-1)	–0.27	0.02 ***	0.03 ***	–0.21	0.06 ***	0.07 ***	–0.20	0.06 ***	0.08 ***
Consumer price index (%, year-on-year, t-1)	–0.00	0.00	0.00	–0.00	0.00	0.00	–0.00	0.00	0.00
Core FSI (residuals)									
Interest margin to gross income				–0.06	0.01 ***	0.01 ***	–0.04	0.01 ***	0.01 ***
Liquid Asset ratio				0.06	0.02 ***	0.02 ***	0.04	0.01 ***	0.01 ***
Liquid Assets to short term liabilities				0.01	0.00 **	0.00 ***	0.00	0.00 *	0.00 ***
Net open position in foreign exchange to capital				0.11	0.02 ***	0.02 ***	0.08	0.01 ***	0.02 ***
Noninterest expenses to gross income				0.17	0.02 ***	0.02 ***	0.12	0.02 ***	0.02 ***
Nonperforming loans to gross loans				0.06	0.02 ***	0.03 **			
Regulatory capital to risk-weighted assets				–0.67	0.10 ***	0.10 ***			
Return on assets				–0.91	0.19 ***	0.20 ***			
Nonperforming loans net of provisions to capital							0.00	0.00	0.00
Regulatory Tier 1 capital to risk-weighted assets							–0.43	0.07 ***	0.07 ***
Return on equity							–0.09	0.02 ***	0.02 ***
Constant	–1.73	0.32 ***	0.34 ***	–4.92	0.96 ***	1.45 ***	–3.43	0.73 ***	0.77 ***
Likelihood ratio/Wald		503.68 ***	276.87 ***		423.62 ***	100.28 ***		373.09 ***	92.73 ***
df		9.00	9.00		17.00	17.00		17.00	17.00
Pseudo-R2	0.26			0.61			0.55		
Observations	1,638			635			628		
Crisis periods	383								

*, **, *** significant at 10%, 5%, and 1%, respectively. SE = standard error.
a Excludes Cyprus and Rwanda due to outlying observations.

Table 5: Odds Ratios for Pooled Logit Regression Results

Dependent Variable: Crisis	Base Model			Model 1			Model 2		
	Coeff.	SE	Robust SE	Coeff.	SE	Robust SE	Coeff.	SE	Robust SE
Macroeconomic Variables									
Real gross domestic product (%, year-on-year, t-1)	0.76	0.02 ***	−23.90 ***	0.81	0.05 ***	−18.87 ***	0.82	0.05 ***	−18.20 ***
Consumer price index (%, year-on-year, t-1)	1.00	0.00	−0.01	1.00	0.00	−0.02	1.00	0.00	−0.01
Core FSI (residuals)									
Interest margin to gross income				0.95	0.01 ***	−5.36 ***	0.96	0.01 ***	−3.95 ***
Liquid Asset ratio				1.06	0.02 ***	6.30 ***	1.04	0.01 ***	3.81 ***
Liquid Assets to short term liabilities				1.01	0.00 **	0.75 ***	1.00	0.00 *	0.50 ***
Net open position in foreign exchange to capital				1.12	0.02 ***	11.93 ***	1.09	0.01 ***	8.60 ***
Noninterest expenses to gross income				1.18	0.02 ***	18.10 ***	1.12	0.02 ***	12.33 ***
Nonperforming loans to gross loans				1.06	0.02 ***	6.26 **			
Regulatory capital to risk-weighted assets				0.51	0.05 ***	−49.06 ***			
Return on assets				0.40	0.07 ***	−59.93 ***			
Nonperforming loans net of provisions to capital							1.00	0.00	0.08
Regulatory Tier 1 capital to risk-weighted assets							0.65	0.05 ***	−35.17 ***
Return on equity							0.91	0.02 ***	−8.82 ***
Constant	0.18	0.06 ***	−82.28 ***	0.01	0.01 ***	−99.27 ***	0.03	0.02 ***	−96.77 ***

*, **, *** significant at 10%, 5%, and 1%, respectively. SE = standard error.
a Excludes Cyprus and Rwanda due to outlying observations.

and higher levels of administrative expenses increase deposit-takers' vulnerability to a banking crisis. Model 2 estimates show that return on equity does not have the same explanatory power as return on assets, reducing the odds of a crisis by only 7.0% with a percentage increase in its value.

To test the robustness of these specifications, macroeconomic variables such as growth of nominal interest rate and real effective exchange rate were added to both models in separate regressions. Return on equity was also added as a regressor to Model 1 to check how it fares against return on assets, and vice versa. Return on equity and return on assets have a high pairwise correlation, but the overall correlation diminishes to about 50.0% when other variables are included in the estimation. This gives room to test their individual explanatory power when both are included in the same equation. The results of these tests are in Table 6. Including the growth of nominal interest rate in models 1 and 2 erodes the significance of interest margin to gross income and alters the sign of liquid asset ratio from positive to negative. Including the growth of real effective exchange rate has a similar effect on liquid asset ratio, and in Model 2 with NPL, ROE, and CART1 as alternative regressors, liquid asset ratio loses its explanatory power. The rest of the core FSIs maintain their signs and significance. Adding return on equity to Model 1 eliminates any explanatory power that the indicator used to have. Meanwhile, the rest of the core FSIs maintain the direction of their contribution and p-values.

Simultaneous estimations of FSIs paired against the incidence of a crisis do not lend a clear view on the direction of causality that makes it possible to interpret the results conversely, i.e., the incidence of a crisis may be causing the core FSIs to behave as estimated. Nonetheless, the results affirm the notion that FSIs should be monitored and should be the basis for preventive measures since they affect directly, or are affected strongly by, the probability of a banking crisis.

Table 6: Pooled Logit Regression Results

| Dependent Variable: Crisis | Model 1 with Return on Equity | | Models with Nominal Interest Rate | | | | | | Models with Real Effective Exchange Rate | | | | | |
| | | | Base Model | | Model 1 | | Model 2 | | Base Model | | Model 1 | | Model 2 | |
	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE	Coeff.	SE
Macroeconomic Variables														
Real GDP (%, y-o-y, t-1)	−0.18	0.06 ***	−0.25	0.03 ***	−0.21	0.07 ***	−0.15	0.06 **	−0.29	0.03 ***	−0.36	0.08 ***	−0.50	0.13 ***
CPI (%, y-o-y, t-1)	−0.00	0.00	−0.00	0.00	0.00	0.00	0.00	0.00	−0.00	0.00	−0.00	0.00 *	−0.00	0.00
Core FSI (residuals)														
Interest margin to gross income	−0.06	0.01 ***			−0.01	0.02	−0.00	0.02			−0.08	0.02 ***	−0.12	0.02 ***
Liquid Asset ratio	0.06	0.02 ***			−0.11	0.04 ***	−0.09	0.03 ***			−0.06	0.02 ***	−0.01	0.03
Liquid Assets to short term liabilities	0.01	0.00 **			0.03	0.01 ***	0.02	0.00 ***			0.05	0.01 ***	0.08	0.02 ***
Net open position in foreign exchange to capital	0.11	0.02 ***			0.12	0.02 ***	0.06	0.01 ***			0.18	0.03 ***	0.27	0.04 ***
Noninterest expenses to gross income	0.16	0.02 ***			0.17	0.03 ***	0.10	0.02 ***			0.17	0.03 ***	0.29	0.05 ***
Nonperforming loans to gross loans	0.05	0.02 **			0.07	0.03 ***					0.08	0.03 **		
Regulatory capital to risk-weighted assets	−0.65	0.10 ***			−0.86	0.16 ***					−0.34	0.09 ***		
Return on assets	−1.03	0.53 **			−0.69	0.32 **					−1.46	0.31 ***		
Nonperforming loans net of provisions to capital							−0.00	0.00					0.00	0.01
Regulatory Tier 1 capital to risk-weighted assets							−0.49	0.11 ***					−0.94	0.19 ***
Return on equity	−0.01	0.06					−0.10	0.03 ***					−0.14	0.05 ***
Robustness checks														
Nominal interest rate (%, y-o-y, t-1)		***	−0.00	0.00	−0.01	0.01	−0.01	0.01						
Real effective exchange rate (%, y-o-y, t-1)									−0.02	0.01 *	0.05	0.04	0.06	0.05
Constant	−4.95	0.99 ***	−1.76	0.33 ***	−7.19	1.39	−5.05	1.05 ***	−0.99	0.36 ***	−8.23	1.28 ***	−6.28	1.34 ***
Likelihood ratio/ Wald		404.77 ***		354.23 ***		279.38		254.56 ***		362.88 ***		341.20 ***		406.67 ***
df				10.00		18.00		17.00						
Pseudo-R2	0.60		0.23		0.64		0.59		0.23		0.64		0.78	
Observations	628		1,388		513		513		1222		427		420	
Crisis periods														

*, **, *** significant at 10%, 5%, and 1%, respectively. CPI = consumer price index, GDP = gross domestic product, SE = standard error. y-o-y = year on year.

4. A Comparison of the Three Countries: Bangladesh, Georgia, and Viet Nam

Macroeconomic Environment

Financial intermediaries play a crucial role in connecting sources and users of funds. Therefore, financial intermediaries may aid economic growth by boosting investment and the production of goods and services, stimulating job creation and consumption. On the other hand, financial sector development may also come as a result of economic growth. Rising demand for financing may generate competition among lending agencies, create more types of products, and open additional avenues for financial access. Allen and Gale (2000) provide an extensive review of literature examining the relationship between the financial system and economic development. Empirical studies covered have found a positive correlation between financial sector development and economic growth, although the direction of causation remains debatable. Nonetheless, given these linkages, it is important to establish the current macroeconomic state of Bangladesh, Georgia, and Viet Nam to provide a context for the later analysis of the respective countries' FSIs.

Gross Domestic Product Growth

Since 2001, Bangladesh has maintained a healthy GDP growth of 5.9 per annum, but the growth was affected by the global financial crisis in 2008. Georgia and Viet Nam also experienced significant slowdowns of different magnitude. Bangladesh was barely affected by the global financial crisis, merely losing 0.4–1.0 percentage points in its growth rate during 2009 and 2010. On the other hand, Georgia and Viet Nam experienced significant slowdowns due to the global financial crisis. GDP growth in Georgia was also severely affected by military conflict with the Russian Federation in 2008. Both countries have shown signs of recovery since then, although 2011 figures in Georgia and Viet Nam also declined due to political uncertainty and growth stabilization (Figure 1). Growth in all three countries is fueled by private consumption, followed by external trade and investment (gross fixed capital formation).

Figure 1: Contribution to Gross Domestic Product Growth
a. Bangladesh

Note: left-hand side, % contribution to GDP, right-hand side, % GDP growth (at 2005 USD).
Source: World Development Indicators (http://databank.worldbank.org/, accessed 12 August 2015).

Figure 1: continued

b. Georgia

Household consumption
Government consumption
Exports
Imports
Gross fixed capital formation
Gross domestic product

Note: left-hand side, % contribution to GDP, right-hand side, % GDP growth (at 2005 USD).
Source: World Development Indicators (http://databank.worldbank.org/, accessed 12 August 2015).

c. Viet Nam

Household consumption
Government consumption
Exports
Imports
Gross fixed capital formation
Gross domestic product

Note: left-hand side, % contribution to GDP, right-hand side, % GDP growth (at 2005 USD).
Source: World Development Indicators (http://databank.worldbank.org/, accessed 12 August 2015).

External Sector

The effects of financial crisis are much more apparent in the external sector, where both export and import growth considerably tightened in 2009 as a result of slower external demand (Figure 2). Bangladesh and Georgia have shown increasing trade deficits since the 1990s, which put downward pressure on their balance of payments. On the other hand, the trade deficit has been declining in Viet Nam since 2009, and the 2012 estimate even posted a positive trade balance. Annual period averages of foreign exchange rates in all three countries have been relatively stable but they have been steadily depreciating in Bangladesh and Viet Nam over the past 2 decades and appreciating since 2004. The floating exchange rate regime was introduced in Bangladesh in 2003. On the other hand, Viet Nam shifted from a managed floating exchange rate to a more flexible, market-determined exchange rate regime in 2011 (Figure 3).

Inflation and Unemployment

The annual growth of consumer prices in Bangladesh has gradually risen since 1997. On the other hand, prices in Georgia and Viet Nam have shown greater fluctuations consistent with the movement of their respective GDP growths. Viet Nam saw 23.0% inflation in 2008, and more double-

Figure 2: Exports, Imports, and Trade Deficit

a. Bangladesh

Export growth (%, LHS)   Import growth (%, LHS)   —— Trade deficit (US$ million, RHS)

Note: LHS = left-hand scale, RHS = right-hand scale, US$ = United States dollar.
Source: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org

b. Georgia

Export growth (%, LHS)   Import growth (%, LHS)   —— Trade deficit (US$ million, RHS)

Note: LHS = left-hand scale, RHS = right-hand scale, USD = United States dollar.
Source: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org

c. Viet Nam

Export growth (%, LHS)   Import growth (%, LHS)   —— Trade deficit (US$ million, RHS)

Note: LHS = left-hand scale, RHS = right-hand scale, US$ = United States dollar.
Source: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org

Figure 3: Local Currency to US Dollar
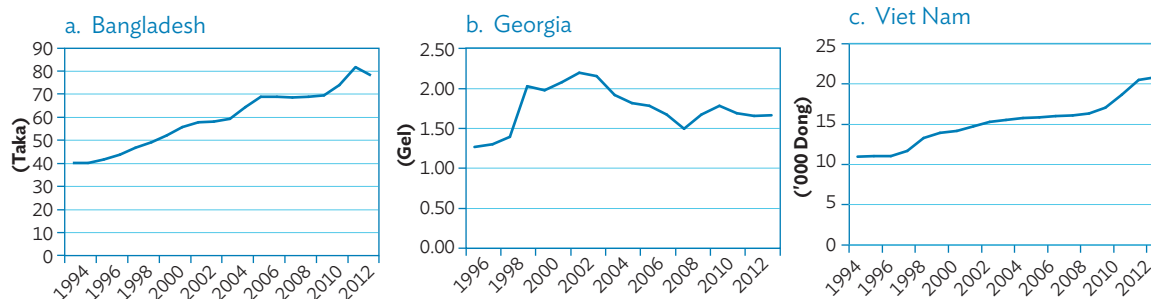
a. Bangladesh

b. Georgia

c. Viet Nam

Source: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org

digit inflation in 2011, both due to increasing food and transportation costs. In contrast, Georgia has been experiencing deflation over the past 2 years because of declining food costs in the international market (Figure 4).

Figure 4: Inflation Rate

Source: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org
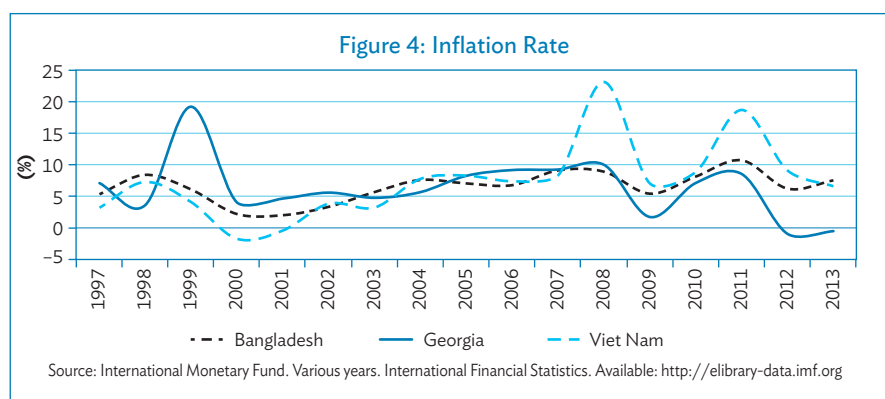
Structure of the Financial System

Composition

Table 7 shows a comparison of the financial sector structure in Bangladesh, Georgia, and Viet Nam. Bank loans are still the dominant source of finance because equity markets are still insignificant in comparison. However, there has been substantial development in this area since 2000, particularly in Viet Nam. Bank loans are the dominant source of financing because deposit-taking institutions comprise the largest share of financial sector assets and liabilities in all the three countries. This is consistent with empirical studies suggesting that banks outperform market-based systems in underdeveloped financial sectors (Tadesse 2000), and the banking system provides a better lending mechanism when the legal system is weak. These two characteristics are common in emerging economies. Commercial banks take up the majority of this sector, which can be classified into private commercial banks (including foreign-owned firms) and state-owned banks. Other deposit-taking institutions include special-purpose banks, and financial and leasing companies. These firms are regulated by their respective country's central banks: Bangladesh Bank, National Bank of Georgia, and State Bank of Viet Nam. Other institutions belonging to the financial system include insurance and pension companies, exchange bureaus, and microcredit institutions that are regulated by separate laws and organizations. Insurance companies are subject to a country's insurance act, while firms operating in the capital market are regulated by a securities and exchange commission (SEC).

Table 7: Financial Market Resources, % of Gross Domestic Product

	Bank Loans		Equity Market Capitalization		Outstanding Local Currency Bonds	
	2004[a]	2013	2000[b]	2012	2000	2013
Bangladesh	32.7	38.1	2.5	13.1	—	—
Georgia	9.6	38.6	0.8	6.0	—	—
Viet Nam	82.3	93.8	0.4	21.1	0.3	16.9

a = 2007 for Viet Nam; b = 2003 for Viet Nam.
Note: a Bank loans refer to "commercial bank loans" as indicated in the Financial Access Survey database. Equity market capitalization is based on the World Bank's data of the market capitalization of listed companies.
Sources: Financial Access Survey database, International Monetary Fund; World Development Indicators, World Bank; AsiaBondsOnline, Asian Development Bank.

Liberalization measures in Bangladesh spurred the growth of private commercial banking. The share of private commercial banks to total assets of deposit-taking institutions has significantly increased from 24.6% in 1991 to 57.9% in 2012, even as the number of banks per classification remained the same (Figure 5). Since 2001, there have been 30 private commercial banks and 4 state-owned banks. The number of foreign banks has decreased from 11 to 9, and the number of specialized banks from 5 to 4. Specialized banks were established to assist agricultural and industrial sectors (Figure 6).

Figure 5: Market Share of Deposit Money Banks in Bangladesh

Source: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org

Figure 6: Number of Banks in Bangladesh

Source: Country sources.
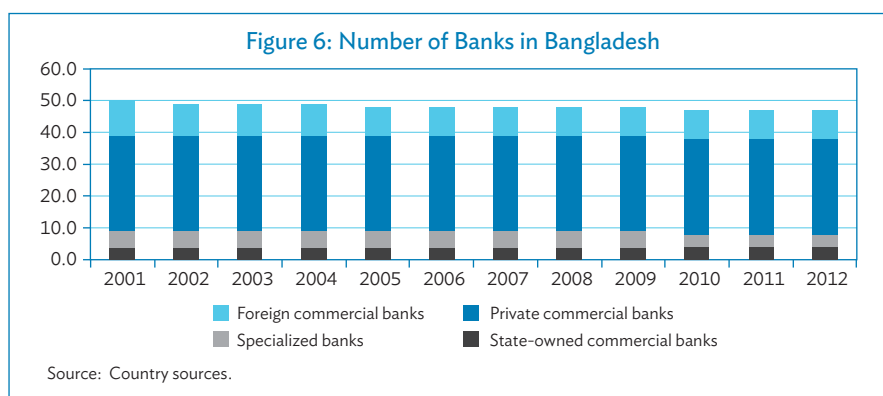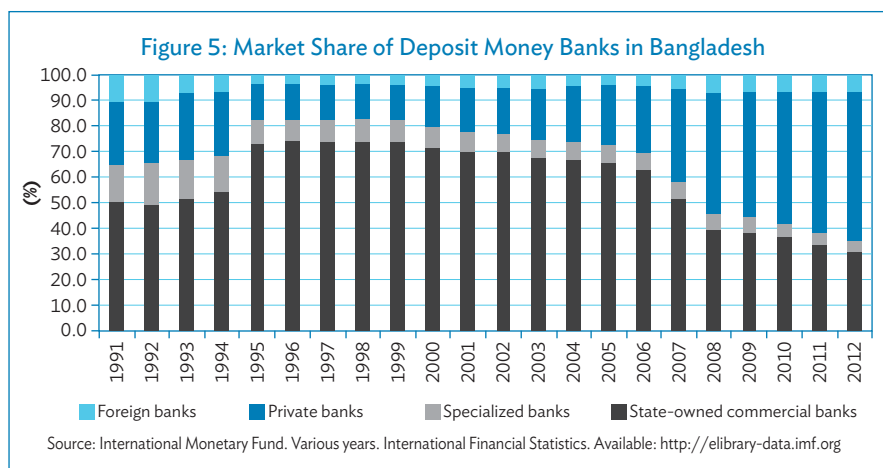
On the other hand, state-owned banks continue to dominate the financial sector in Viet Nam, holding a majority of the share for both deposit and credit markets (Figures 17 and 18 of the Viet Nam country report). The State Bank of Viet Nam has yet to meet its target of partially privatizing its state-owned banks by reducing government ownership to 51.0%. As of April 2011, only Vietcombank and Vietinbank have successfully sold their shares to the private sector (Federal Reserve Bank of San Francisco, 2011). Presently, there are 5 state-owned banks, 34 joint-stock private banks, 4 joint-venture banks, and 5 banks with complete foreign ownership. In Georgia, privately run banks dominate the sector but there is concern over diversification, since 20 out of 21 banks are foreign-owned. This is a sizable increase from 2004 when there were only 12 out 21 commercial banks with foreign ownership (Figure 7).

Figure 7: Number of Commercial Banks and Foreign-Owned Banks in Georgia

Sources: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org; country sources.
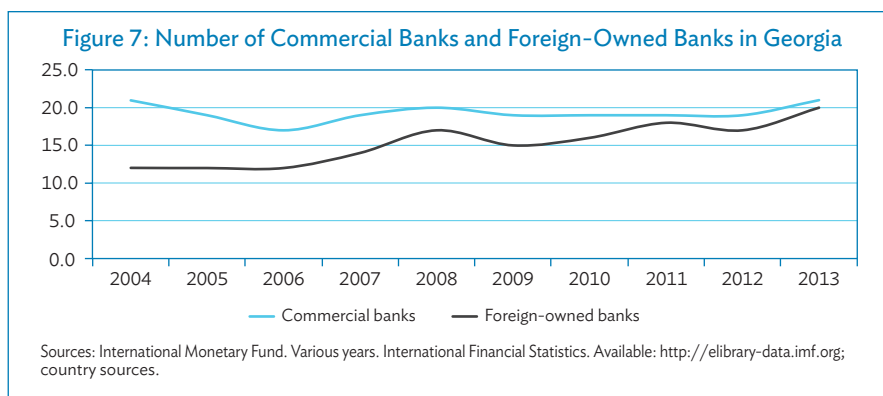
Size, depth, and development

The sizes of deposit-taking institutions in Bangladesh and Georgia have dramatically increased since the 1990s. In Bangladesh, the ratio of assets of deposit money banks to GDP has risen more than threefold from 40.6% in 1991 to 141.2% in 2012. In Georgia, the ratio of commercial bank assets to GDP has increased from 6.8% in 1996 to 64.4% in 2013 (Figure 8). Some financial deepening has also taken place in Bangladesh, Georgia, and Viet Nam, as evident in the increasing M2 to GDP ratio since 2001. It should be noted, however, that Viet Nam's M2 has far exceeded GDP due to liquidity problems associated foreign exchange stability (Figure 9). Nonetheless, it is palpable that financial development has taken place, given that private sector borrowing has increased (Figure 10). Moreover, the ratio of deposits to GDP has also increased, suggesting that more individuals and entities have been using deposit-taking institutions for saving (Figure 11).

Figure 8: Bank Assets to GDP—Bangladesh and Georgia

Sources: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org; country sources.

Figure 9: M2 to GDP Ratio—Bangladesh, Georgia, and Viet Nam

Sources: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org; country sources.

Figure 10: Private Sector Claims to GDP—Bangladesh, Georgia, and Viet Nam

Sources: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org; country sources.

Figure 11: Deposits to GDP—Bangladesh, Georgia, and Viet Nam

Sources: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org; country sources.

Practices in the Collection, Compilation, and Dissemination of FSIs

Responsible agencies

In principle, the collection and compilation of FSIs should be assigned to the central bank or overarching financial institution because of the concentration of expertise; scope, breadth, and sensitivity of information; and costs involved. This is certainly the case for Bangladesh, Georgia, and Viet Nam. Bangladesh Bank, the National Bank of Georgia, and the State Bank of Viet Nam have the authority and mandate to collect and calculate financial sector statistics for their respective countries.

Availability

The International Monetary Fund (IMF) publishes FSIs of 19 ADB member countries, including Georgia and Viet Nam, which are coordinated with their respective central banks. In other words, the IMF only publishes FSIs. As shown in Appendix 3, tables A3.2 and A3.3, both annual and quarterly data have been available for Georgia since 2001. On the other hand, data for Viet Nam are available only annually from 2008. The IMF does not include Bangladesh in its FSI database, but calculates some core indicators for the country as part of its Article IV staff reports. Part of this project includes a FSI compilation exercise involving Bangladesh Bank, which calculated its own estimates for core indicators and some of the encouraged indicators. Appendix 5 summarizes data issues and comparability for Georgia and Viet Nam for each core and encouraged indicator.

Definitions

The definition used to collect the data is one of the key issues in the usefulness and comparability of FSIs for research and monitoring purposes. Because of differences in accounting practice and standards, care should be exercised when comparing indicators across countries. Regulatory changes also influence

the levels of selected FSIs, so one should note of structural breaks when comparing indicators across time. Appendix 5 summarizes the definitions used by Georgia and Viet Nam in calculating FSIs.

Trends in Core and Encouraged FSIs

Capital adequacy

The core set of FSIs has three types of capital-based ratios. The first two, regulatory capital to risk-weighted assets, and regulatory Tier 1 capital to risk-weighted assets, measure the capacity of capital to weather economic shocks. They differ in the sense that the former uses total supervisory capital (tiers 1–3 less supervisory deductions), while the latter only uses core capital (Tier 1). The third, nonperforming loans net of provisions to capital, is to measure whether there is sufficient capital to cover losses from NPLs.

Figure 12 shows the performance of Bangladesh, Georgia, and Viet Nam in terms of capital adequacy ratios. Deposit-takers in Georgia and Viet Nam have historically been compliant with the minimum level of regulatory capital and Tier 1 capital ratios prescribed by their respective central

Figure 12: Regulatory Capital to Risk-Weighted Assets

a. Bangladesh

Bangladesh Bank estimate ■ IMF estimate
—Minimum capital adequacy ratio requirement (10% as of 2010)

b. Georgia

Georgia — Minimum capital adequacy ratio requirement (12% as of 2006)

c. Viet Nam

Viet Nam — Minimum capital adequacy ratio requirement

Sources: International Monetary Fund. Various years. International Financial Statistics. Available: http://elibrary-data.imf.org; country sources.

banks. More than sufficient capital is also evident when looking at the levels of nonperforming loans net of provisions to capital (Figure 13), which remained below 10.0% over the past decade. On the other hand, banks in Bangladesh had a harder time meeting the minimum ratio requirement for capital to risk-weighted assets (10.0%), and only succeeded in doing so beginning in 2008. The dip in 2010 was due to a shift from Basel I to the Basel II standards, which required banks to account for both credit risk and market risk. Nonperforming loans net of provisions to capital have declined dramatically since 2007, but more as a result of a significant decline in nonperforming loans instead of an increase in capital over the period.

Capital adequacy is a supervisory concept, so analysis of related ratios should always take into account central bank regulations on minimum levels and computation. It is also important to evaluate whether the industry aggregate is representative of the overall health of banks, or whether the ratio merely reflects the case for a very few large banks that take up the majority of the market share. Georgia cites that its five largest banks enjoy high levels of capital adequacy. Similarly, Viet Nam's 12 most dominant banks are also sufficiently capitalized. In Bangladesh, the industry has already met the minimum regulatory capital to risk-weighted assets, but the ratios for specialized development banks have been negative since 2006. Table 8 summarizes the regulatory requirements of Bangladesh, Georgia, and Viet Nam.

Figure 13: Nonperforming Loans Net of Provisions to Capital—Bangladesh, Georgia, and Viet Nam

Source: Country sources.
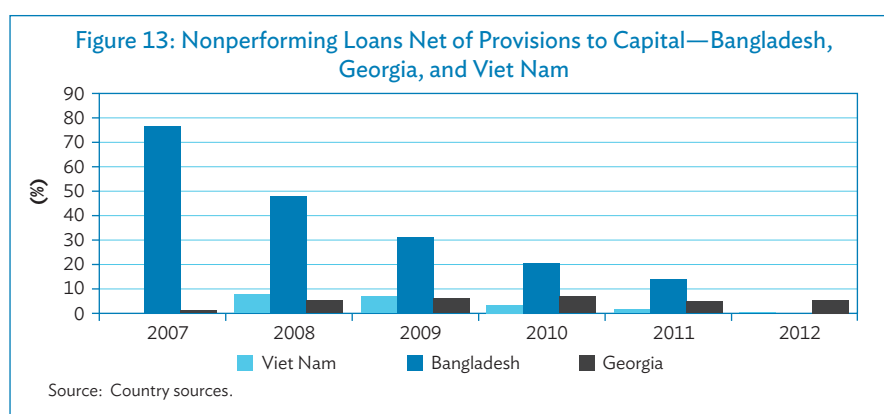
Table 8: Minimum Capital Ratios, %

	Tier 1	Total	Total + Capital Buffer	Framework	Effective
Bangladesh	5.5	10.0	10.0	Basel III	2015
Georgia	8.0	12.0	—	Basel II	2003
Viet Nam	4.0	9.0	—	Basel I	2010

Source: Bank of Bangladesh, National Bank of Georgia, and State Bank of Viet Nam.

Asset quality

There are two prescribed indicators for evaluating asset quality. The first, nonperforming loans to total gross loans, is a direct measure of the portion of deposit-takers' assets that are already in default or close to being in default. The other, sectoral distribution of loans to total loans, shows asset diversification and identifies where risks are concentrated.

Figure 14 shows the ratio of nonperforming loans to total loans from the past decade to present. Levels in Georgia remained below 10.0% over the period covered, even after rising sharply in 2008. In Viet Nam, the ratio has stayed below 3.0% since 2008 and is on a downward trend. Nonperforming

Figure 14: Nonperforming Loans to Total Gross Loans—Bangladesh, Georgia, and Viet Nam

Source: Country sources.
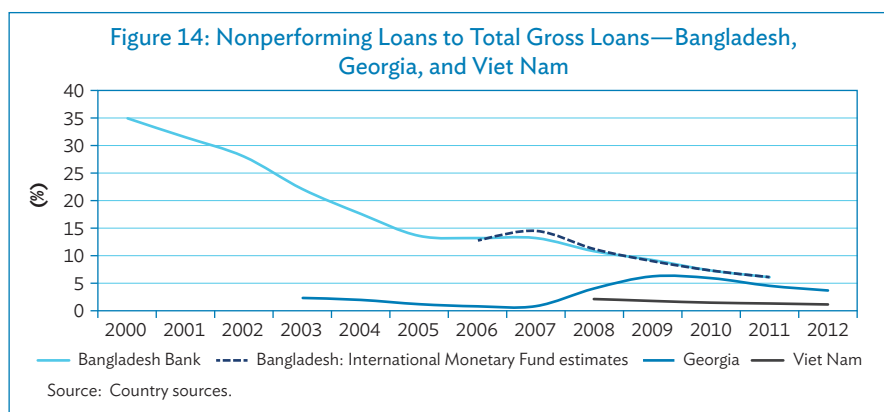
loans in Bangladesh used to be very high due to weak credit selection and risk management in state-owned commercial banks. This saw a significant turnaround in 2006 after restructuring, loan recovery drives, and debt write-offs. The ratio declined from close to 35.0% in 2000 to 6.1% in 2011.

Figures 15–17 show the sectoral distribution of loans over the same period. In Georgia, the majority of loans are from residents. In addition, about 60.0% of total loans are taken up by nonfinancial corporations, while about 30.0% are from other domestic sectors. In Viet Nam, loans were entirely taken up by residents, and more than 90.0% were lent to nonfinancial corporations. These figures suggest that (i) both countries are far from diversifying their risks to include foreign borrowers, and (ii) lending mostly goes to the real estate sector. Bangladesh computes a more disaggregated distribution. Based on Bangladesh Bank calculations, about 60.0% of borrowers come from the manufacturing, commerce, and trade sectors as of 2010–2011. The ratio of public borrowing has also declined from 9.0% in 2001–2002 to 3.7% in 2010–2011 (Table 12, Bangladesh country report).

Earnings and profitability

There are four prescribed indicators of earnings and profitability under the core set of FSIs: return on assets (ROA), return on equity (ROE), interest margin to gross income, and noninterest expenses to gross income. Return on assets and return on equity proxy for the efficiency of deposit-takers in using their assets and capital to generate income, respectively. Interest margin to gross income measures the portion of deposit-takers' profits created from interest earnings. Lastly, noninterest expenses to gross income measures how much of gross income is taken up by administrative and overhead costs. Unlike measures of capital adequacy and asset quality, profitability indicators are not directly influenced by policy and tend to be influenced by market forces.

Figure 18 shows the historical trend of ROA and ROE for Bangladesh, Georgia, and Viet Nam. Clearly, the ROA and ROE estimates follow the same pattern because their numerators are the same. Georgia's dipping ratios in 2008 reflect the adverse effect of the global crisis and war with the Russian Federation on the earnings of deposit-takers, consistent with the trend in GDP growth. Georgia and Viet Nam also show a decline in 2012. In Bangladesh, foreign commercial banks traditionally pulled up the ROA and ROE as state-owned commercial and specialized development banks underperformed. Based on Bangladesh Bank's estimates, the ROAs of state-owned commercial banks and specialized development banks remained negative or close to nil until 2008. The ROEs have been at double-digit levels since 2001 but those of specialized development banks remain negative for they continue to incur losses.

Financial Soundness Indicators for Financial Sector Stability:
A Tale of Three Asian Countries

Source: Country sources.

Figure 16: Distribution of Loans by Institution—Georgia

Legend:
- Deposit-takers
- Other financial corporations
- Central bank
- General government
- Nonfinancial corporations
- Other domestic sectors
- Discrepancy

Source: Country sources.

Figure 15: Distribution of Loans to Residents and Nonresidents—Georgia

Legend:
- Residents
- Nonresidents

Figure 17: Sectoral Distribution of Loans—Viet Nam

Source: Country sources.

Figure 18: Return on Assets and Equity

a. Bangladesh

ROA: IMF (right hand scale) ROE: Bangladesh Bank (left hand scale)
ROE: IMF (left hand scale) ROA: Bangladesh Bank (right hand scale)

b. Georgia

ROA (right hand scale) ROE (left hand scale)

c. Viet Nam

ROA (right hand scale) ROE (left hand scale)

IMF = International Monetary Fund, ROA = return on assets, ROE = return on equity.
Source: Country sources.

Figure 19 shows the time series for interest margin to gross income and noninterest expenses to gross income, respectively. Interest margin to gross income has been increasing for Viet Nam, suggesting an increase in profitability of interest-earning assets. The other calculated ratios have generally stayed within the same range over the past decade.

Figure 19: Interest Margin and Noninterest Expense to Gross Income

a. Bangladesh

b. Georgia

c. Viet Nam

Source: Country sources.
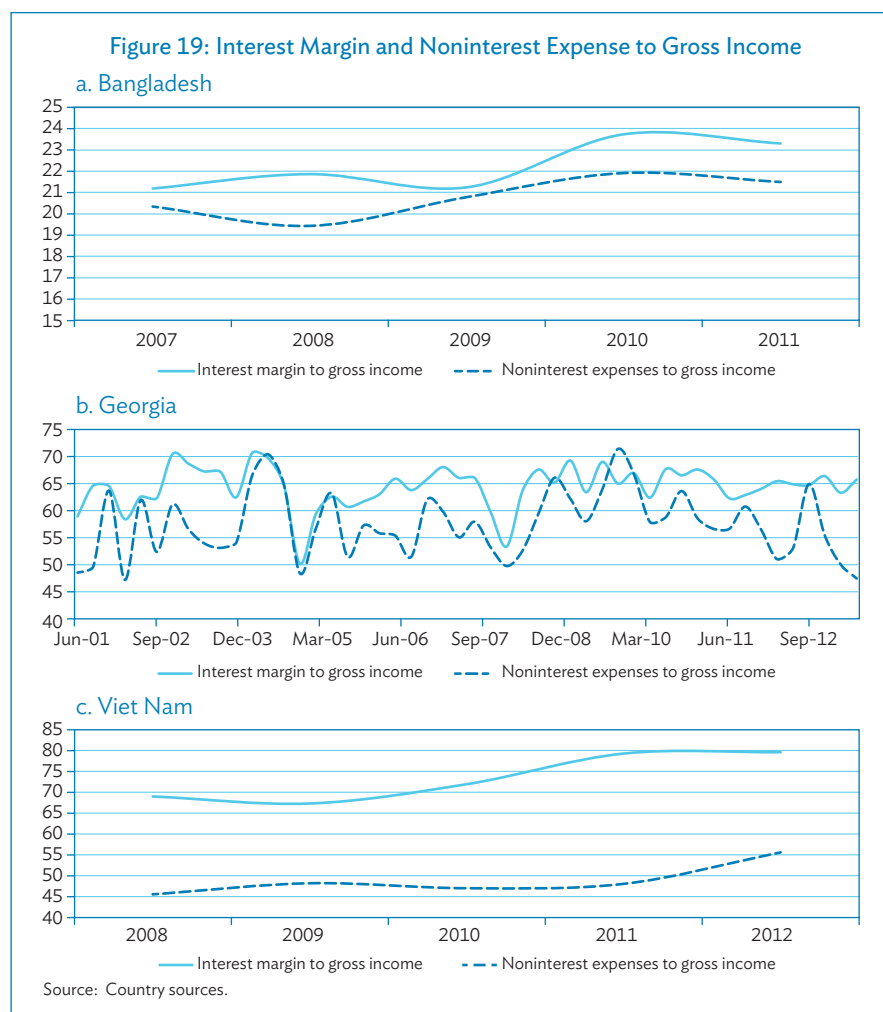
Liquidity

There are two measures of liquidity under the core set of FSIs: liquid asset ratio, defined as liquid assets in the numerator and total assets in the denominator, to show the capacity of liquid assets to meet unexpected demands for cash; and liquid asset to short-term liabilities ratio to show the liquidity mismatch between assets and liabilities and measure the capability of liquid assets to meet short-term withdrawal of funds. It should be noted, however, that central banks should maintain sufficient but not excess liquidity, since the latter undermines the value of money and eventually leads to inflation.

Figure 20 shows the liquidity ratios for Bangladesh, Georgia, and Viet Nam. As with ROE and ROA, these liquidity ratios tend to move in the same direction because they have the same numerators. Liquidity ratios remain sufficiently high in Georgia despite the omission of securities traded in liquid markets in the calculation of liquid assets. However, there has been a jump in liquidity ratios in the past 18 months. In Bangladesh, liquidity ratios restarted their upward trajectory, fueled by persistently high liquidity in private and foreign commercial banks. On the other hand, Viet Nam's liquidity ratios have been consistently falling since 2008.

Figure 20: Liquidity Ratios

a. Bangladesh

- - - Bangadesh liquid asset ratio

b. Georgia

—— Liquid asset ratio   —— Liquid assets to short-term liabilities

c. Viet Nam

—— Viet Nam liquid asset ratio   - - - Viet Nam liquid assets to short-term liabilities

Source: Country sources.
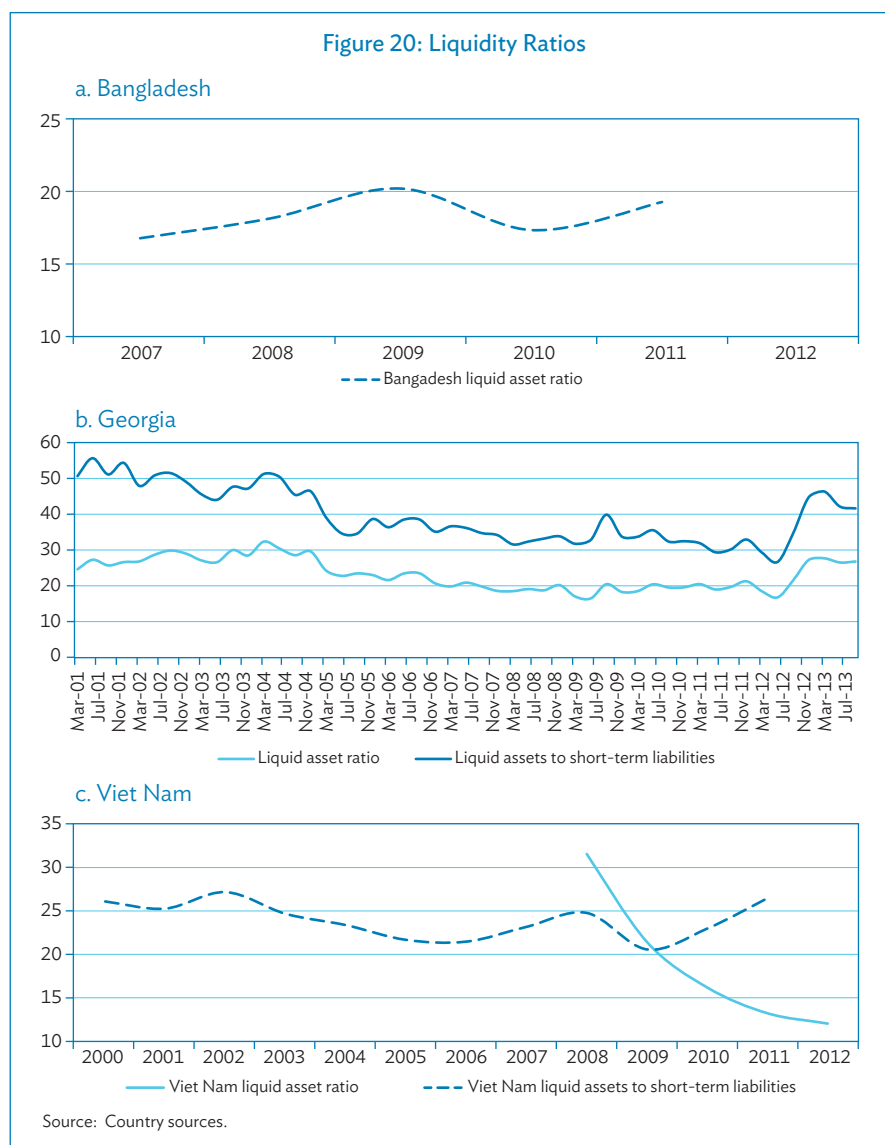
Sensitivity to market risk

Sensitivity to market risk is measured by net open position in foreign exchange to capital, which assesses the capacity of capital to cushion deposit-takers against risks associated with exchange rate exposure, such as volatility or even contagion. Net open position is a supervisory concept that is calculated based on the recommendation of the Basel Committee on Banking Supervision (BCBS). Figure 21 shows the sensitivity ratios for Bangladesh and Georgia. Georgia shows decreasing vulnerability to foreign exchange risk primarily because of a gradual reduction in its net open position, as capital remained stable. On the other hand, net open position sharply climbed in Bangladesh, resulting in heightened sensitivity to external market risk.

Capital to assets

This is the only encouraged indicator where all three economies have available data. This ratio differs from the core capital ratios since capital is measured as total capital plus reserves (Tier 1 capital may also be used), and the assets are not risk-weighted. It is a measure of financial leverage. Figure 22 shows the capital-to-asset ratios for Bangladesh, Georgia, and Viet Nam. The ratio has been steadily

declining in Georgia, suggesting that owner's equity covers less of deposit-taker's assets than before. Larger portions of assets in Georgia's deposit takers are financed through external means, thereby increasing the riskiness of the sector's stock or ownership value.

Figure 21: Net Open Position in Foreign Exchange to Capital

a. Bangladesh

b. Georgia

Source: Country sources.

Figure 22: Bank Capital to Assets

Source: Country sources.
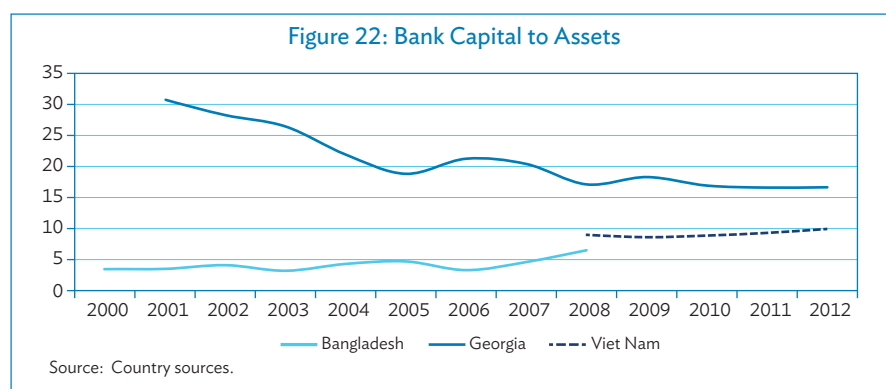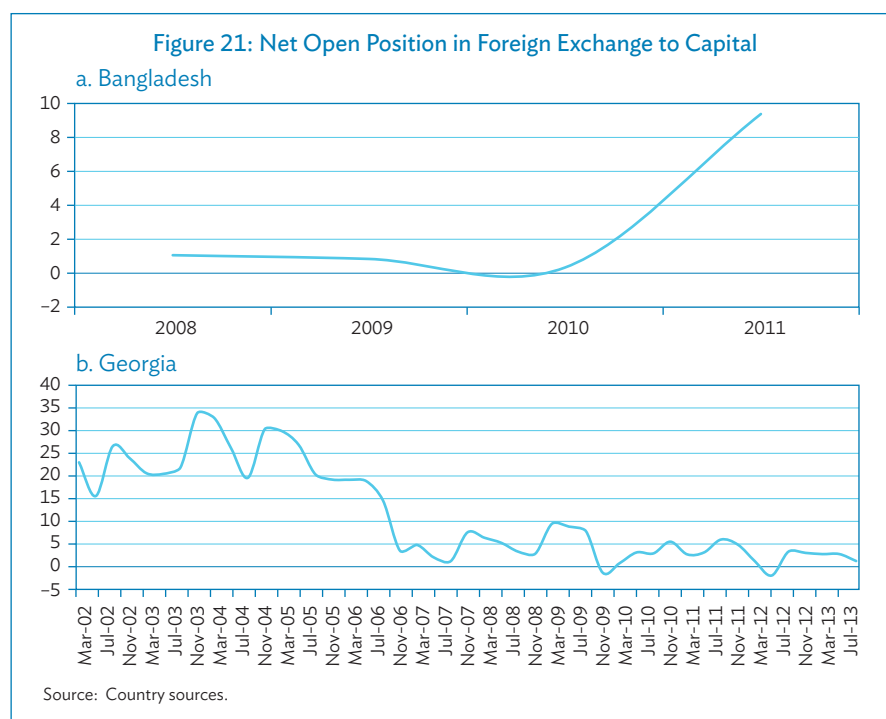
Recent Developments in Georgia, Bangladesh, and Viet Nam[6]

Bangladesh

Bangladesh is in the middle of a 3-year extended credit facility (ECF) with the IMF and the main objective is to reform the state-owned commercial banks through improved governance, credit risk management, and internal controls, along with recapitalization. It is therefore a concern that asset

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[6] The discussion on Bangladesh was obtained from IMF Country Report No. 14/149, Bangladesh Fourth Review Under the Three-Year Arrangement under the Extended Credit Facility and Request for Modification of Performance Criteria. The discussion on Georgia was obtained from IMF Country Report No. 15/17, First Review under the Stand-by Arrangement and Request for Modification of a Performance Criterion. The discussion for Viet Nam was obtained from IMF Country Report No. 14/311, Staff Report for the 2014 Article IV Consultation.

quality at the four state-owned commercial banks (SCBs) continued to deteriorate in the first half of fiscal year 2014. This was attributed to the impact of unrest-related economic disruptions as well as the legacy of poor lending decisions in the past. Their stock of lending has, in aggregate terms, also declined (as has their share in banking system assets). SCB liquidity, however, is not a concern as deposits have continued to grow at a healthy rate,

As indicated in the latest IMF report, the large NPLs of SCBs continue to be a problem. The strategy to address this problem consists of improved governance, gradual recapitalization, and maintaining prudent credit growth limits.

Georgia

A financial sector assessment program (FSAP) was conducted in Georgia. It involved stress tests which showed that the banking sector is relatively resilient. However, the capital and liquidity buffers need to be strengthened. The FSAP indicates that banks maintain sufficient capital to withstand shocks although there are some weaknesses among small banks.

The role of FSIs is again paramount. For example, the reported asset-to-equity ratio is robust at around 6.0% and the capital adequacy ratio is 18.0% (26.0% according to Basel definition). The minimum liquidity requirement is 30.0% and the actual value for the system is 40.0% on average. NPLs are low at 3.6% (standard 90-day measure), although the NBG's more conservative approach puts them at 8.6%.

The FSAP, however, indicated vulnerabilities facing the banking sector. Almost 60.0% of loans are denominated in foreign currency, including to unhedged borrowers. Banks are therefore exposed to significant currency-induced credit risk. In addition, more than one-third of their balance sheet is funded externally, subjecting them to volatility in international markets. The loan–deposit ratio has declined but remains above 100.0%.

The banking sector's resilience should help protect against recent risks. There has been a recent acceleration in credit growth owing to lower interest rates and the NBG's efforts to promote domestic currency lending. This has resulted in a 2.0% rise in the estimated credit-to-GDP gap above its long-term trend. An unintended consequence of the accelerated credit growth is a limit on the increase in the NPL ratio (standard definition), even though NPLs themselves are growing.

The authorities are incorporating FSAP recommendations to strengthen financial stability and supervision. Although the NBG has put in place a forward-looking comprehensive supervisory and regulatory approach, weaknesses remain, especially in crisis preparedness and management and safety nets. To address these risks, the NBG and MOF have signed a memorandum of understanding to improve financial sector management and information sharing, which should help with crisis management. They are also submitting legal amendments to improve regulation and supervision, developing guidelines for concentration risk (as part of Basel III), and taking steps to improve training and retention of staff.

Viet Nam

Problems in the banking sector have continued despite implementation of policy measures designed to help improve the functioning of the sector. Data indicate that liquidity has improved owing to more accommodative monetary conditions and FDI and remittance inflows. Despite the laxer monetary policy and strong deposit growth, bank credit to the private sector has been tepid and

profitability has declined. The system-wide loan-to-deposit ratio has fallen to below 90.0% from a peak of around 105.0% in 2011 although this was partly a result of by sales of NPLs to the Viet Nam Asset Management Company (VAMC).

The decline in profitability manifested itself in a system-wide ROA and ROE in 2013 at 0.5% and 5.6%, respectively. Improved liquidity has provided some flexibility to the banking system but a number of key problems remain. Asset quality is being negatively affected by weak domestic activity and the continued slump in the prices of real estate, which is a significant source of banks' loan collateral. Tighter standards for classifying loans have not yet been fully implemented. Full implementation of tighter loan classification has been postponed. This has allowed loan rescheduling and new lending to delinquent customers without reclassification, and some merged institutions are granted time to comply with key prudential norms. Banks have 5 years to compensate against NPLs sold to the VAMC in exchange for bonds that are nonmarketable, pay no interest, and are not government guaranteed. Meanwhile, major legal hurdles exist for the transfer of loan titles and collateral and these impede NPL resolution. Moreover, the macroprudential framework requires refinement.

5. Conclusion and Policy Implications

Given the important role of the financial sector in the economy, it is very important to monitor its health. The experience with the AFC and GFC shows how the deterioration of balance sheets of banks can trigger an economy-wide slump. What should be prevented is a situation of turning vulnerabilities in the financial sector into weaknesses. By monitoring key financial indicators (i.e., FSIs), vulnerabilities of the financial sector can be detected early on so that appropriate measures to reduce them can be implemented.

The analysis in this study shows the usefulness of FSIs for monitoring not only the health of a country's financial sector but also the health of the entire economy. Analysis of FSIs reveals areas where the financial sector is vulnerable or weak so that possible policy measures to address the weaknesses can be identified.

The econometric results of the multivariate logit model with core FSIs controlled by macroeconomic variables, income groups, and years establish the relationship between core FSIs and the probability of banking crises. The results show that all core FSIs—except for nonperforming loans net of provisions to capital—are strongly correlated with the occurrence of a banking crisis. Particularly, high levels of return on assets, regulatory capital to risk-weighted assets, and regulatory Tier 1 capital to risk-weighted assets strongly reduce the probability of a banking crisis. A weaker but still prominent effect comes from noninterest expense to gross income and net open position in foreign exchange to capital, which move in the same direction as the incidence of a crisis. These findings are robust across a number of specifications. The results indicate the importance of FSIs in maintaining the health of the financial system and in monitoring for signs of potential financial instability.[7]

The three countries covered in the study differ in terms of their FSIs. For example, Georgia and Viet Nam have met capital adequacy standards but Bangladesh has faltered in this aspect. At present, injections of capital into state-owned commercial banks (SCBs) are required, but these are contingent upon improved governance. Georgia and Viet Nam have been more susceptible to global economic crises than Bangladesh. This is partly because a significant amount of public and private debt in Georgia is denominated in foreign currency while Viet Nam's economic openness—largely because of rapid economic integration in East Asia—has made it more vulnerable to global economic slowdowns.

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[7]   However, the analysis remains constrained with limited data, which confined the model to the most recent crisis only. Similarly, lack of quarterly data for both macroeconomic variables and core FSIs excluded many countries from the sample. While there is a good mix of high-, middle, and low- income countries in the sample, it is possible that omitted observations may have influence on the results, had they been available. Future studies may become more conclusive once more countries become covered by the IMF's FSI database, and data with longer time series and increased frequency become available.

Key Findings on Bangladesh

Bangladesh state-owned commercial banks (SCBs) suffered from large NPLs in the early 2000s as a result of their ineffective procedures in identifying borrowers, poor risk management, and weak collections, as well as pressures to make loans and reduce debt service payments by certain sectors. In response, measures were implemented to reduce pressure to make loans and to restructure these banks to strengthen the loan recovery and write-off mechanisms. This resulted in the decline of NPLs, particularly in the period of 2006–2011.

The measures to reform the SCBs focus on the following areas: (i) Improving governance—this will be undertaken based on a revised memorandum of understanding (MoU) with BB. All the SCB boards approved several new policies to develop credit and liquidity risk management and strengthen internal control and compliance. Meanwhile, BB will undertake a review of SCBs' conformity with their new internal control and compliance policies; (ii) Gradual recapitalization—Based on the progress of efforts to improve governance, the BB is committed to further gradual capital injections to the SCBs; and (iii) Maintaining prudent credit growth limits—Since the strengthening of the SCBs' capital position is contingent on improved governance, there is a need for an interim measure to maintain the health of their balance sheets. One way is through a program ceiling on overall SOB credit, as well as by specific credit growth limits established in the MoUs.

In its latest annual report, the BB reports a number of policy measures that emphasize risk management, corporate governance, stress testing, and enhanced CSR and green banking activities in the banks, as well as monitoring of fraud and forgeries through self-assessment of antifraud internal controls.[8] Meanwhile, a revised guideline for the CAMELS rating has been implemented in order to conform to international standards. A risk management committee at the board level has been required to ensure proper risk management practice in the banks. Presently the banks are also being rated for their overall risk management performance.

BB has also taken several measures in the recent past to put in place good corporate governance in banks, including a "fit and proper" test for appointment of chief executive officers, specifying the constitution of an audit committee of the board, and enhancing disclosure requirements.

BB has also spearheaded strategic reforms in bank supervision technique and approach to promote the institutional and systemic soundness of the banking sector. The main focus of these changes is to minimize risk and uncertainty in order to maintain stability in the financial sector and protect the interest of depositors. Specifically, BB is shifting its strategy from a compliance-based approach to a forward-looking risk-based approach with the goal of conforming to international best practices.

The main challenge to the financial sector of Bangladesh is to ensure that undercapitalized banks follow consistently what is set up in the memorandums of understanding between them and BB. Another important issue is to raise the resources to meet the potential additional recapitalization needed by the state-owned banks.

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[8] Bangladesh Bank Annual Report (July 2013–June 2014). Dhaka.

Key Findings on Georgia

The vulnerabilities of each economy are also different. Georgia is a country with one of the highest costs of finance in developing Europe and Central Asia. This is reflected in the large interest spreads and a high risk premium of private loans. The high cost of finance is puzzling since it is not consistent with the macroeconomic fundamentals of the country. Neither is it consistent with the conservative lending standards, high capitalization rates, and a relatively low percentage of nonperforming loans in the overall loan portfolio.

The analysis looks into a possibility that the high cost of finance is related to the relatively low level of financial depth and undeveloped capital markets. The relatively large share of dollar-denominated debt may also increase credit risk. The study shows that while a low savings rate and shortage of domestic deposits remain a problem, they are not the leading cause of the high cost of finance. In particular, the relatively low deposit rates may indicate that aggressively attracting domestic deposits is not a priority for the commercial banks. On the other hand, supply of domestic financing may be a bigger problem in the future.

The phenomenon of a high interest rate spread in Georgia is a complex problem that may be due to several factors, such as the following:

- high perceived risk of doing business, which is non-idiosyncratic (not firm-specific), and therefore cannot be diversified away by the lender. This is due to systemic problems, such as uncertainty about property rights and the status of borrowers' assets as collateral; lack of financial transparency in business reporting including and credit worthiness of borrowers; high leverage ratio of qualified borrowers due to underdeveloped capital markets; and lack of alternative ways to raise capital.

- low efficiency of Georgian banks, for they incur the biggest share of noninterest expenses as personnel costs. The heavy reliance on traditional ways to conduct bank transaction (e.g. using bank branches rather than ATMs, low internet penetration, and high cost of administering and monitoring loans) makes banks more labor intensive and contributes to the high costs of financing; and

- high lending rates are further perpetuated by adverse selection problem that makes banks can only choose clients from a more risky pool—the type who could offer high returns and operate with lower credit maturities.

Accordingly, the following medium-term policy actions are suggested: (i) deposit insurance and depositor protection mechanisms, (ii) improving credit-sharing mechanism, (iii) facilitating property registration, and (iv) improving reporting standards for firms. For the longer term, the country needs to (i) develop capital markets, (ii) diversify industrial base, and (iii) reduce income inequality through job creation and inclusive growth.

Key Findings on Viet Nam

The banking sector in Viet Nam has been experiencing problems over high NPLs and sluggish credit growth caused by governance and structural problems such as weak balance sheets, regulatory forbearance, connected lending and cross-ownership (including between banks and state-owned enterprises), weak risk management, and the presence of special interest groups that have resulted in credit being channeled to unprofitable and unproductive business.

Efforts of the SBV and individual banks have resulted in a recent significant decline in the amount of NPLs. For example, the Viet Nam Asset Management Company (VAMC) has been established to purchase NPLs from commercial banks with the intention to liquidate, restructure, and sell these NPLs. In this context, the banks have been required to submit restructuring plans to the SBV.

Other reforms include the drafting of a new risk management regulation based on Basel II that will be piloted in 10 banks as part of adopting a new road map. A revised bankruptcy law has been adopted and related legislation is under review to provide smoother restructuring and debt resolution for enterprises. The limit on banks' single foreign ownership was increased slightly under the unchanged overall foreign ownership cap of 30.0%. A new Monetary and Financial Stability Department was created in the SBV, and the SBV has issued an action plan for the banking sector to supplement existing strategies.

The main challenge in Viet Nam's financial sector is to implement reforms in a comprehensive manner to address the root causes of the banking sector problems. The following are the key elements of an effective reform program:

- assessing banks' recapitalization needs;
- revising classification criteria to guide resolution options;
- recapitalizing, restructuring, and resolving which includes foreign strategic partnerships;
- strengthening the VAMC including by infusing more capital;
- developing additional options to deal with NPLs;
- tightening supervision to ensure sound lending practices going forward;
- revamping the architecture and procedures for crisis management;
- strengthening financial safety nets during the reform process.

Overall, the discussion summarized in this synthesized report and described further in the country reports suggest the following key conclusions:

- FSIs should be monitored systematically and regularly along with those of the standard macroeconomic indicators. There is a possible two-way relationship between financial sector stability and macroeconomic performance of which we must be aware.
- In analyzing FSIs, one should take globalization trends into account. Crises that emanate from other countries can feed into domestic economies through various channels including the capital accounts.
- Monitoring FSIs will identify areas of concern where improvement in the financial system is needed. This includes developing capital market to reduce the dominance of the banking sector as a source of development finance that is a common feature of most developing countries.
- Countries should exert efforts to collect data to enable them to monitor at least all core FSIs. This should be made using uniformly accepted definitions and methodology to ensure comparability.
- Efforts to collect data for FSIs should be accompanied by measures to comply with the Basel III Accord, which represents a substantial change from the current framework and that will be fully implemented in 2019.
- The nonfinancial corporate (NFC) sector, household (HH) sector, and real estate (RE) market constitute the main sources of credit exposure of financial institutions in many developing countries. The degree of indebtedness and solvency in the corporate sector, household sector, and the real estate has far-reaching impacts on asset quality and profitability at financial institutions. Therefore, policy makers need to have timely data and indicators of these three sectors to examine the market conditions now and in the foreseeable future.

Appendix 1: Systems of Accounts

Income and Expense Statement	Balance Sheets	Memorandum Series
		Other series required to calculate the agreed FSIs
1. Interest income 1	14. Total assets (= 15 + 16 = 31)	
(i) Gross interest income	15. Nonfinancial assets	*Supervisory series*
(ii) Less provisions for accrued interest on nonperforming assets	16. Financial assets (= 17 through 22)	32. Tier 1 capital
2. Interest expense	17. Currency and deposits	33. Tier 2 capital
3. Net interest income (= 1 minus 2)	18. Loans (after specific provisions)	34. Tier 3 capital
4. Noninterest income	(i) Gross loans1	35. Supervisory deductions
(i) Fees and commissions receivable	(i.i) Interbank loans	36. Total regulatory capital (= 32 through 34 minus 35)
(ii) Gains or losses on financial instruments	(i.ii) Noninterbank loans (ii) Specific provisions	
(iii) Prorated earnings		37. Risk-weighted assets
(iv) Other income	19. Debt securities	38. Number of large exposures
5. Gross income (= 3 + 4)	20. Shares and other equity	*Series that provide a further analysis of the balance sheet*
6. Noninterest expenses	21. Financial derivatives	
(i) Personnel costs	22. Other assets	39. Liquid assets (core)
(ii) Other expenses	23. Liabilities (= 28 + 29)	40. Liquid assets (broad measure)
7. Provisions (net)	24. Currency and deposits	41. Short-term liabilities
(i) Loan loss provisions	(i) Customer deposits	42. Nonperforming loans
(ii) Other financial asset provisions	(ii) Interbank deposits	43. Residential real estate loans
8. Net income (before extraordinary items and taxes) (= 5 minus [6 + 7])	(ii.i) Resident (ii.ii) Nonresident (iii) Other currency and deposits	44. Commercial real estate loans
9. Extraordinary items		45. Geographic distribution of loans5
10. Income tax		46. Foreign currency loans
11. Net income after tax (= 8 minus [9 + 10])	25. Loans	47. Foreign currency liabilities
12. Dividends payable	26. Debt securities	48. Net open position in equities
13. Retained earnings (= 11 minus 12)	27. Other liabilities	49. Net open position in foreign currency for on-balance-sheet items
	28. Debt (= 24 + 25 + 26 + 27)	
	29. Financial derivatives	*Balance-sheet-related series*
	30. Capital and reserves (i) Of which: Narrow capital and reserves	50. Total net open position in foreign currency
		51. Exposures of largest deposit takers to largest entities in the economy
	31. Balance sheet total (= 23+ 30 = 14)	
		52. Exposures to affiliated entities and other "connected" counterparties

Source: Compiled by the author from International Monetary Fund. 2006. Financial Soundness Indicators Compilation Guide. www.imf.org/external/pubs/ft/fsi/guide/2006/index.htm

Appendix 2: Financial Soundness Indicators— Concepts and Definitions

Code	Indicator Name	Description
Deposit-Takers: Core Set		
I1	Regulatory capital to risk-weighted assets	This financial soundness indicator (FSI) is calculated using total regulatory capital as the numerator and risk-weighted assets as the denominator. Data are compiled in accordance with the guidelines of either Basel I or Basel II. It measures the capital adequacy of deposit takers. Capital adequacy and availability ultimately determine the degree of robustness of financial institutions to withstand shocks to their balance sheets.
I2	Regulatory Tier 1 capital to risk-weighted assets	The data for this FSI are also compiled in accordance with the guidelines of either Basel I or Basel II. It measures the capital adequacy of deposit takers based on the core capital concept of the Basel Committee on Banking Supervision (BCBS).
I3	Nonperforming loans net of provisions to capital	This FSI is calculated by taking the value of nonperforming loans (NPLs) less the value of specific loan provisions as the numerator and capital as the denominator. Capital is measured as total capital and reserves in the sectoral balance sheet; for cross-border consolidated data, total regulatory capital can also be used. This FSI is a capital adequacy ratio and is an important indicator of the capacity of bank capital to withstand losses from NPLs.
I4	Nonperforming loans to total gross loans	This FSI is calculated by using the value of NPLs as the numerator and the total value of the loan portfolio (including NPLs, and before the deduction of specific loan-loss provisions) as the denominator. This FSI is often used as a proxy for asset quality and is intended to identify problems with asset quality in the loan portfolio.
I5	Sectoral distribution of loans to total loans	This FSI is calculated using lending to each of the institutional sectors reported in the sectoral balance sheet of the deposit takers as the numerators and total gross loans as the denominator. This FSI is an asset quality ratio. It provides information on the distribution of loans (including NPLs and before the deduction of specific loan-loss provisions) to resident sectors and to nonresidents. Lack of sectoral diversification in the loan portfolio signals the potential existence of an important vulnerability in the financial system.
I6	Return on assets	This FSI is calculated by dividing net income before extraordinary items and taxes (as recommended in the FSI guide) by the average value of total assets (financial and nonfinancial) over the same period. This FSI is an indicator of bank profitability and is intended to measure deposit takers' efficiency in using their assets.
I7	Return on equity	This FSI is calculated by dividing net income before extraordinary items and taxes by the average value of capital over the same period. Capital is measured as total capital and reserves as reported in the sectoral balance sheet; for cross-border consolidated data, Tier 1 capital can also be used. This FSI is a bank profitability indicator and is intended to measure deposit takers' efficiency in using their capital.
I8	Interest margin to gross income	This FSI is calculated by using net interest income as the numerator and gross income as the denominator. It is a profitability ratio, which measures the relative share of net interest earnings—interest earned less interest expenses—within gross income. In the case of banks with low leverage, this FSI will tend to be higher.
I9	Noninterest expenses to gross income	This FSI is a profitability ratio, which measures the size of administrative expenses within gross income—that is, it measures the efficiency of deposit takers' use of resources.
I10	Liquid assets to total assets (liquid asset ratio)	This FSI is calculated by using the core measure of liquid assets as the numerator and total assets as the denominator. The ratio can also be calculated using the broad measure of liquid assets as the numerator. This FSI is a liquid asset ratio, which provides an indication of the liquidity available to meet expected and unexpected demands for cash. The level of liquidity indicates the ability of the deposit-taking sector to withstand shocks to their balance sheet.
I11	Liquid assets to short-term liabilities	This FSI is calculated by using the core measure of liquid assets as the numerator and short-term liabilities as the denominator. The ratio can also be calculated by taking the broad measure of liquid assets as the numerator. This FSI is a liquid asset ratio and is intended to capture the liquidity mismatch of assets and liabilities, and provides an indication of the extent to which deposit takers can meet the short-term withdrawal of funds without facing liquidity problems.
I12	Net open position in foreign exchange to capital	The net open position in foreign exchange should be calculated based on the recommendation of the BCBS. Capital should be total regulatory capital or Tier 1 capital as net open position in foreign exchange is a supervisory concept. This FSI is an indicator of sensitivity to market risk, which is intended to show deposit takers' exposure to exchange rate risk compared with capital. It measures the mismatch of foreign currency asset and liability positions to assess the vulnerability to exchange rate movements.

Appendix 2: continued

Code	Indicator Name	Description
I13	Capital to assets	This FSI is the ratio of capital to total assets, without the latter being risk weighted. Capital is measured as total capital and reserves as reported in the sectoral balance sheet; for cross-border consolidated data, Tier 1 capital can also be used. It indicates the extent to which assets are funded by other than own funds and is a measure of capital adequacy of the deposit-taking sector. It complements the capital adequacy ratios compiled based on the methodology agreed to by the BCBS. Also, it measures financial leverage and is sometimes called the leverage ratio.
I14	Large exposures to capital	This FSI is calculated by using the value of large exposures as the numerator and capital as the denominator. From a supervisory point of view, large exposures are defined as one or more credit exposures to the same individual or group that exceed a certain percentage of regulatory capital, such as 10%. Capital should be total regulatory capital or Tier 1 capital. This is an asset quality ratio, which is intended to identify vulnerabilities arising from the concentration of credit risk.
I15	Geographical distribution of loans to total loans	This FSI is calculated by using loans distributed geographically (by region, country, or jurisdiction) as the numerators and total gross loans as the denominator. The suggested regional classification follows that used in the IMF's *World Economic Outlook*. This FSI is an asset quality ratio, which monitors credit risk arising from exposures to particular (groups of) countries, and helps to assess the impact of adverse events in these countries on the domestic financial system. It is a measure of concentration risk of the deposit takers.
I16	Gross asset position in financial derivatives to capital	This FSI is calculated by using the market value of financial derivative assets as the numerator and capital as the denominator. Capital is measured as total capital and reserves as reported in the sectoral balance sheet; for cross-border consolidated data, Tier 1 capital can also be used. This FSI is an asset quality ratio and is intended to provide an indication of the exposure of deposit takers' financial derivative asset positions relative to capital.
I17	Gross liability position in financial derivatives to capital	This FSI is calculated by using the market value of financial derivative liabilities as the numerator and capital as the denominator. Capital is measured as total capital and reserves as reported in the sectoral balance sheet; for cross-border consolidated data, Tier 1 capital can also be used. This FSI is an asset quality ratio and is intended to provide an indication of the exposure of deposit takers' financial derivative liability positions relative to capital.
I18	Trading income to total income	This FSI is calculated by using gains or losses on financial instruments as the numerator and gross income as the denominator. It is an indicator of earnings and profitability, which is intended to capture the share of deposit takers' income from financial market activities, including currency trading—that is, it measures the deposit takers' reliance on market-related activity to generate profits.
I19	Personnel expenses to noninterest expenses	This FSI is an indicator of earnings and profitability. It provides an indication of efficiency as a high or increasing ratio could undermine profitability.
I20	Spread between reference lending and deposit rates	This FSI is the difference (expressed in basis points) between the weighted average loan rate and the weighted average deposit rate, excluding rates on loans and deposits between deposit takers. It is an indicator of earnings and underlying profitability of the deposit-taking sector. It can also be used as a gauge of competitiveness within the sector.
I21	Spread between highest and lowest interbank rate	This FSI measures the spread between the highest and lowest interbank rates (SIRs) charged to deposit takers in the domestic interbank market. The guide encourages weekly compilation of SIRs, using end-period rates for loans of the same maturity (overnight or weekly). This is a liquidity indicator. The dispersion in interbank rates is a very useful indicator of liquidity problems and bank distress. A high dispersion in interbank rates may signal that some institutions are perceived by their peers as vulnerable.
I22	Customer deposits to total (noninterbank) loans	This FSI is sometimes used to detect liquidity problems—a low ratio might indicate potential liquidity stress in the banking system, and perhaps a loss of depositor and investor confidence in the long-term viability of the sector.
I23	Foreign-currency-denominated loans to total loans	This FSI is calculated by using the foreign currency and foreign-currency-linked part of gross loans to residents and nonresidents as the numerator and total gross loans as the denominator. It is an asset quality indicator, which measures the relative size of foreign currency loans within gross loans and therefore monitors exposures to both credit and currency risk.
I24	Foreign-currency-denominated liabilities to total liabilities	This FSI is calculated using the foreign currency liabilities as the numerator and total debt plus financial derivative liabilities less financial derivative assets as the denominator. It is an asset quality indicator, which measures the relative importance of foreign currency funding within total liabilities. A high reliance on foreign currency borrowing (particularly of short-term maturity) may signal that deposit takers are taking greater risks.
I25	Net open position in equities to capital	This FSI is calculated by using deposit takers' net open position in equities as the numerator and capital as the denominator. Capital should be total regulatory capital or Tier 1 capital. This FSI is an indicator of sensitivity to market risk, which is intended to identify deposit takers' equity risk exposure compared with capital.
	Other Financial Corporations	
I26	Assets to total financial system assets	This FSI is calculated using OFCs' financial assets as the numerator and total financial system assets as the denominator. The latter is the total of financial assets owned by deposit takers, OFCs, nonfinancial corporations, households, the general government, and the central bank. This FSI measures the relative importance of OFCs within the domestic financial system.

Appendix 2: continued

Code	Indicator Name	Description
I27	Assets to GDP	This FSI is calculated using OFCs' financial assets as the numerator and gross domestic product as the denominator. It measures the importance of OFCs compared with the size of the economy.
Nonfinancial Corporations		
I28	Total debt to equity	This FSI is calculated by using debt as the numerator and capital and reserves as the denominator. It is a measure of corporate leverage—the extent to which activities are financed out of own funds.
I29	Return on equity	This FSI is calculated by using earnings before interest and tax as the numerator and the average value of capital and reserves over the same period as the denominator. It is a profitability ratio, which is commonly used to capture nonfinancial corporations' efficiency in using their capital.
I30	Earnings to interest and principal expenses	This FSI is calculated by using earnings (net income) before interest and tax plus interest receivable from other nonfinancial corporations as the numerator and debt service payments over the same period as the denominator. It measures nonfinancial corporations' capacity to cover their debt service payments (interest and principal). It serves as an indicator of the risk that a firm may not be able to make the required payments on its debts.
I31	Net foreign exchange exposure to equity	This FSI is calculated by using nonfinancial corporations' net foreign exchange exposure for on-balance-sheet items as the numerator and capital and reserves as the denominator. It measures nonfinancial corporations' exposure to foreign currency risk compared with their capital. The larger the exposure to foreign currency risk, the greater the stress on the financial soundness of nonfinancial corporations from significant currency depreciation, and, as a consequence, on deposit takers.
I32	Number of bankruptcy proceedings initiated	This FSI is a simple numerical addition of the cases where bankruptcy proceedings are actually initiated during the period. It is a measure of bankruptcy trends, but it is influenced by the quality and nature of national bankruptcy and related legislation.
Households		
I33	Household debt to GDP	The data for household debt comprise debt incurred by resident households of the economy only. This FSI measures the overall level of household indebtedness (commonly related to consumer loans and mortgages) as a share of GDP.
I34	Household debt service and principal payments to income	This FSI is calculated by using household debt service payments as the numerator and gross disposable income over the same period as the denominator. It measures the capacity of households to cover their debt payments (interest and principal).
Market Liquidity		
I35	Average bid–ask spread in the securities market 1	This FSI is calculated as the difference between the best (highest) bid and the best (lowest) ask price in the market, expressed as a percentage of the mid-point of the buy and sell price of an asset—a benchmark domestic government or central bank debt security in the first instance. Bid–ask spreads tend to be narrower in more liquid and efficient markets. This FSI is a measure of market tightness—the relative cost of engaging in a transaction irrespective of the absolute level of the market price of the items being sold.
I36	Average daily turnover ratio in the securities market 1	This FSI is calculated as the number of securities bought and sold during a trading period divided by the average number of securities outstanding at the beginning and the end of the trading period. The guide recommends that turnover be calculated in the first instance for a benchmark domestic government or central bank debt security. This FSI is a measure of market depth—the ability of a market to absorb large trade volumes without significant impact on market prices.
Real Estate Markets		
I37	Residential real estate prices	This FSI covers residential real estate price indixes. Currently, there is limited international experience in constructing representative real estate price indixes as real estate markets are heterogeneous, both within and across countries, and illiquid. A rapid increase in real estate prices, followed by a sharp economic downturn, can have a detrimental effect on financial sector soundness by affecting credit quality and the value of collateral.
I38		As with I37, there is currently limited international experience in constructing representative real estate price indixes for the commercial sector.
Real Estate Markets		
I39		This FSI is an asset quality ratio, which is intended to identify deposit takers' exposure to the residential real estate sector, with the focus on household borrowers. A high concentration of the loan portfolio in real estate signals the potential existence of an important vulnerability in the financial system.
I40		This FSI is calculated by using in the numerator loans collateralized by commercial real estate, loans to construction companies, and loans to companies active in the development of real estate; and gross loans as the denominator. It is an asset quality ratio, which measures banks' exposure to the commercial real estate market, and carries the same vulnerability risks as I39 associated with a high ratio.

Appendix 2: continued

Code	Indicator Name	Description
Notes on consolidation basis		
I41	Cross-border, cross-sector consolidation basis for all domestically incorporated entities (CBCSDI)	This consolidation basis covers the data of domestically incorporated, domestically controlled entities in the sector, as well as domestically incorporated subsidiaries of foreign entities classified in the same sector, along with the data of these domestically incorporated entities' branches and subsidiaries (both domestic and foreign residents), as well as in other sectors.
I42	Domestically controlled, cross-border, cross-sector consolidation basis (DCCBS)	This basis covers the data of domestically incorporated, domestically controlled entities in the sector, their branches (domestic and foreign), and all their subsidiaries (domestic and foreign) that are classified in the same sector as well as in other sectors.
I43	Domestic consolidation basis (DC)	This includes the data of resident entities along with those of their branches and subsidiaries in the same sector that are resident in the domestic economy.
I44	Domestically controlled, cross-border consolidation basis (DCCB)	This includes the data of domestically incorporated, domestically controlled entities in the sector, along with the data of their branches (domestic and foreign) and of all their subsidiaries (domestic and foreign) that are classified in the same sector.
I45	Cross-border consolidation basis for all domestically incorporated entities (CBDI)	This includes the data of domestically incorporated, domestically controlled entities in the sector and of domestically incorporated subsidiaries of foreign entities classified in the same sector, along with the data of these entities' branches and subsidiaries (in the same sector), which can be either domestic or foreign residents.
I46	Foreign bank branch consolidation basis (FBB)	This includes the data of branches of foreign-controlled and foreign-incorporated entities. This consolidation basis applies only to the sector of deposit takers.
I47	Other consolidation basis (O)	The data refer to groupings of institutions other than those mentioned above. For example, if a country chooses to report an FSI ratio with the numerator being compiled with a different consolidation basis than the denominator (say CBCSDI and DC), then the ratio would be shown under the column Other consolidation basis (O), while the underlying series for the numerator and denominator would be shown under the consolidation bases that they are compiled with, i.e., CBCSDI and DC, respectively.
I48	Consolidation basis is not applicable (NA)	This concerns indicators I021 (spread between highest and lowest interbank rates); I035 (average bid–ask spread in the securities market); I036 (average daily turnover ratio in the securities market); I037 (residential real estate prices); and I038 (commercial real estate prices).
Notes on Consolidation Adjustments		
I49	Intragroup consolidation adjustments	This adjustment involves the elimination of all income and expense flows as well as all positions among members of each group in the population. A group consists of the parent, its branches, and subsidiaries. Associates are not part of the group. These adjustments are intended to avoid double counting of income, capital, and assets of the group.
I50	Intergroup consolidation adjustments	These adjustments are made at the sector level and involve the elimination of positions (all positions except debt and financial derivatives) and flows among deposit-taking groups in the population. The adjustments are aimed at avoiding double counting of certain items in the sectoral income statement and balance sheet.
Notes on Accounting Rules		
I51	Valuation	The amended guide follows the IFRSs on valuation of financial assets and liabilities. Under IAS39, for initial recognition, a financial asset or financial liability is recorded at its fair value. For subsequent measurement, financial assets at fair value through profit and loss as well as available-for-sale assets are valued at fair value; whereas loans and receivables, and investments held until maturity, are valued at amortized cost. All financial liabilities are valued at amortized cost with some exceptions.
I52	Time of recognition of flows and positions	The amended guide defers to the IFRSs, which determine whether assets and liabilities exist and are outstanding on the basis of two criteria—(i) the probability of future economic benefits that can be measured reliably and (ii) control.
I53	Exchange rate	The amended guide defers to the IFRSs, in which foreign currency accounts are to be revalued at market exchange rates. As specified in IAS 21, (i) foreign currency monetary items are reported using the closing rate, (ii) nonmonetary items measured at historical cost in a foreign currency are translated using the exchange rate on the date of the transaction, and (iii) nonmonetary items measured at fair value in a foreign currency are translated using the exchange rates on the date when the fair value was determined.

Source: International Monetary Fund. 2013. Modifications to the Current List of Financial Soundness Indicators. www.imf.org/external/np/pp/eng/2013/111313.pdf

Appendix 3: Availability of Core and Encouraged Indicators in the International Monetary Fund Financial Soundness Indicators Database[a]

Developing Member Economy	Core		Encouraged	
	Range	Frequency	Range	Frequency
Afghanistan	2010 Q2–2012 Q1	Q	2010 Q2–2012 Q1	Q
Armenia	2004 Dec–2013 Sep	M	2004 Dec–2013 Sep	M
Bhutan	2009 Q1–2013 Q3	Q	2009 Q1–2013 Q3	Q
Brunei Darussalam	2009 Q4–2013 Q1	Q	2009 Q4–2013 Q1	Q
People's Republic of China	2010–2012	A	…	–
Georgia	2001 Q1–2013 Q3	Q	2001 Q1–2013 Q3	Q
India	2009 Q1–2013 Q3	Q	2011 Q3–2013 Q3	Q
Indonesia	2011 Q2–2013 Q3; 2005–2010	Q, A	2011 Q2–2013 Q3; 2005–2010	Q, A
Hong Kong, China	2008 Q4–2013 Q2	Q	2009 Q4–2013 Q2	Q
Kazakhstan	2008 Q1–2013 Q2	Q	2008 Q1–2013 Q2	Q
Korea, Republic of	2009 Q1–2013 Q1; 2008–2012	Q, A	2009 Q1–2013 Q1; 2008–2012	Q, A
Malaysia	2005 Q4–2013 Q3	Q	2010 Q4–2013 Q3	Q
Pakistan	2005 Q4–2013 Q3	Q	..	–
Philippines	2008 Q2–2013 Q3; 2008–2009	Q, A	2008 Q2–2013 Q3; 2008–2009	Q, A
Singapore	2008 Q4–2013 Q2	Q	2008 Q4–2013 Q2	Q
Sri Lanka	2012 Q1–2013 Q3; 2011–2012	Q, A	2012 Q1–2013 Q3; 2011–2012	Q, A
Tajikistan	2008 Q1–2013 Q3	Q	2008 Q1–2013 Q3	Q
Uzbekistan	2011 Q1–2013 Q3	Q	2011 Q1–2013 Q3	Q
Viet Nam	2008–2012	A	2008–2012	A

… Data not available, IMF-FSI = International Monetary Fund-Financial Soundness Indicators.
[a] For reporting economies only. Figures refer to the longest series available. Frequencies with a single observation were excluded.
Source: Compiled by the author from the International Monetary Fund website. http://fsi.imf.org

Appendix 3.1: Inventory of Core Indicators from IMF-FSI Database

Core Indicator	Georgia			Viet Nam		
	Earliest	Latest	Obs	Earliest	Latest	Obs
Interest margin to gross income						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Liquid assets to short-term liabilities						
Annual						
Quarterly	Mar–01	Sep–13	51			
Liquid assets to total assets (liquid asset ratio)						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Net open position in foreign exchange to capital						
Annual						
Quarterly	Mar–02	Sep–13	47			
Noninterest expenses to gross income						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Nonperforming loans net of provisions to capital						
Annual				Dec–08	Dec–12	5
Quarterly	Dec–03	Sep–13	25			
Nonperforming loans to total gross loans						
Quarterly	Dec–03	Sep–13	25			

Appendix 3.1: continued

Core Indicator	Georgia			Viet Nam		
	Earliest	Latest	Obs	Earliest	Latest	Obs
Regulatory capital to risk-weighted assets						
Annual	Dec–02	Dec–12	11	Dec–08	Dec–12	5
Quarterly	Dec–02	Sep–13	44			
Regulatory Tier 1 capital to risk-weighted assets						
Annual				Dec–08	Dec–12	5
Quarterly	Dec–02	Sep–13	44			
Return on assets						
Annual	Dec–01	Dec–12	12	Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Return on equity						
Annual	Dec–01	Dec–12	12	Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Sectoral distribution of total loans: Central bank						
Annual						
Quarterly	Mar–01	Sep–13	51			
Sectoral distribution of total loans: Deposit-takers						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Sectoral distribution of total loans: General government						
Annual						
Quarterly	Mar–01	Sep–13	51			
Sectoral distribution of total loans: Nonfinancial corporations						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Sectoral distribution of total loans: Nonresidents						
Annual						
Quarterly	Mar-01	Sep–13	51			
Sectoral distribution of total loans: Other domestic sectors						
Annual						
Quarterly	Mar-01	Sep–13	51			
Sectoral distribution of total loans: Other financial corporations						
Annual						
Quarterly	Mar-01	Sep–13	51			
Sectoral distribution of total loans: Residents						
Annual				Dec-08	Dec-12	5
Quarterly	Mar-01	Sep–13	51			

IMF-FSI = International Monetary Fund–Financial Soundness Indicators
Source: Compiled by the author from the International Monetary Fund website. http://fsi.imf.org

Appendix 3.2: Inventory of Encouraged Indicators from IMF-FSI Database

Encouraged Indicator	Georgia			Viet Nam		
	Earliest	Latest	Obs	Earliest	Latest	Obs
Average bid–ask spread in the securities market						
Quarterly	Dec-09	Sep-13	16			
Average daily turnover ratio in the securities market						
Quarterly	Dec-09	Sep-13	16			
Capital to assets						
Annual	Dec-01	Dec-12	12	Dec-08	Dec-12	5
Quarterly	Mar-01	Sep-13	51			
Commercial real estate loans to total loans						
Annual				Dec-10	Dec-12	3
Quarterly	Jun-06	Sep-13	30			
Customer deposits to total (noninterbank) loans						

Appendix 3.2: continued

Encouraged Indicator	Georgia			Viet Nam		
	Earliest	Latest	Obs	Earliest	Latest	Obs
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Foreign-currency-denominated liabilities to total liabilities						
Quarterly	Mar–01	Sep–13	51			
Foreign-currency-denominated loans to total loans						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Geographic distribution of total loans						
Quarterly	Jun–12	Sep–13	6			
Gross asset and liability position in financial derivatives to capital						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Net open position in equities to capital						
Quarterly	Mar–01	Sep–13	51			
Personnel expenses to noninterest expenses						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			
Residential real estate loans to total loans						
Quarterly	Jun–06	Sep–13	30			
Spread between highest and lowest interbank rate						
Quarterly	Jun–08	Sep–13	22			
Spread between reference lending and deposit rates						
Quarterly	Mar–05	Sep–13	35			
Trading income to total income						
Annual				Dec–08	Dec–12	5
Quarterly	Mar–01	Sep–13	51			

IMF-FSI = International Monetary Fund-Financial Soundness Indicators
Source: Compiled by the author from the International Monetary Fund website. http://fsi.imf.org

Appendix 4: Financial Soundness Indicators for Georgia: Changes to the Current Financial Soundness Indicators List

FSI Code	N	Revised List of FSI	Current Status	Changes/Comments
Core FSIs for Deposit Takers				
I01	1	Regulatory capital to risk-weighted assets	Published	"Regulatory capital" to be redefined in line with Basel III.
I02	2	Regulatory Tier 1 capital to risk-weighted assets	Published	"Tier 1 capital" to be redefined in line with Basel III.
I03	3	Nonperforming loans net of provisions to capital	Published	"capital" to use total regulatory capital except for DC-based FSIs 3.
I04	4	Nonperforming loans to total gross loans	Published	No change.
I05	5	Sectoral distribution of loans to total loans	Published	No change.
I06	6	Returns on assets	Published	No change.
I07	7	Returns on equity	Published	"equity" to use balance sheet capital and reserves only.
I08	8	Interest margin to gross income	Published	No change.
I09	9	Noninterest expenses to gross income	Published	No change.
I10	10	Liquid assets to total assets	Published	"Liquid assets" to be redefined in line with Basel III for jurisdictions that adopt Basel III.
I11	11	Liquid assets to short-term liabilities	Published	Liquidity coverage ratio to be introduced for jurisdictions that adopt Basel III.
I12	12	Net open position in foreign exchange to capital	Published	"Capital" to use total regulatory capital.
I13	13	Capital to assets	Published	Move to the core set. "Capital" to use regulatory Tier 1 capital.
New	14	Solvency indicator (CET1 to RWA)	New	Underlying series to be defined in line with Basel III for jurisdictions that adopt Basel III.
New	15	Net stable funding ratio	New	Underlying series to be defined in line with Basel III for jurisdictions that adopt Basel III.
New	16	Provisions to nonperforming loans	New	Underlying series to be defined in the revised FSICG.
Additional FSIs for Deposit Takers				
I14	17	Large exposures to capital		"Capital" to use total regulatory capital only.
I15	18	Geographical distribution of loans to total loans	Published	No change.
I16	19	Gross asset position in financial derivatives to capital		"Capital" to use total regulatory capital or balance sheet capital as an alternative.
I17	20	Gross liability position in financial derivatives to capital		"Capital" to use total regulatory capital or balance sheet capital as an alternative.
I18	21	Trading income to total income	Published	No change.
I19	22	Personnel expenses to noninterest expenses	Published	No change.
I20	23	Spread between reference lending and deposit rates (base points)	Published	No change.
I21	24	Spread between highest and lowest interbank rates (base points)	Published	No change.
I22	25	Customer deposits to total (noninterbank) loans	Published	No change.
I23	26	Foreign-currency-denominated loans to total loans	Published	No change.
I24	27	Foreign-currency-denominated liabilities to total liabilities	Published	No change.
I25		Net open position in equities to capital		Deleted.
New	28	Credit growth to private sector	New	Underlying series to be defined in the revised FSICG.
Additional FSIs for Other Financial Corporations				
I26	29	OFC assets (percent of total financial system assets)		Additional breakdown.
	30	< MMF assets (percent of total financial system assets)	1 (new)	
	31	< IC assets (percent of total financial system assets)	2 (new)	
	32	< PF assets (percent of total financial system assets)	3 (new)	
	33	< Other OFC assets (percent of total financial system assets)	4 (new)	

Appendix 4: continued

FSI Code	N	Revised List of FSI	Current Status	Changes/Comments
I27	34	OFC assets (percent of GDP)		Additional breakdown.
	35	‹ MMF assets (percent of GDP)	1 (new)	
	36	‹ IC assets (percent of GDP)	2 (new)	
	37	‹ PF assets (percent of GDP)	3 (new)	
	38	‹ Other OFC assets (percent of GDP)	4 (new)	
New	39	Capital adequacy ICs		Underlying series to be defined in the revised FSICG.
New	40	Reinsurance issues ICs		Underlying series to be defined in the revised FSICG.
New	41	Earnings and profitability ICs		Underlying series to be defined in the revised FSICG.
New	42	‹ Return on assets		Underlying series to be defined in the revised FSICG.
New	43	‹ Return on equity		Underlying series to be defined in the revised FSICG.
New	44	Liquidity ratio PFs		Underlying series to be defined in the revised FSICG.
New	45	Earnings and profitability PFs		Underlying series to be defined in the revised FSICG.
New	46	Sectoral distribution of investments for MMFs		Underlying series to be defined in the revised FSICG.
New	47	Maturity distribution of investments for MMFs		Underlying series to be defined in the revised FSICG.
Additional FSIs for Nonfinancial Corporations				
I28	48	Total debt to equity		Add two supplementary ratios: external debt to equity and foreign currency debt to equity.
	49	‹ External debt to equity		
	50	‹ Foreign currency debt to equity		
New	51	Return on assets		Add this indicator.
I29	52	Return on equity		No change.
I30	53	Earnings to interest and principal expenses		No change.
New	54	Earnings to interest expenses		Add this indicator with a view to addressing data limitation for compiling I30 in some countries, and to monitor interest coverage.
I31		Net foreign exchange exposure to equity		Deleted.
I32		Number of bankruptcy proceedings initiated	published	Deleted.
		Liquidity indicators:		
	55	‹ Current ratio	New	Underlying series to be defined in the revised FSICG.
	56	‹ Liquidity ratio	New	Underlying series to be defined in the revised FSICG.
	57	NFC debt to GDP	New	Underlying series to be defined in the revised FSICG.
Additional FSIs for Households				
I33	58	Household debt to GDP		SNA data may be used, or banking data for the numerator in the absence of SNA data.
I34	59	Household debt service and principal payments to income		SNA data may be used, or banking data for the numerator in the absence of SNA data.
New	60	Household debt to household disposable income		Underlying series to be defined in the revised FSICG.
Additional FSIs for Market Liquidity				
I35		Average bid-ask spread in the securities market	published	Deleted. Such information of high frequency is available from commercial sources.
I36		Average daily turnover ratio in the securities market	published	Deleted. Such information of high frequency is available from commercial sources.
Additional FSIs for Real Estate Market				
I37	61	Residential real estate prices (percentage change/last 12 months)		No change.
I38	62	Commercial real estate prices (percentage change/last 12 months)		No change.
I39	63	Residential real estate loans to total gross loans	published	No change.
I40	64	Commercial real estate loans to total gross loans	published	No change.

Source: Compiled by the author.

Appendix 5: Data Issues and Comparability: Georgia and Viet Nam

	Georgia	Viet Nam
Total regulatory capital	Regulatory capital includes core capital (Tier 1 capital) and additional capital (Tier 2 capital). Tier 3 capital is not compiled. Supervisory deductions include (i) revaluation reserve of fixed assets; (ii) book value of intangible assets; (iii) investments in unconsolidated banking and financial subsidiaries (iv) investments in resident banks 5. own shares or equity participation repurchased by bank.	Total regulatory capital = Tier 1 + Tier 2 – supervisory deductions. Tier 3 is not used. According to Circular No. 13/2010/TT-NHNN, 20 May 2010: amounts constituting Tier-1 capital include (i) charter capital (already allocated capital, contributed capital); (ii) the charter capital supplementation reserve fund; (iii) the operation development investment fund; (iv) retained earnings;(v) surplus shares permitted to be accounted as capital under law, minus the portion used for purchasing treasury stocks (if any). Deductibles from Tier-1 capital include (i) goodwill; (ii) business losses, including cumulated losses; (iii) amounts contributed as capital to or used to purchase shares of other credit institutions; (iv) amounts contributed as capital to or used to purchase shares of subsidiary companies; (v) amounts contributed as capital to or used to purchase shares of an enterprise, an investment fund, or an investment project exceeding 10% of the aggregate; and (vi) the aggregate of amounts contributed as capital and used to purchase shares after subtracting the amount in excess of the 10% limit stipulated. Amounts constituting Tier-2 capital include (i) 50% of the credit balance of the account of fixed assets re-valued under law; (ii) 40% of the credit balance of the account of financial assets re-valued under law; (iii) the financial reserve fund, and (iv) convertible bonds issued by the credit institution and other debt instruments meeting certain conditions.
Regulatory Tier-1 capital	Tier 1 capital includes common shares less callable shares; Noncumulative perpetual preferred shares less callable shares; share premium; reserve funds; and retained earnings (loss) of the previous years. Supervisory deductions include (i) revaluation reserve of fixed assets (ii) book value of intangible assets.	According to Circular No. 13/2010/TT-NHNN, 20 May 2010: Amounts constituting Tier-1 capital include (i) charter capital (already allocated capital, contributed capital), (ii)the charter capital supplementation reserve fund, (iii) the operation development investment fund, (iv) retained earnings, (v) surplus shares permitted to be accounted as capital under law, minus the portion used for purchasing treasury stocks (if any). Deductibles from Tier-1 capital include (i) goodwill; (ii) business losses, including cumulated losses; (iii) amounts contributed as capital to or used to purchase shares of other credit institutions; (iv) amounts contributed as capital to or used to purchase shares of subsidiary companies;
		(v) amounts contributed as capital to or used to purchase shares of an enterprise, an investment fund or an investment project exceeding 10% of the aggregate; and (vi) the aggregate of amounts contributed as capital and used to purchase shares after subtracting the amount in excess of the 10% limit stipulated.
Risk-weighted assets		Total risk-weighted assets are the total value of assets determined based on the extent of risk and the value of corresponding assets of off-balance-sheet commitments determined based on the extent of risk. Assets determined based on the extent of risk shall be calculated by multiplying the value of assets by the corresponding risk coefficient of assets stipulated in clauses 5.1, 5.2, 5.3, 5.4, 5.5 and 5.6 of Circular 13/2010/TT-NHNN of 20 May 2010
Nonperforming loans	NPLs exclude financial leases and repurchase agreements that are not classified as deposits.	According to the Decision 493/2005/QD-NHNN, 22 April 2005 loans are classified as follows: (i) Group 1 (standard debts) includes undue debts of which principal and interest are assessed by credit institutions to be fully recoverable when they become due, and other debts classified into Group 1. (ii) Group 2 (debts receiving attention) includes debts turned overdue for less than 90 days; rescheduled debts that are now undue according to the rescheduled terms; and other debts that are classified into Group 2. (ii) Group 3 (substandard debts) includes debts turned overdue for between 90 and 180 days, rescheduled debts that are now overdue for less than 90 days according to the rescheduled terms; and other debts that are classified into Group 3. (iv) Group 4 (doubtful debts) includes debts turned overdue for between 181 and 360 days; rescheduled debts that are now overdue for between 90 and 180 days according to the rescheduled terms; and other debts classified into Group 4. (v) Group 5 (debts with possibly irrecoverable principal) includes debts turned overdue for more than 360 days; debts frozen pending the government's handling; rescheduled debts that are now overdue for more than 180 days according to the rescheduled terms; and other debts classified into Group 5. Nonperforming loans are defined as the sum of loans classified in groups 3, 4, and 5 (with overdue of interest and principal of more than 90 days).

Appendix 5 continued

		Georgia	Viet Nam
Capital		Total capital and reserves.	Total capital and reserves (balance sheet capital) is being used since DC consolidation basis is used to compile this indicator. Starting from 2009 and onward average capital is being applied.
Sectoral distribution of loans		All financial leases are included in loans to "nonfinancial corporations." The sectoral distribution of financial leases is not available. Securities repurchase agreements (repo) are included only in loans to the central bank. The sectoral distribution of repos is not available.	Complete sectoral distribution of loans is not available. For compiling this FSI, loans to nonfinancial corporations include loans to nonfinancial corporations, other financial corporations, households, and nonresidents. The amount of loans to nonresidents, however, is relatively small (less than 0.5%). Accrued interests are not included as part of the outstanding amount of loans.
Net income		Net income is before taxes and extraordinary items. Accrued interest on nonperforming assets is Partially deducted. Fees and commissions receivable and Gains or losses on financial instruments are given as net of income and expenses.	
Total assets		Amortization and special provisions are deducted.	Starting from 2009 and onward, average total assets is being applied. Accrued interests are recorded as other receivables.
Total liabilities		Total debt plus financial derivative liabilities less financial derivative assets.	
Interest margin		Interest margin is net interest income; accrued interest on nonperforming assets is partially deducted.	
Gross income		Accrued interest on nonperforming assets is partially deducted.	
Noninterest expenses		Noninterest expense does not include commissions and fees.	
Liquid assets		Liquid assets broad measure, including securities.	Broad definition of liquid asset is being used, comprising currency and deposits, government securities, and valuable papers with remaining maturity of up to 1 year. Gold, precious metal, and precious stones are included as part of liquid assets.
Total gross loans		Noninterbank gross loans	Accrued interests are not included as part of the outstanding amount of loans. Accrued interest are not included as part of the outstanding amount of loans (less than 0.5%).
Trading and foreign exchange gains (losses)		Gains or losses on financial instruments are given as net of income and expenses.	
Spread between reference lending and deposit rates		The spread between reference lending and deposit rates is calculated as the difference between quarterly weighted average interest rate of loans and quarterly weighted average interest rate of deposits. The weights are determined by dividing the outstanding value of each loan (type of deposit) at the end of the quarter by outstanding value of all loans (deposits) at the end of the quarter. NPLs are included in calculation with zero interest rate.	
Average bid–ask spread in the securities market		For calculation of bid–ask spread, Georgian treasury government bills are used. The data comprise the securities traded on the primary market. Due to inactivity of the secondary market of securities, the highest winning yield recorded at a primary auction of the securities represents the "bid" of the market and the lowest winning yield represents the "ask" of the market.	

Appendix 5 continued

	Georgia	Viet Nam
Personnel expenses		It covers not only personnel expenses but other operating expenses such as purchase of materials and printing paper, business travel expenses, and expenditure on research and development.
Customer deposits		Customer deposits include all type of noninterbank deposits. Accrued interests are not included as part of the outstanding amount of deposits.
Foreign currency denominated loans		Accrued interests are not included as part of the outstanding amount of loans.
Commerical real estate loans		Real estate loans include both residential and commercial real estate loans. However, the amount of real estate loans is relatively small. Accrued interests are not included as part of the outstanding amount of loans.

Source: Compiled by the author.

Appendix 6: Additional Project Activities in Bangladesh

A)   Developing Encouraged Financial Soundness Indicators (FSIs) for Bangladesh

Like many other countries, the nonfinancial corporate (NFC) sector, household (HH) sector, and real estate (RE) market constitute the main sources of credit exposure for Bangladesh's financial institutions. The degree of indebtedness and solvency in the three sectors has far-reaching impacts on asset quality and profitability of the financial institutions. For this reason, policy makers would like to have timely indicators of the three sectors. In Bangladesh, though the core FSIs are now available on a biannual basis, statistical agencies have not compiled NFC sector data. Thus the main objective this project activity is to construct encouraged FSIs (EFSIs) of the NFC and of the household. The first is done by conducting a pilot survey for NFC, while the latter is conducted through a pawnshop survey.

Tackling the challenge of compiling such data on a large scale is not easy, requiring a comprehensive effort from the central bank, finance ministry, and national account agency. Therefore, the study conducted a nationwide pilot survey that serves as groundwork for calculating an encouraged set of FSIs that otherwise is not present. The technical note accompanying these synthesized and country reports summarizes the activity and its main results.

The strategic actions for compiling EFSIs for NFCs include the following:

- Give high importance is given to initiatives of sectoral accounts working on the basis of major economic units.
- Demand greater granularity of data.
- Recognize that comprehensive and high-quality data is essential.
- Align data requirements for macro and microprudential needs.
- Synergize the efforts of Bangladesh Bank (BB) and Bangladesh Bureau of Statistics (BBS) to develop a common data template and directives to banks to redesign their ledger book templates accordingly.
- Create with IMF requirements.
- Set timelines and provide resources.

B)   Encouraged FSIs for Household Debt

Pawnshops remain a significant source of instant cash for households. A pawnshop is a place where a customer in dire need of money pledges a valuable item as collateral in exchange for some money, usually about 50.0% to 60.0% of the item's net market value. However, pawnshops will also offer loans without collateral. To reclaim their pawned items, borrowers must pay back the loan principal together with interest and other fees within the contractual period. If a borrower fails to do so or chooses not to renew the loan by paying interest only, the pawnbroker has the right to take possession of the pawned item and terminate the contract. The item can be sold and the entire sale is for the pawnbroker. However, if it is required by law, the pawnbroker may only take the amount that the borrowers owe and return the rest to the borrower.

The survey results reveal the significant role of pawnshops in providing lending to households, who also take loans from informal sources, such as relatives, well-connected people, various cooperatives, and NGOs. Only a small percentage of loans come from the banks. There seems a good prospect for pawnshop business in the future as compared with conventional sources of credit.

In fiscal year (FY) 2014, sampled pawnshops distributed a considerable amount of loans with or without pawns. For the large ones, the average total amount lent per pawnshop was about 1.89 million Bangladesh taka (Tk). For the medium and small pawnshops, the numbers were Tk0.88 million and Tk0.47 million, respectively.

While microcredit and banks are tightening the rules and regulations in providing loans, pawnshops have become a lucrative alternative. As a result, pawnshops are gaining a larger share of the credit market. The demand for loans is reflected in the charged interest rate, which ranged round 6.0% to 40.0%. Pawnshops surveyed generally do not ask for service charges.

In FY2014, 36.0% of pawnshops loaned Tk10,001 to Tk30,000, and about 41.0% of the loans were less than Tk10,000. More than Tk100,000 loans were given to 5.0% of customers. The percentage of loans ranging from Tk30,000 to Tk50,000 was 12.0%, and from Tk50,000 to Tk100,000 was 6.0%. Around 5.0% of loans amounted to more than Tk100,000. The financial position of the sampled pawnshops shows that the average total assets were Tk2.77 million, in which the financial assets were Tk1.55 million. While they are informal lenders, pawnshops use formal financial systems. The average pawnshop deposit amounted to Tk0.26 million, whereas the average cash assets retained was Tk0.27 million. The average pawnshop sector net profit was Tk0.18 million. The average total debt of pawnshops was Tk1.57 million, while the average industry financial debt was Tk0.28 million.

C) Developing a Real Estate Valuation System Using a GIS Approach

The real estate price dynamics and their relationship with financial stability and monetary policy are very important. They pose difficult challenges for risk management, financial regulation, and policy due to the complexity of the issue and market, as well as inadequate data. The collection of reliable and comparable data on property markets has proved very difficult, restricting the scope of meaningful analysis. Therefore, there is a need for improving the availability and quality of property data and enhancing their analyses.

The real estate sector has been a major source of recovery for the global economy as can be seen in the residential property sector. House prices have been quite strong over the past few years and rising house prices, together with low interest rates, have boosted mortgage refinancing activities, encouraged consumer spending, and supported macroeconomic growth. However, the boom and subsequent bust in the property sector, particularly on the commercial side, was a major contributor to banking problems. Sharp downward corrections in commercial property prices caused a broad-based reduction in profitability, and a widespread deterioration in asset quality drove many financial institutions into distress. Therefore, proper valuation is necessary for financial stability.

Against this background, this study is to shed light on the determinants of real estate asset prices and examined factors contributing to asset price determination that were influenced by location and different qualitative and quantitative attributes. This is done by using the nominal valuation method of the geographic information system (GIS). In doing so, the model determines an asset valuation system based on spatial qualitative and quantitative characteristics of the asset. Accordingly, the asset values are assigned by the numerical parameters rather than real market values. The numerical

parameters can be converted into monetary value subsequently for different purposes, including for tax base valuation and developing a real estate price index (as part of encouraged FSIs). The example done in the project was only for a small area of Dhaka but the application of the system can be scaled up for the entire country.

D)   Developing an Investment Climate Monitor for ADB Developing Member Countries

To examine the position of Bangladesh within South Asia and to compare it with other ADB developing member countries, a user-friendly investment climate monitor (ICM) of ADB's DMCs has been developed under the project. This is to also demonstrate the link between the financial sector and the investment climate condition. Given the coverage of the ICM, it can also be used for analyzing other countries.

ICM is a framework to examine the investment climate condition of a country based on six different components of investment climate commonly used in the World Bank Doing Business survey and investment climate assessment, i.e., infrastructure, taxation, labor, business operation, financing, and stability. For each component of the investment climate, there is a corresponding indicator that is represented by some variables. Each variable is measured by an index, which takes a value from 0 to 100 whereby higher is better. The indexation is based on the methodology used in constructing the human development index. Each index has been made comparable across countries and time. The comparison can be conducted at the investment climate component level as well as for the total investment climate. Given there are more than one variable or indicator in each component of the investment climate, there will be some aggregations in each component of the investment climate as well as for the overall investment climate. Accordingly, the investment climate indicator is a composite index of the investment climate components' indicators.

To conclude, it is worth mentioning that the current interface is a very flexible and easy to use model. It allows users to add more variables under the six broad ICIs according to their need and topic of study. The rank summary page gives the users a quick glance at the performance of a country, both at the beginning and the end year under study, across the DMCs. For instance, among 40 countries, infrastructure ranked 39th and labor 34th as the most common investment constraints to business. Lastly, this model allows users to be more ambitious by providing them a nice object oriented user interface that could be used for the construction of a number of other indicator-modelling or forecasting models. We believe this would benefit significantly empirical researchers in doing quantitative research.

Appendix 7: Insights into the Investment Climate of Georgia

Sound investment climate is a crucial component of financial and economic development. For this reason, policy makers pay particular attention to investment climate and investment constraint assessments for both large enterprises and small and medium-sized enterprises. Typically such assessments are done via investment climate surveys, where the standard practice is to ask the existing firms to rank the constraints to investment and growth they encounter according to severity of impact.

As part of this study, a survey was conducted in conjunction with in-depth interviews of several of the largest firms and banks in Georgia. The purpose of the survey was to gain new insight into the investment climate in the country. The main findings confirm the existence of property rights uncertainty, regulatory framework deficiencies, and insufficient human capital as the principle constraints to investment.

Methodology

The investment climate survey was designed for a group of a few large private firms and large commercial banks with the questions grouped as follows: (i) general information about the firm, (ii) investment climate constraints to the establishment, (iii) financing, (iv) business–government relationship, (v) capacity innovation and learning, and (vi) labor relations.

The banks were also asked questions about constraints to investment faced by their clients' operations and growth, and the obstacles to issuing loans in the Georgian market. The surveys were done either electronically or in face-to-face interviews, where the respondents were asked to elaborate on the nature of the particular constraints they indicated as being significant.

Main Insights from the Investment Climate Survey

- The top obstacles to doing business by firms were as follows: (i) quality of labor (ability to find qualified skilled workers)—moderate to severe problem; (ii) cost of financing, access to financing, and economic and regulatory policy uncertainty—moderate to minor problems; (iii) macroeconomic instability, tax rates, and labor costs—major to moderate constraints.

Macroeconomy. Concern about the macroeconomic environment is mentioned by companies in the context of affecting revenue uncertainty, but the banks did not mention macroeconomic stability (i.e., inflation, exchange rates) as a problem.

Quality of labor and cost of labor. Quality of labor or inability to find a qualified worker to do the job has been mentioned in all interviews. Therefore, high premiums on qualified workers exist. Although the banks do not mention the cost of labor as an obstacle for their clients (perhaps because clients seeking for a loan do not complain of staffing issues), the issues of quality and cost come out very clearly in the interviews.

Uncertainty in property rights enforcement. Although uncertainty in property rights enforcement is listed as a minor problem in the survey, the interview results point toward the issue, especially on land accessibility, availability of collateral, and access to electricity.

In the interviews with banks about access to financing, the respondents indicated that unwillingness to officially register property has prevented clients from using their property as collateral, which has hindered access to loans. While the property registration process is relatively easy, the unwillingness to register can be because of registration cost and disputed ownership. In either case, the uncertainly about property rights remains an obstacle for businesses to access bank financing.

Uncertainty in regulatory policy. This constraint is rated as moderate or moderate to severe, particularly by companies. They mention regulatory burdens, such as attempts to regulate prices in an environment where no natural monopoly exists. Companies argue that there is a need for a transparent and independent arbitrage process in the case of regulatory disputes that should rely on sound economic principles and best practices.

Anticompetitive or informal practices. These aspects are rated as mostly minor to moderate with no further explanation given in the extended interviews.

Access to financing and cost of financing. These constraints are rated as moderate to major problems, except in the case of large companies, which manage to rely exclusively on internal finances. An interesting insight came out during the interviews that debt-to-asset ratio typically does not play as much of a role in loan considerations (e.g., cash flow and profitability). Loan amounts are usually up to three times of net yearly profit. The main reason for refusal of a loan application was the client's low ability to service the loan, in particular because of instability in income. The problems of collateral become less pronounced when the income source is stable. Collateral is important for start-up lending, but it has become less important for established businesses, which are evaluated based on their annual profits.

Business loans denominated in foreign currency range from 10.0% to 70.0%. The bank with the smallest amount of loans denominated in foreign currency is exceptional. The main reason for foreign-currency-denominated loans is the lack of sufficient long-term deposits in Georgian lari (GEL). Local currency resources are usually limited and expensive and the banks incentivize GEL funding by introducing significant deposit premiums on GEL deposits.

Overall, however, the lack of initial or seed capital is considered by banks to be a bigger problem for client's business development than access to bank credits or bank financing cost. The need for alternative financial instruments to provide companies with seed capital has been reported in the interviews.

Government–business relations. Large firms advocate less intervention, more property rights enforcement, less bureaucratic burden, and less burdensome regulations. Government intervention is only supported in the case of agro-insurance. Firms do not consider public infrastructure as a problem, but consider an impartial court system for firm–government arbitrage as necessary. The ambiguity of the tax code and lack of cooperation with the government on developing sensible regulations were cited as problems.

Innovation and learning. Banks reported that clients (in particular, agrobusinesses) introduced new plants, planted new crops, and used higher- quality pesticides. About 50.0% introduced new technologies that substantially changed the production method, 25.0% agreed to new ventures with foreign partners, 15.0% developed new product lines, while 40.0% upgraded existing product lines. Government regulations, quality of management, and education and experience of the labor force were cited as the obstacles to introducing new technologies and innovation:

Labor. The premium for a skilled worker's wage was reported to be 50.0% and in some cases about 100.0%–500.0% over an unskilled worker's wage. Training beyond the basic on–the-job training is provided; however, the high cost of training (in retail), and lack of relevant experience and educational background of the workers, have been cited as primary concerns.

Other findings. The main obstacles to issuing bank loans (from bank surveys), in the order of higher to lower importance: are (i) low financial education, (ii) lack of stable entrepreneurial initiatives, (iii) gap in development of other sectors in the economy (market size), (iv) high leverage of clients, (v) maturity of loans, (vi) limitations in acquiring financial funds, and (vii) high interest rates.

Overall, the investment climate assessment surveys and interviews confirm that political stability (uncertainty about regulatory environment and property rights) and access to finance are important constraints to doing business in Georgia. At the same time, the interviews with the banks about their clients revealed other types of constraints that typically are not registered in regular business surveys, such as (i) inadequate human capital (in particular, low financial education of the banks' clients, lack of experience in the line of business, and low quality of management); and (ii) instability of income flow.

These constraints appear to be even more limiting to business' development than lack of collateral to finance a loan.

For small and medium-sized enterprises, the cost of financing, particularly high lending rates, continues to be a problem. The evidence from different sources seems to point to high risk premiums as one of the reasons behind the high lending rates and high interest spreads. The high spreads, however, can also stem from low cost-efficiency of the banking sector, small market size, and lack of sector diversification in the economy.

In terms of policy initiatives, the present study recommends alternative, nonbank sources of financing for start-up enterprises as a means to alleviate the credit constraint in the economy. In light of this, the recent launch of the Georgian Co-Investment Fund (GCF) could be an important first step in this direction.

Appendix 8: Excel-Based Framework for Calculating Financial Soundness Indicators in the Banking Sector in Viet Nam

In addition to developing the guidelines for constructing FSIs in Vietnamese language, the second key additional activities in Viet Nam is to develop an Excel-based Framework for Calculating FSIs in the banking sector. The main reason for this is because of the dominant role of the banking sector in Viet Nam and to ease the calculation and analysis of the FSIs. In addition, the system can also show the relative performance of an individual bank in relation to all banks in Viet Nam. In the current framework, the system covers 36 banks but it can easily include other banks and financial institutions.

Short Description of the System

Definition and data. A sheet containing the definitions of all FSIs in the order similar to that of the IMF compilation guide was incorporated into the system.

Core Indicators

Regulatory capital to risk-weighted assets measures the capital adequacy of deposit takers and is based on the definitions used by the Basel Capital Accord.

Regulatory Tier I capital to risk-weighted assets. This FSI is a narrower measure of the previous FSI and is calculated by (i) aggregate data on Tier I regulatory capital for the reporting population, (ii) aggregating risk-weighted assets for the reporting population as the denominator, and (iii) dividing (i) by (ii).

Nonperforming loans net of provisions to capital is intended to compare the potential impact on capital of NPLs, net of provisions.

Nonperforming loans to total gross loans is to identify problems with asset quality in the loan portfolio. It may be interpreted in combination with the NPLs, less specific provisions to capital ratio described above.

Sectoral distribution of loans to total loans provides information on the distribution of loans (including NPLs, and before the deduction of specific loan loss provisions) to resident sectors and to nonresidents.

Return on assets is intended to measure deposit takers' efficiency in using their assets. It may be interpreted in combination with the FSI on return on equity.

Return on equity is to measure deposit takers' efficiency in using their capital.

Interest margin to gross income is to measure the relative share of net interest earnings—interest earned less interest expenses—within gross income.

Noninterest expenses to gross income measures the size of administrative expenses to gross income (interest margin plus noninterest income). This FSI is calculated using noninterest expenses as the numerator and gross income as the denominator.

Liquid assets to total assets (liquid asset ratio) provides an indication of the liquidity available to meet expected and unexpected demands for cash.

Liquid assets to short-term liabilities is to capture the liquidity mismatch between assets and liabilities, and provides an indication of the extent to which deposit takers could meet a short-term withdrawal of funds without facing liquidity problems.

Net open position in foreign exchange to capital is to identify deposit takers' exposure to exchange rate risk compared with capital.

Encouraged Indicators

Capital to assets provides an indication of the financial leverage—the extent to which assets are funded by resources other than own funds—and another measure of capital adequacy of the deposit-taking sector.

Large exposures to capital is to report the total number of large exposures of deposit takers that are identified under the national supervisory regime.

Geographical distribution of loan to total loan provides information on the geographical distribution of gross loans, by regional grouping of countries. It allows the monitoring of credit risk arising from exposures to a group of countries and can help in an assessment of the impact of adverse events in these countries on the domestic financial system.

Gross asset and liability positions in financial derivatives to capital are to provide an indication of the exposure of deposit takers' financial derivative positions relative to capital.

Trading income to total income is intended to capture the share of financial market activities, including currency trading, to deposit takers' incomes, and thus help in assessing the sustainability of profitability. This FSI is calculated using gains or losses on financial instruments as the numerator and gross income as the denominator.

Personnel expenses to noninterest expenses measures the incidence of personnel costs in total administrative costs. This FSI is calculated using personnel costs as the numerator and noninterest expenses (that is, not including provisions) as the denominator.

Spread between reference lending and deposit rates is the difference (expressed in basis points) between the weighted average loan rate and the weighted average deposit rate, excluding rates on loans and deposits between deposit takers.

Spread between highest and lowest interbank rate measures the spread between the highest and lowest interbank rates charged to deposit takers in the domestic interbank market.

Customer deposits to total (noninterbank) loans is to measure liquidity, in that it compares the "stable" deposit base with gross loans (excluding interbank activity). When stable deposits are low

relative to loans, there is a greater dependence on more volatile funds to cover the illiquid assets in deposit takers' portfolios.

Foreign-currency-denominated loans to total loans measures the relative size of foreign currency loans within gross loans. Particularly in countries where domestic lending in foreign currency is permitted, it is important to monitor the ratio of foreign-currency-denominated loans to gross loans for residents because of the increased credit risk associated with the ability of the local borrowers to service their foreign-currency-denominated liabilities, particularly in the context of large devaluations or a lack of foreign currency earnings.

Foreign-currency-denominated liabilities to total liabilities measures the relative importance of foreign currency funding within total liabilities. The magnitude of this ratio should be considered together with the value of the previous FSI, foreign-currency-denominated loans to total loans.

Net open position in equities to capital is to identify deposit takers' equity risk exposure compared with capital. Even if the sector as a whole does not have an exposed equity position, this might not be true for individual deposit takers or groups of deposit takers.

Analysis of Viet Nam's Banking Sector

The analysis will be solely focused on the performance of the 12 largest banks in Viet Nam (the G12) based on available indicators. The indicators excluded in the analysis are because data is unavailable at the moment or insufficient to make a thorough analysis.

The performance of these banks will also be compared with the aggregate indicators of the whole sector to determine the stability and soundness of each bank. The analysis would be on capital adequacy, asset quality, earnings and profitability, liquidity, and sensitivity to market risks of banks.

Regulatory capital to risk-weighted assets

This FSI cannot be aggregated for Viet Nam's banks because of the lack of data and information. However, some banks calculated and disclosed this indicator as well as reported it in their financial statements. It seems that the G12 banks did not find it difficult to meet the State Bank of Viet Nam's requirements on capital adequacy ratio (CAR) of 9.0%. However, the reliability of these figures needs to be reconsidered.

Capital to assets

This ratio is easily computed so that it is available for all banks. It seems that the average level of the whole sector was quite stable at around 7.0%–8.0%, implying that a reasonable level of bank assets is backed up by banks' own funds.

Nonperforming loans to total gross loans

This ratio was quite low for all banks, indicating that Vietnamese banks did not have huge nonperforming loans. However, the reliability of the data can be a problem, as nonperforming loans have been regarded as one of the most serious issues in the banking sector recently.

Return on assets

Return on assets indicated that the performance of Vietnamese commercial banks worsened in 2012 and 2013. The average indicator for all banks had been quite stable at around 1.3% in 2008–2011, before falling to 1.0% in 2012 and 0.9% in 2013.

Return on equity

The average return on equity for the banking sector was quite stable in 2009–2011, at 17.0%–18.0%. However, similar to the return on assets ratio, 2012 and 2013 did not show brighter prospects for Vietnamese commercial banks since the figure dropped to 12.1% and 10.7%, respectively.

Interest margin to gross income

The average interest margin to gross income for the whole banking sector showed an upward trend during the period 2008–2013. After slightly decreasing in 2009, it bounced back and increased dramatically to 90.0% in 2011. The ratio stood at 85.0% in 2012 before decreasing to approximately 80.0% in 2013, which was still impressive.

Trading income to total income

The ratio of trading income to total income exhibited a downward trend during the period 2008 to 2012, i.e., from 5.6% to 0.9%, indicating a worsening performance of Vietnamese banks' trading activities. In 2013, this ratio increased significantly to 5.7% showing an improved performance.

Noninterest expenses to gross income

The ratio of noninterest expenses to gross income was quite stable at around 45.0% in 2008–2011, before increasing to 50.0% in 2012–2013. The G12 banks' ratios were all higher than the ratio of the whole sector, which could imply that the larger the banks, the higher the administrative costs.

Personnel expenses to noninterest expenses

This ratio was available for most banks and it showed stability during 2008 to 2013. On average, Vietnamese banks kept personnel expenses at around 50.0% of administrative costs. In 2012 and 2013, many banks reduced this expense, thus decreasing the average ratio of the whole sector. Given the banks' worsening earnings and profitability, it was possible that they had to lay off people, resulting in a lower expenses.

Liquid assets to total assets

Since Viet Nam's accounting standard has not defined liquid assets, it is assumed liquid assets include cash, marketable securities, government securities, interbank deposits, and short-term marketable securities. Based on this assumption, the ratio of liquid assets to total assets for all banks was computed. The average ratio was quite stable at around 20.0%–25.0% in 2008–2013, showing a strong liquidity that may result from the State Bank of Viet Nam's policies to support liquidity and protect depositors.

Customer deposits to total (noninterbank) loans

The average ratio of customer deposits to total (noninterbank) loans decreased from 115.0% in 2008 to 100.0% in 2011, before rising again to 114.0% in 2012 and over 120.0% in 2013. This performance was quite impressive compared with other countries in the region. However, this does not mean Vietnamese banks have been performing well, since they do not utilize their full lending capacity yet.

Sensitivity to market risks

The most common measure of foreign exchange exposure is the net open position in foreign exchange-to-capital ratio, while the measure of equity risk exposure is the net open position in equity to capital. However, the indicators relating to banks' sensitivity to market risks cannot be calculated in Viet Nam because of lack of data. There are only a few banks that report the information needed to calculate those indicators, but they cannot reflect the whole picture of the Vietnamese banking sector's sensitivity to market risks.

Conclusion

The framework is a flexible and easy-to-use tool to update data and calculate FSIs for Viet Nam's banking sector. It allows users to add more financial data from banks and calculate FSIs automatically. The summary of each indicator for all banks and the whole sector will enable researchers to assess and analyze the stability and soundness of Viet Nam's banking sector based on standard measures such as capital adequacy, asset quality, earnings and profitability, liquidity, and sensitivity to market risks. In the future, this system can be updated with more publicly available data that would benefit policy makers, researchers, and other key stakeholders in doing quantitative research.

References*

ADB. 2008. *Emerging Asian Regionalism: A Partnership for Shared Prosperity*. Manila.

Allen, F. and D. Gale. 2000. *Comparing Financial Systems*. The MIT Press, Cambridge, MA.

Brunschwig, S., B. Carrasco, T. Hayashi, and H.Mukhopadhyay. 2011.The Global Financial Crisis: Impact on Asiaand Emerging Consensus. *ADB South Asia Working Paper Series No.3*. Manila.

Filardo, A. 2011. The Impact of the International Financial Crisis on Asia and the Pacific: Highlighting Monetary Policy Challenges from a Negative Asset Price Bubble Perspective. *Bank of International Settlements Working Paper No. 356*. Basel.

FederalReserveBankofSanFrancisco.2011.*AsiaFocus:BankingReforminVietnam*.CountryAnalysisUnit. www.frbsf.org/banking-supervision/publications/asia-focus/2011/june/banking-reform-vietnam/june-banking-reform-in-vietnam.pdf

Krugman, P. 2002. Crises: The Next Generation? In E. Helpman and E. Sadka, eds.*Economic Policy in the International Economy: Essays in Honor of AssafRazin*. Cambridge: Cambridge University Press.

Laeven, L. and F. Valencia. 2012. *Systemic Banking Crises: An Update*. IMF Working Paper 12/163. Washington: International Monetary Fund. www.imf.org/external/pubs/ft/ wp/2012/ wp12163.pdf

Navajas, M. C. and A. Thegeya. 2013. *Financial Soundness Indicators and Banking Crises*. IMF Working Paper 13/263. Washington: International Monetary Fund. www.imf.org/external/pubs/ft/ wp/2013/wp13263.pdf

Tadesse, S. 2001. *Financial Architecture and Economic Performance: International Evidence*. William Davidson Working Paper Number 449. Michigan. http://deepblue.lib.umich.edu/bitstream/ handle/2027.42/39833/wp449.pdf?sequence=3

Zhuang, J., H. Gunatilake, Y.Niimi, M. E. Khan, Y. Jiang, R. Hasan, N.Khor, A. S. Lagman-Martin, P. Bracey, and B. Huang. 2009. Financial Sector Development, Economic Growth,and Poverty Reduction: A Literature Review. *ADB Economics Working Paper Series No.* 173. Manila.

*ADB recognizes "Vietnam" as Viet Nam.

Financial Soundness Indicators for Financial Sector Stability
A Tale of Three Asian Countries

The development and analysis of financial soundness indicators (FSIs) help policy makers identify the strengths and vulnerabilities in their countries' financial systems and take preventive action to avert a crisis or at least minimize its effects. This publication presents the country-case studies for Bangladesh, Georgia, and Viet Nam focusing on the growing evidences in the development of financial soundness indicators to effectively monitor the financial performance of the country. With the support from Investment Climate Facilitation Fund under the Regional Cooperation and Integration Financing Facility, the tales of three countries shows the diverse financial vulnerabilities of each economy. For example, Georgia and Viet Nam have met capital adequacy standards but Bangladesh has faltered in this aspect for it requires an injection of capital into state owned commercial banks that is contingent upon improved governance. On the other hand, Georgia and Viet Nam could have been more susceptible to global economic crises than Bangladesh. A significant amount of public and private debt in Georgia is denominated in foreign currency while Viet Nam's economic openness—largely because of rapid economic integration in East Asia—has made it vulnerable to global economic slowdowns.

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