

Does Regulatory Governance Matter for Financial System Stability? An Empirical Analysis

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Introduction

Policy discussions and research pertaining to financial stability and its key building blocks are increasingly recognizing the importance of good governance, in general, and the part of financial system oversight agencies (“regulatory governance”), in particular. Growing emphasis is being placed in the financial system standards and codes, developed by international standard-setting bodies, on elements of good governance for sectoral regulators and supervisors.¹ This greater attention, however, has so far come about on an ad hoc basis, bereft of much analytical foundation.

1. Reference is to regulatory and supervisory standards developed by the Basel Committee for Banking Supervision (BCBS), the International Association of Insurance Supervisors (IAIS), the International Organization of Securities Commissions (IOSCO), the Basel-based Committee on Payment and Settlement Systems (CPSS), and the International Monetary Fund (IMF). The revised IAIS core principles for insurance supervision, adopted in October 2003, explicitly emphasize regulatory governance issues.

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A first systematic approach towards the role and importance of regulatory governance for financial stability was undertaken by Das and Quintyn (2002). That paper (i) provided an operational framework on regulatory governance; (ii) established the “governance nexus” to underline the importance of financial system governance for the proper functioning of the non-financial sector; and (iii) assessed the current practices with regard to the quality of regulatory governance, based on the work undertaken by the IMF and the World Bank since 1999 in the context of the Financial Sector Assessment Program (FSAP).

The present paper follows up on this earlier work and empirically explores the relationship between regulatory governance and financial system stability. In doing so, the paper makes a threefold contribution. First, it constructs an index for financial system soundness (used as a proxy for financial system stability); second, it constructs an index for the quality of regulatory governance; and third, it quantifies the impact of the quality of regulatory governance on financial system soundness. The paper also identifies further areas of research relating to the governance–financial stability interrelationship.

Given the wider availability and comparability of cross-country banking system data, this paper quantifies the impact of good regulatory governance on banking system soundness only. A multivariate cross-sectional analysis shows that the quality of regulatory governance does indeed matter for the soundness of the banking system. The model is tested, using a range of control variables pertaining to the macroeconomic environment, the structure of the financial system, and the political and institutional setting. The latter has a direct and indirect impact on financial system soundness, with the indirect links showing that the effects of good regulatory governance are amplified when supported by good governance practices in the public sector.

The ultimate goal is to broaden the concepts introduced in this paper to the entire financial system, but data limitations prevent us from doing so at this time. However, when including one important non-bank financial system component—the insurance sector—preliminary tests reveal that good regulatory governance practices are not as prevalent as in the banking sector alone. With more evidence of financial insolvencies and failures emerging, the systemic importance of the non-bank sectors is growing. Such findings highlight the need for stronger regulatory governance practices in the non-bank financial sectors to support financial soundness, in general, and limit the possibility of systemic problems emanating from these sectors, spilling over to the rest of the financial system.

Even though this research is work in progress, the results carry significant implications for financial stability related policy making. The findings show that institutional enhancements at all levels of the regulatory and supervisory machinery are vital for maintaining financial system soundness. They also indicate that the adoption of international practices and standards is important in the pursuit of financial system stability.

The paper is structured as follows. Section 1 discusses the concepts of financial stability and financial system soundness, and constructs an index of financial system soundness (FSSI). Section 2 lays out the linkages between regulatory governance and FSSI and constructs an index of regulatory governance (RGI). Section 3 presents the model and the empirical results. Section 4 discusses preliminary findings on the quality of regulatory governance in the broader financial system. Conclusions and a research agenda are presented in the final section. Methodologies, data sources, and additional results are presented in the appendixes.

1 Financial Stability and Its Measurement

1.1 An operational definition

The term financial stability has gained prominence in international policy discussions and has become an actively discussed academic topic since the mid-1990s. However, a precise definition still eludes the work done so far. As Issing (2003) and Padoa-Schioppa (2003) note, a number of authors find it easier to define financial *instability*, instead of its positive counterpart.

Following Issing, two types of positive definitions are emerging from the literature. Some sources take a systemic view and emphasize the resilience of the financial system as a key component of stability. In this view, an individual bank failure is not necessarily proof of financial instability. Such an event can even contribute to more efficient financial intermediation, and thus help maintain or enhance stability. Following Mishkin (1991, 1997), one can say that financial stability stems from the prevalence of a financial system that is able to provide, on a durable basis and without major disruptions, an efficient allocation of savings to investment opportunities (see Padoa-Schioppa (2003) and Haldane, Hoggart, and Saporta (2001) for similar approaches).

The second approach to defining financial stability is to liken it to situations *without* banking crises and *with* asset-price stability. The advantage of this approach is that more directly observable variables can be used (for instance, interest rate smoothness), but on the whole, it is conceptually less appealing, because the absence of banking crises still offers no insights in the relative strength of the financial system.

The definition offered by Crockett (1997) in many ways bridges the two strands. As Crockett states (1997, 9): “stability requires (1) that the key *institutions* in the financial system are stable, in that there is a high degree of confidence that they can continue to meet their contractual obligations without interruption or outside assistance; and (2) that the key *markets* are stable, in that participants can confidently transact in them at prices that reflect fundamental forces and that do not vary substantially over short periods when there have been no changes in fundamentals.” However, he acknowledges the operational limitations of such a broad definition: one needs to decide which are the “key institutions” whose stability is important, and what degree of price stability in financial markets is required.

This paper adopts the positive and systemic approach by emphasizing the resilience of the financial system to shocks—the capacity to “withstand events.” Consistent with this approach and for the purposes of this paper, we refer to “financial system soundness” instead of using the broader and less definable concept of financial stability. The term “soundness” better reflects the resilience element, is measurable, and constitutes a major component of the concept of financial stability.²

1.2 Financial system soundness and the role of supervisors

A slightly narrower focus on financial system soundness, as opposed to financial stability, also serves another purpose. Since this paper estimates the impact of regulatory governance, the concept should be so defined that regulators and supervisors can be held responsible for its achievement. Supervisors alone cannot be held responsible for the country’s financial stability in its broadest meaning. Achieving this goal depends also on elements and actions outside the direct control of the supervisor. These elements include macroeconomic policies, monetary stability, and the presence and quality of a financial sector safety net. Other institutions—notably the central bank in its monetary policy role—have an important responsibility in contributing to financial stability, by pursuing monetary stability. A growing body of literature is exploring the linkages between

2. Admittedly, from the viewpoint of *global* financial stability, having sound national financial systems is a necessary but not sufficient condition. If the global financial market infrastructure is not robust, the spillover of crises can be magnified. In addition to stable national financial systems, global stability also depends on: (i) effective management of the counterparty risk by global financial institutions; (ii) supervisors responsible for the efficiency of the global financial infrastructure; (iii) robustness of payment systems in the major financial centres; and (iv) sustainable macroeconomic policies backed by adequate foreign exchange reserves and a credible exchange rate regime.

monetary and financial stability and the changing role of the central bank.³ Many central banks are seeking—or have already obtained—a formal mandate to pursue financial stability, in addition to their monetary stability mandate (typically price stability). This trend reflects the complementarity between the pursuit of monetary and financial stability.

The central banks' task in pursuing financial stability is complemented by the work of the supervisory agencies. The latter's task is defined mainly as maintaining the prudential and financial soundness of the firms under their supervision.⁴ To achieve full complementarity, however, supervisors should be urged to focus not only on the health of individual institutions—their traditional mandate—but to monitor the system-wide implications as well.

Recent academic and policy work provides tools to achieve greater synergy between central banks and supervisors. Borio (2003) advocates the development of a macroprudential framework for financial supervision. The author makes a distinction between a macroprudential approach to supervision (limiting the risks involved in episodes of financial distress with significant output losses for the economy as a whole), and a microprudential approach (the traditional approach, focusing on risks in individual banks with a eye on depositor and investor protection) and argues that supervisors should incorporate elements of the macroprudential approach in their work.⁵

To underpin such a macroprudential approach, Evans et al. (2000) and Sundararajan et al. (2002) develop in the context of the FSAP work and the IMF's surveillance mandate a set of financial soundness indicators, which national authorities are encouraged to adopt in their off-site analysis of the financial sector (IMF 2003). Aggregation of individual bank data provides a first glance at the soundness of the system.

This broader role for financial system supervisors in promoting systemic stability has been explicitly recognized in recently revised charters of some agencies, often as part of a reorganization of the sectoral supervisory responsibilities. The supervisory agencies, for instance, in Chile, Germany, Japan, Switzerland, and the United Kingdom, have an explicit mandate to

3. See, for instance, Schwartz (1986), Brealy et al. (2001), BIS (2000), Ferguson (2002), Issing (2003), Padoa-Schioppa (2002, 2003), and Schinasi (2003), as well as the literature cited in these contributions.

4. See McDonough (2002) for similar views.

5. Elaborating on this view, Borio and White (2003) argue that the emerging financial environment calls for greater co-operation between monetary and prudential authorities. They put forward the notion of "elasticity of an economic system," i.e., a system's inherent potential to allow financial imbalances to build up over time, with endogenous forces failing to rein them in, until the imbalances unwind, possibly resulting in financial instability.

pursue stability of the sector.⁶ In many other countries, however, prudential oversight of the individual institutions is still the core of the supervisory mandate.⁷

1.3 An index of financial system soundness

To capture the notion of resilience and soundness, we construct a financial system soundness index (FSSI). The use of an index is appealing in that it allows to gauge the degree of (un)soundness of a given system, and provides an *ex ante* measure of soundness.⁸ In addition, when analyzing the impact of the quality of regulatory governance, an approach based on degrees of (un)soundness seems capable of providing more insights than a stability/crisis approach.

The use of a continuous index differs from most other work undertaken recently.⁹ Several authors approach financial stability from the viewpoint of extreme financial instability (a financial crisis).¹⁰ Typically, these studies use a 1/0 dummy to reflect the occurrence of a banking crisis. While the appeal of such an approach is that it yields a directly observable variable, it fails in distinguishing among degrees of (in)stability (or (un)soundness) that this paper is interested in, and misses out on periods of financial distress that did not result in a full-blown crisis.

Another strand in the literature uses single variables as proxies for financial stability—or for the performance of the financial system. Barth, Caprio, and Levine (2001) use several measures of bank performance as the dependent variable to assess the impact of regulatory and supervisory quality (these studies are interested mainly in the impact on bank development and fragility).¹¹ Sundararajan, Marston, and Basu (2001) use non-performing loans as the dependent variable to estimate the impact of compliance with the Basel Core Principles (BCPs) on financial stability.

6. See Hupkes, Quintyn, and Taylor (2004).

7. In practice, many more supervisory authorities are already taking elements of a macro-prudential framework into account in their analysis.

8. In this sense, the approach is also consistent with the work undertaken under the FSAP, which is focused on crisis prevention.

9. Admittedly, the purpose of some of the studies reviewed here may differ from ours, justifying different approaches. Nonetheless, the index approach can certainly be used for many purposes.

10. This is, for instance, the case in seminal work by Demirgüç-Kunt and Detragiache (1998); Barth, Caprio, and Levine (2000); Rossi (1999); Barth, et al. (2000); and Goldstein, Kaminsky, and Reinhart (2000).

11. Barth, Caprio, and Levine (2001) used bank development, net interest margin, overhead costs, non-performing loans, and crisis (O/1); in Barth et al. (2002), bank profitability is the dependent variable.

A different approach is adopted in Kent and Debelle (1999). Starting from the premise that policy-makers observe a monotonic relationship between the size of financial disturbances and the resulting macroeconomic losses, they define and measure system stability (or instability) in terms of expected macroeconomic losses arising from financial system disturbances. They construct an index of stability, reflecting the probability of various financial disturbances and the size of the macroeconomic costs arising from such disturbances. Such an *ex post* or outcome-oriented approach to measuring (in)stability contrasts with the *ex ante* approach developed in this paper (also Haldane, Hoggarth, and Saporta 2001).

The index approach is used by Corsetti, Pesenti, and Roubini (1999) for the Asian crisis. They construct an index of financial fragility based on non-performing loans data and information on the presence of a lending boom. An index approach has also been implicitly suggested in Johnston, Chai, and Schumacher (2000) and has been adopted in some private sector work.¹² The best-known private sector index of financial system strength is Moody's Bank Financial Strength Ratings. Moody's define their index as follows: "Factors considered in the assignment of Bank Financial Strength Ratings include bank-specific elements such as financial fundamentals, franchise value, and business and asset diversification. Although Bank Financial Strength Ratings exclude the external factors specified above, they do take into account other risk factors in the bank's operating environment, including the strength and prospective performance of the economy, as well as the structure and relative fragility of the financial system, and the quality of banking regulation and supervision."

The FSSI constructed in this paper is limited to the banking system mainly because comparable data on the banking system and on its supervision are available for a larger set of countries than data on other subsectors. Limiting the analysis to the banking system is not a major drawback from an analytical point of view, since banking sector soundness has a predominant impact on the financial system.

12. Johnston, Chai, and Schumacher (2000) suggest measuring financial stability by aggregate (continuous) variables of financial sector instability and vulnerability.

The FSSI is composed of two quantitative variables:¹³ the capital-adequacy ratio (CAR) and the ratio of non-performing loans.¹⁴ The CAR is the ultimate indicator of the resilience of a financial institution to shocks to its balance sheet, while the ratio of non-performing loans signals the quality of the financial institutions' portfolio and, in the end, their solvency (Evans, Leone, and Hilbers 2000).¹⁵

An index composed of these two variables provides a reliable basis to measure financial sector soundness in individual countries over time.¹⁶ For any meaningful cross-country comparison, however, it is important to weigh the index to arrive at a measure of the relative strength of the systems in the sample. For our analysis, we weigh the index with the share of bank credit in GDP.¹⁷ In systems where credit markets are small and less developed, the cost of financial instability—measured as the fiscal cost of a bailout or the resulting macroeconomic losses—will be lower than in systems with developed credit markets.

Figure 1 shows the FSSI for three groups of countries.¹⁸ Perhaps not surprisingly, it suggests that financial system soundness is significantly higher in advanced countries in the sample, than in transition or developing countries.¹⁹

13. See Appendix 1 for the technical details.

14. Sundararajan et al. (2002) list a wide range of macroprudential indicators of the health of a financial system, reflecting the CAMELS approach to bank soundness. CAMELS represents an assessment based on six key elements of bank performance: Capital adequacy, Asset quality, Management soundness, Earnings, Liquidity, and Sensitivity to market risk. However, a consistent set of cross-country data is not yet available for all these indicators.

15. Ideally, the index should be broader, including data about the quality of the financial system. Intuitively, a CAMELS index, aggregated for the entire sector, has a lot of appeal as a soundness indicator, since it combines quantitative and qualitative elements. Unfortunately, the quality of available data does not allow us to pursue that direction at this time.

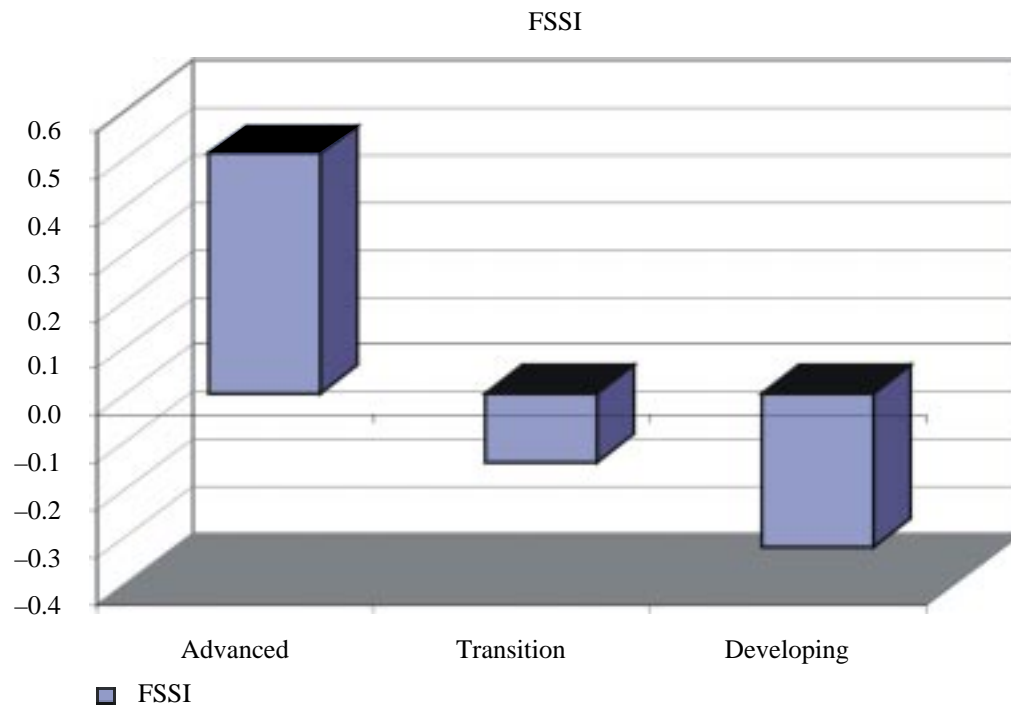
16. A drawback of these two variables is that they are considered backward-looking. However, this does not invalidate their use. First, for the purposes of this paper—an international comparison—this criticism does not hold. Second, when time series were taken to gauge the financial soundness of an individual country, downward movements in the index would still have a significant signalling value.

17. For a similar approach, see Corsetti, Pesenti, and Roubini (1998, 1999).

18. World Economic Outlook classification. The advanced group consists of 11 countries, 17 transition economies, and 27 developing countries.

19. Appendix 2 compares the FSSI with the Moody's index. Our findings are broadly consistent with those of the Moody's index. The detailed list of the variables in the Moody's index and the aggregation method used are not publicly available.

Figure 1
Financial System Soundness Index (FSSI) for country groupings



Note: Country groupings according to World Economic Outlook (WEO) classification.

2 Regulatory Governance and Its Measurement

2.1 Regulatory governance and financial stability— The governance nexus

Borio (2003) notes that the life of supervisors has changed dramatically over the past 20 to 30 years. When overseeing the largely repressed financial systems that emerged in the post-war period, the quality of regulatory governance was seldom an issue. Nowadays, what supervisors undertake—or do not undertake—in their supervisory capacity, and how they intervene, often makes headline news. So, the role of governance has assumed special importance for regulators and supervisors.

Two factors have been driving this shift—financial liberalization and advances in risk management. These developments have several implications for financial stability through a resulting rise in competitive pressures, a structural increase in liquidity and potential for leverage, a rise in the option value implicit in safety nets, and a heightened significance of common factors that could lead to the spread of cross-market and cross-sector financial distress (Crockett 2003).

In this new environment, financial systems are only as strong as the governing practices of all stakeholders (market participants, as well as their regulators and supervisors), the financial soundness of the institutions, and the efficiency of the market infrastructure. Promoting and practising good governance is a shared responsibility of market participants and regulatory agencies. It enhances the system-wide capacity to act collectively in a manner that deters unsound market practices and the occurrence of moral hazard, and enhances the effectiveness of system-wide management of stress.

By reinforcing the credibility and moral authority of the regulatory agencies (and central banks), good regulatory governance helps in promoting sound practices among market participants.²⁰ Ill-defined or dysfunctional governance arrangements do not support the required credibility and will contribute to the spread of unsound practices in the institutions under regulatory oversight, potentially impairing the stability of the financial system as a whole (Goodhart 2001). Seen from this viewpoint, the pursuit of financial stability is a continuous and permanent process, rather than an engagement that is triggered only in the event of an institution-specific crisis, and concludes with a defined end.

However, the two main groups of stakeholders referred to above—supervisors and financial institutions—do not operate in a vacuum but are influenced by other (political and economic) institutions and the quality of their governance. More particularly, the quality of public sector governance—governance practices in the broader public sector—will have an impact on regulatory governance and financial sector governance. The impact on the latter can be direct or indirect through the supervisory authorities.²¹

This broader picture can be captured by the notion of a “governance nexus,” modelling the impact of governance practices at each layer on the practices and the outputs of the next layer (see Box 1, page 333). The existence of the governance nexus is consistent with the views of the New Institutional Economics School (see, among others, Williamson (2000), for a

20. A study of those central banks and regulatory agencies explicitly assigned the financial stability mandate shows that these agencies have begun placing emphasis on governance-related issues, such as transparency and disclosure of information on risks; strengthening market discipline through provision of better information and clarity on policy postures; and an analysis of some of the qualitative dimensions, such as information-sharing arrangements and supervisory co-operation.

21. Although not analyzed in the context of the financial system, Damania, Fredriksson, and Muthukumara (2003) show that in politically unstable regimes, the institutions necessary to monitor and enforce regulatory compliance are weak and, hence, corruption is widespread and compliance is low.

comprehensive overview) that institutions and their governance have a significant impact on economic development and stability. Empirical evidence corroborating the view of the primacy of institutions is increasingly emerging. See, for instance, Rodrik, Subramanian, and Trebbi (2002). Our paper applies this framework to the narrower, but nonetheless very important, domain of financial stability.

2.2 A framework for good regulatory governance

Like financial stability, good regulatory governance is considered desirable, but at the same time hard to define. Based on the broader definition of public sector governance offered by Kaufmann, A. Kraay, and P. Zoido-Lobaton (2000), good regulatory governance can be defined as (i) the capacity to manage resources efficiently and to formulate, implement, and enforce sound prudential policies and regulations—to be seen as the duty to meet the delegated objectives; and (ii) the respect of the agency for the broader goals and policies of the (elected) legislature (also see Das and Quintyn 2002).

The unique nature of financial supervisors—in particular, banking supervisors, but increasingly also supervisors of other subsectors of the financial system—has been widely recognized (see Quintyn and Taylor (2003) and references therein). Supervision of the financial sector is more crucial than of most other sectors of the economy because of the public-good aspect of financial intermediation. Critical supervisory tools such as sanctioning and enforcement—including revoking licences—to ensure the stability of the system, can have a far-reaching impact on stakeholders' property rights. To prevent abuse of these powers, safeguarding the integrity of the supervisory function is a key objective, which, therefore, should be based on high-quality governance practices.

Preserving the integrity of the supervisory function is difficult, however. To ensure its effectiveness, the supervisory function is typically invisible and it is exactly this invisibility that makes it vulnerable to (often very subtle) interference, both from politicians and the supervised entities. Government interference, often under the form of granting forbearance—letting institutions continue to breach regulations unpunished, not enforcing sanctions—takes place in many countries. In isolated cases, it may lead to the prolongation of the life of insolvent institutions (and, therefore, lead to unfair competition and higher costs for the taxpayer at a later stage). In more extreme cases, it may threaten the stability of the sector and lead to systemic problems. All this justifies high-quality governance.

A prerequisite for good regulatory governance is firm institutional underpinnings. Das and Quintyn (2002) identified four components that bring together the elements that form the basis for good regulatory governance: independence, accountability, transparency, and integrity. Box 2 (page 332) elaborates on these four components.

The components interact and reinforce each other at various levels in supporting good governance. Independence and accountability are two sides of the same coin. Transparency is a vehicle for safeguarding independence. By making actions and decisions transparent, chances for interference are reduced. It is also a key instrument to make accountability work. Moreover, transparency helps to establish and safeguard integrity in the sense that published arrangements provide even better protection for agency staff. Independence and integrity also reinforce each other. Legal protection of agency staff and clear rules for appointment and removal of agency heads support their independence and their integrity. Finally, accountability and integrity are mutually reinforcing. Because of accountability requirements, there are additional reasons for heads and staff to keep their integrity.

2.3 An index of regulatory governance

The construction of the RGI is based on the above framework. The value of a country's index is computed as the weighted combination of the country's compliance with the four aforementioned components, derived from the assessments undertaken as part of the FSAP (Appendix 3).²² The weights of the four components are derived from the methodology developed by Sundararajan, Das, and Yossifov (2003), who constructed a similar index on transparency in monetary and financial policies. The index pertains only to the banking sector supervisors, in line with the FSSI definition.²³ Figure 2 shows the mean value of the RGI for the three groups of countries. RGI values for advanced countries are higher than those for transition and developing countries.

3 Empirical Model and Findings

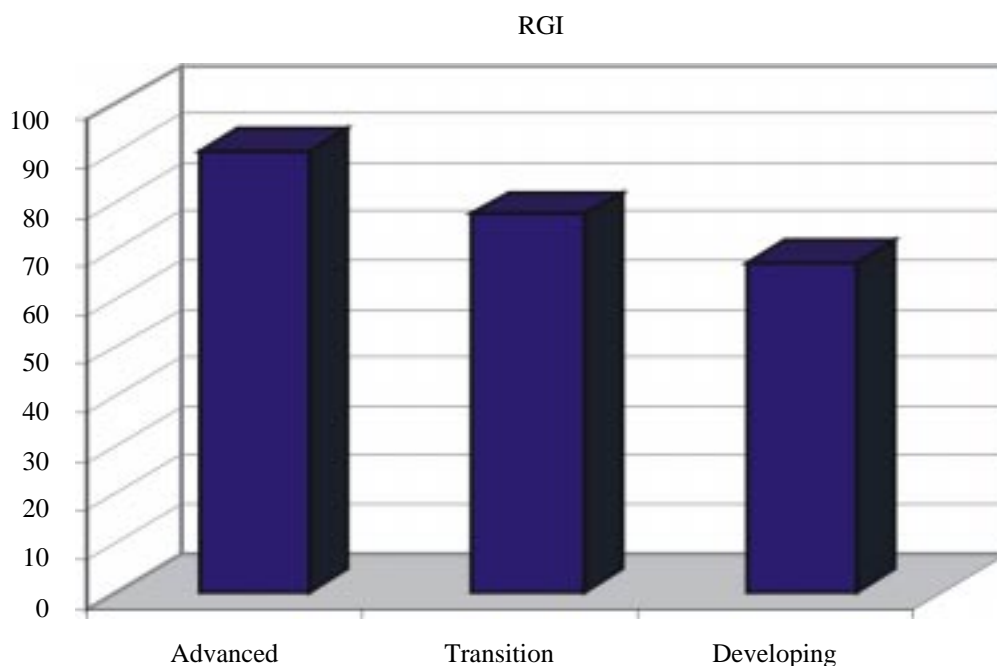
3.1 Selection of variables

To verify the impact of regulatory governance on financial stability, we estimate the correlation between the two indexes, using a multivariate cross-

22. The two international standards and codes used for constructing this index are the IMF's Code of Good Practices on Transparency in Monetary and Financial Policies (MFP Transparency Code) and the Basel Core Principles for Effective Banking Supervision.

23. Section 4 discusses the broader index, which includes insurance sector supervisors.

Figure 2
Regulatory governance index (RGI) banking supervision



Source: Authors' calculations.

sectional analysis in which the RGI acts as an explanatory variable along with a set of control variables.²⁴

Three sets of control variables, consistent with recent policy and academic work on the determinants of financial stability, were used to account for (i) the macroeconomic impact; (ii) the structure of the financial system; and (iii) the broader institutional and governance environment.²⁵ Detailed data definitions and sources are provided in Appendix 5.

- The **macroeconomic environment** is captured by three indicators. The first is a measure of the government's fiscal position. The expected sign is positive (a better fiscal position has a positive impact on soundness). The other variables are the rate of inflation and short-term real interest

24. The sample includes those countries that have participated in the FSAP and for which a complete set of data for 2001 was available. Although the number of observations available for the regression analysis changes, depending on the variables in the regressions, the coverage is approximately 50 countries.

25. See Chang et al. (2003) for an overview. Attention has been placed on what we refer to as the "three crucial pillars of financial stability," namely, the appropriate macroeconomic structure (first pillar), an effective regulatory and supervisory system (second pillar), and a robust market infrastructure (third pillar). A key element of the second and third pillars is the governance nexus (see Appendix 4).

rates, which may affect financial soundness through likely effects on the quality of bank assets. Each of these variables is expected to have a negative impact on financial system soundness.

- Variables reflecting the **structure of the banking sector** are the share of government-owned and foreign-owned banks in the system and a measure of bank concentration. Foreign-owned banks are expected to have a positive impact on stability, because they bring in new know-how, risk management systems, and good governance from their parent company. As it turned out, the variable was insignificant in all specifications, indicating that the impact of foreign banks on domestic financial stability is not unequivocal. The impact of the other two variables is a priori uncertain.²⁶
- Finally, a set of variables on the broader **institutional and governance environment** was introduced. We include variables compiled by International Country Risk Guide, Freedom House (2001), and Kaufmann, Kraay, and Zoido-Lobatón (2002) on aspects of public sector governance.

3.2 Regressions results

The theoretical analysis suggests the following reduced-framework form for analyzing the effect of regulatory governance on financial soundness:

$$FSSI_i = f(\text{MACRO}_i, \text{STRUCT}_i, \text{RGI}_i, \text{PSGOV}_i) + \mu_i, \quad (1)$$

where $FSSI_i$ is the financial system soundness index in country i , and μ_i is the random error term. MACRO_i , STRUCT_i , RGI_i , and PSGOV_i are measures for the macroeconomic environment, the structure of the banking system, regulatory governance, and public sector governance, respectively. The tables report standardized coefficients for the core regressions, so that the estimated effects of those variables can be directly compared. The bivariate relationships between financial soundness and each of the potential explanatory variables reveals a significant relationship. Figures 3 and 4 plot RGI against FSSI.²⁷

26. On the use of these variables, also see Barth, Caprio, and Levine (2000, 2001); Barth et al. (2002); Beck, Demirgüç-Kunt, and Levine (2003); and Demirgüç-Kunt and Detragiache (1998). For a discussion on the role of government-owned institutions on financial (in)stability, see La Porta, Lopez-de-Silanes, and Shleifer (2002) and Andrews (2004).

27. To facilitate comparison, Figure 4 presents the mean of the standardized value of both indexes.

These two figures demonstrate the interconnectedness between both indexes. The bivariate correlation is 0.645, significant at the 1 per cent level. Appendix 6 presents scatter plots concerning the other potential explanatory variables. All of the plots show a relationship between financial system soundness and its possible determinants. Thus, any or all of them have the potential to explain cross-country levels of financial system soundness.

3.3 Weighted-least-squares results

In a first round, the impact of regulatory governance on financial system soundness is estimated by using a weighted-least-squares (WLS) regression. The use of ordinary least squares (OLS) is not appropriate, because the White test revealed the presence of heteroscedasticity in the residuals, a common problem in cross-section analyses.²⁸

The regression results are shown in Table 1. The columns correspond to different model specifications. Model 1 concentrates on the regulatory governance variable, while models 2 to 7 test the impact of regulatory governance in conjunction with the other sets of variables on the macroeconomy, the structure of the banking systems, and the public sector governance (as measured by a set of three: democratic accountability, absence of corruption, and law and order).²⁹

Regulatory governance always has a positive significant coefficient, suggesting that a better regulatory governance framework tends to strengthen and enhance financial system soundness. More importantly, this result proves robust regardless of the model specified.

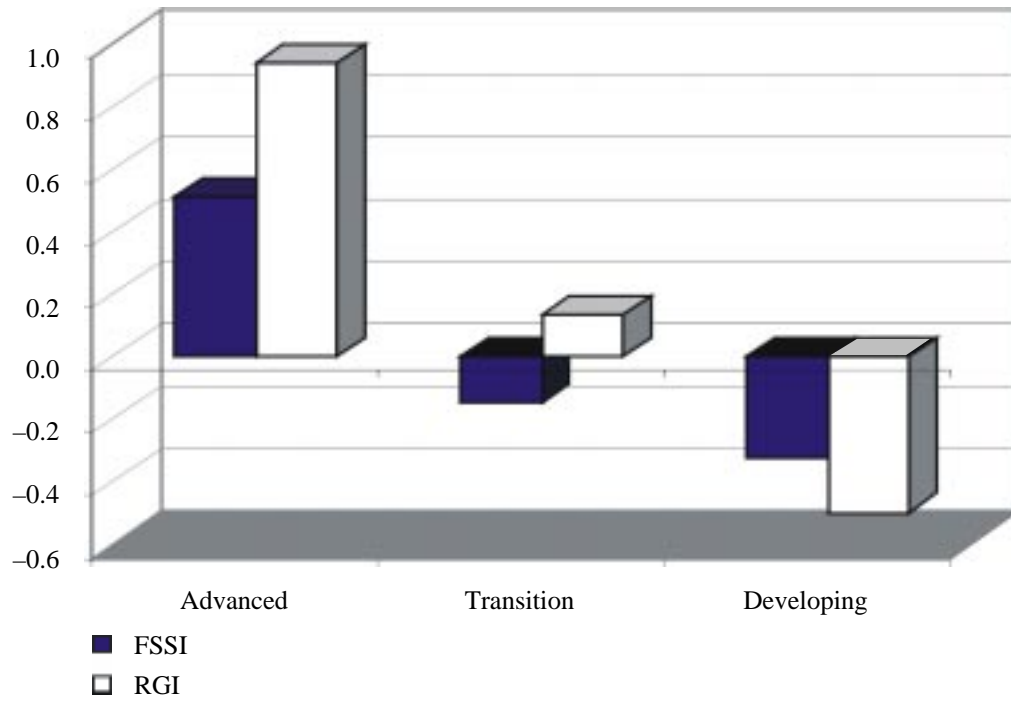
As expected, financial system soundness tends to be associated with low fiscal deficit (or high surplus), low real interest rate, and low inflation. The presence of government-owned banks and of a large degree of concentration in the sector is negatively and significantly correlated to financial stability.³⁰ The results also indicate that the quality of public sector governance has a direct positive impact on financial system soundness. In sum, the WLS regression results support the view that a better governance framework is

28. In the case of heteroscedasticity, OLS is not an appropriate estimation technique, since it is not efficient when the model does not fulfill the classical assumptions of the standard linear-regression model.

29. Appendix 6 presents the summary statistics and correlations.

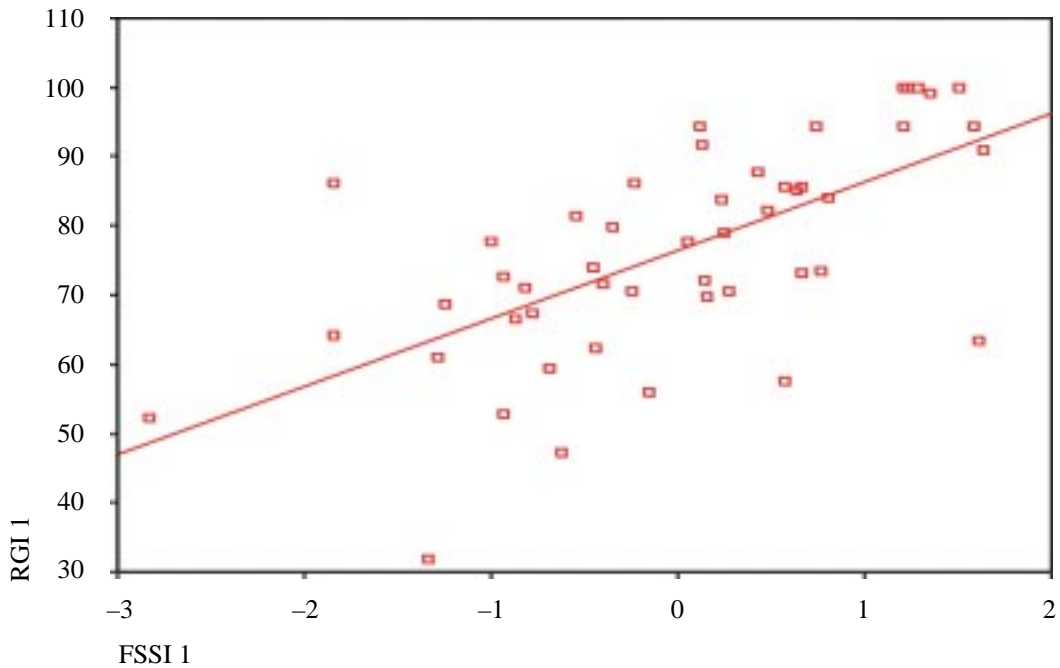
30. This result supports the view that higher bank concentration is more likely to introduce instability. For arguments supporting this view, see, among others, Mishkin (1999) and Boyd and de Nicoló (2003). Admittedly, as Beck, Demirgüç-Kunt, and Levine (2003) note, empirical evidence supporting this view or the opposing view (concentration leads to more stability) is scarce.

Figure 3
Regulatory governance versus financial system soundness



Source: Authors' calculations.

Figure 4
Financial stability as a function of regulatory governance



Source: Authors' calculations.

Table 1
Weighted-least-squares regression results

Independent variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Regulatory governance							
RGI	0.696*** (6.570)	0.331** (2.263)	0.291* (1.761)	0.282* (1.796)	0.304** (2.269)	0.157* (1.710)	0.294** (2.151)
Government-owned banks		-0.283** (-2.446)	-0.284** (-2.382)	-0.271*** (-2.197)	-0.323*** (-3.302)	-0.339*** (-3.992)	-0.388*** (-3.607)
Fiscal balance		0.317** (1.997)	0.290* (1.723)	0.315*(0%) (1.906)			
Concentration				-0.232** (-2.234)	-0.258*** (-2.778)	-0.214** (-2.668)	-0.305*** (-3.228)
Inflation			-0.044 (-0.425)	0.039 (0.344)		0.073 (0.777)	-0.063 (-0.552)
Real interest rate			-0.077 (-0.540)	-0.016 (-0.113)			
Public sector governance					0.299*** (3.081)		1.695* (1.845)
Corruption						0.536*** (4.401)	
RGI* public sector governance							1.068* (1.558)
N	48	44	44	44	44	46	44
R ²	0.484***	0.628***	0.631***	0.675***	0.722***	0.768***	0.718
Adjusted R ²	0.473	0.600	0.583	0.622	0.677	0.739	0.672

* $p < 1.0$. ** $p < 0.05$. *** $p < 0.01$.

Notes: Dependent variable is financial system soundness. The regressions are estimated using WLS, with t -values reported in parentheses. Real interest rate is the short-term real interest rate. Government-owned banks is the percentage of banking system's assets in total sector assets that is owned by the government. Inflation equals the logarithm of the average annual inflation rate 1998–2001. Public sector governance averages the three institutional measures by International Country Risk Guide: (i) bureaucratic quality, (ii) law and order, and (iii) democratic accountability.

associated with higher scores in the index of financial system soundness, other things being equal.

An interesting question is whether the quality of overall public sector governance affects the *relationship* between regulatory governance and financial system soundness, as is assumed by the governance nexus. This question is explored in column 7 (Table 1), where we introduce an interaction variable between RGI and public sector governance. The positive and significant coefficient that is obtained for this interaction variable indicates that the impact of regulatory governance on financial stability is stronger, the higher the quality of public sector governance is. Thus, improving regulatory and supervisory practices will have a stronger impact on financial system soundness in countries where the overall quality of public sector governance is strong and well founded.

3.4 Problems of possible endogeneity

One problem associated with the above results is that the RGI could be plagued by endogeneity, that is, it may be correlated with the error term. It is indeed possible that the public sector governance and/or financial soundness indicators influence the quality of regulatory governance, in which case the results could be flawed.

To address this, the regressions were re-estimated using a two-stage least-squares (2SLS) procedure, whereby the RGI variable is replaced in the final regression by its predicted values, which are uncorrelated with the error term. At least one instrumental variable, uncorrelated with the error term, is used as an explanatory variable in the first-stage regression to model the predicted values for the RGI.

The choice of adequate instruments for regulatory governance is not addressed thoroughly in the literature. In line with the theoretical framework outlined in this paper, our approach is to use public sector governance. The 2SLS results are presented in Table 2. We first test whether the component of the regulatory governance index explained by public sector governance accounts for cross-country differences in financial system soundness. The results suggest that public sector governance influences financial stability through its impact on regulatory governance (column 1), which is consistent with the governance nexus outlined in Box 1 (page 331) and confirms our WLS results concerning the role of the political and institutional setting in enhancing financial system soundness. To examine the robustness of our results, we estimate various specifications and compare the results to the WLS estimates.

Table 2
Two-stage least-squares regressions results

Independent variables	WLS	2SLS	WLS	2SLS	WLS	2SLS	WLS	2SLS
Regulatory governance								
RGI	0.696*** (6.570)	0.699** (6.703)	0.331** (2.263)	0.436*** (3.151)	0.291* (1.761)	0.495*** (4.287)	0.282* (1.796)	0.396*** (3.466)
Government-owned banks			-0.283** (-2.446)	-0.124 (-1.025)	-0.284** (-2.382)	-0.299*** (-3.078)	-0.271*** (-2.197)	-0.253** (-2.673)
Fiscal balance			0.317** (1.997)	0.303** (2.189)	0.290* (1.723)	0.147 (1.075)	0.315*(0%) (1.906)	0.204 (1.549)
Concentration							-0.232** (-2.234)	-0.202** (-2.361)
Inflation					-0.044 (-0.425)	-0.107 (-1.124)	0.039 (0.344)	-0.032 (-0.313)
Real interest rate					-0.077 (-0.540)	-0.202* (-1.829)	-0.016 (-0.113)	-0.171 (-1.518)
N	48	48	44	46	44	46	44	46
R ²	0.484***	0.489***	0.628***	0.563***	0.631***	0.726***	0.675***	0.755***
Adjusted R ²	0.473	0.478	0.600	0.533	0.583	0.632	0.622	0.715

* $p < 1.0$. ** $p < 0.05$. *** $p < 0.01$.

In addition, all specifications show that the impact of regulatory governance on financial system soundness remains positive and significant. Besides, its value is slightly larger and more significant than the corresponding coefficient estimates in WLS. Similarly, the sign and the level of significance of the control variables are virtually unchanged. So, correcting for endogeneity of our regulatory governance index does not dramatically affect the regression results. Both sets of regressions (WLS and 2SLS) support the theoretical framework and show that the correlation between regulatory governance and financial system stability is positive, significant, and robust: regulatory governance does matter for financial system stability.

4 Extension of the Indexes to the Broader Financial System

Current trends and developments are clearly indicating rapid changes in the structure of the global financial industry, which are also affecting structures of national financial systems.³¹ The mainstreaming of the insurance sector as an integral component of the financial system and capital markets has been notable in almost all developed and some developing countries (see Large 2003). An extension of the concepts and indexes developed in this paper therefore becomes necessary to capture the broader notion of financial system soundness.

The insurance sector has traditionally been considered as relatively stable. However, the fact that insurance is no longer restricted to the traditional financial institutions has increased the vulnerability of the sector, representing its relevance to financial system stability. Das, Davies, and Podpiera (2003) and IMF (2003), therefore, point out that indicators of financial system soundness should go beyond the banking sector. They propose a coherent set of financial soundness indicators to develop a macroprudential supervisory framework for the broader sector. This analysis has now been formalized as part of the IMF-developed Financial Soundness Indicators, covering both the banking as well as the non-bank sectors.

31. The FSAP findings are increasingly showing how risks in corporate and non-bank financial sectors can pose risk to financial stability. Corporate sector analysis is bringing out the indirect credit risk to the banking system, just as risks to financial stability are being highlighted through the structural linkages between insurance and banking sectors, and the role insurance plays in optimizing allocation of risks and mobilizing long-term savings. The findings are also increasingly pointing out how banks and other financial institutions have begun to enter insurance business, using the capital markets for risk transformation. Both cross-border as well as cross-sectoral mergers and acquisitions are affecting business lines as well as ownership structures, and complex financial structures, both large and small, are increasingly operating across sectors and markets.

However, the work on non-bank financial soundness is at an early stage, and a number of technical, accounting, and definitional issues continue to affect the consistency and uniformity of non-bank sector data across countries. Large (2003) underlined the need to intensify our focus on the way capital adequacy and prudential supervisory techniques fit together for the different areas of the financial world, among which the insurance sector plays a major role. The Joint Forum (2003), in the context of better management of major individual risks in the banking, insurance, and securities sectors, has emphasized the need for risk management on an integrated firm-wide basis and has endorsed a conservative regulatory capital framework in the absence of reliable data and limitations posed by data across risk types. They have, in fact, emphasized a need for further advances in supervisory and regulatory data, given data and other related limitations. A construction of a broader index of financial stability covering banking and non-bank sectors (in this case, the insurance sector) is therefore premature and fraught with methodological pitfalls.

With the available data, it was possible to derive a broader regulatory governance index that includes the insurance sector, using the same methodology and data sources used to construct the RGI for the banking sector. Figure 5 compares the two indexes of regulatory governance covering banking and insurance. The results show that the value of the RGI declines when governance in the insurance regulatory and supervisory process is considered, suggesting that good governance practices are less widespread in the insurance sector than in the banking sector.

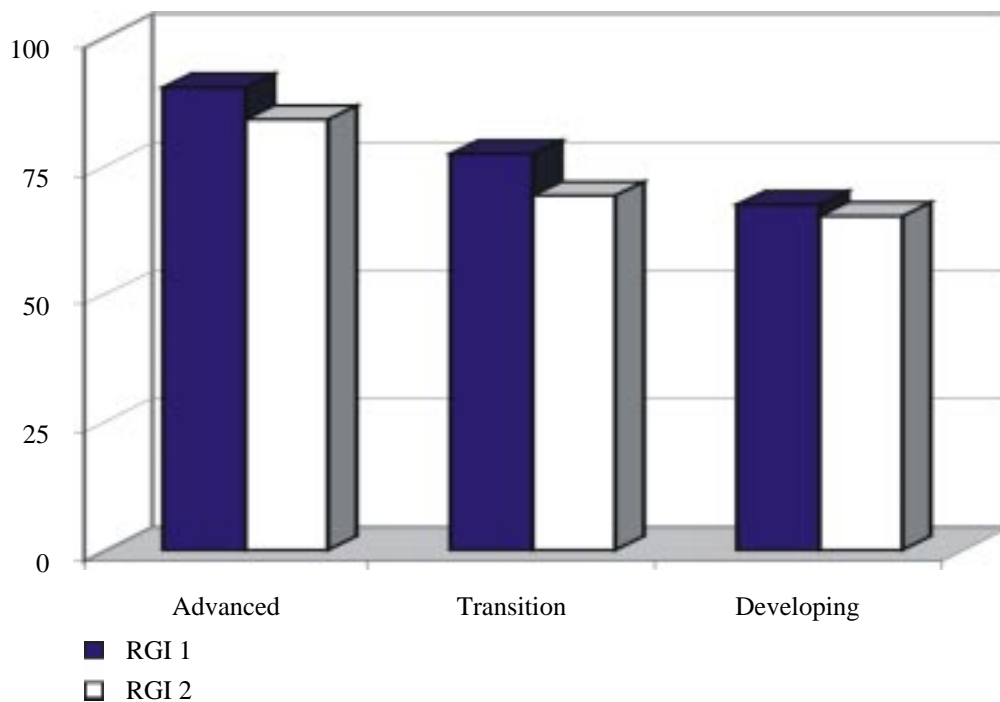
This finding raises a flag that regulatory governance practices should catch up to support the soundness of those other sectors, and limit the chances that systemic problems arise in those parts of the financial system and spread throughout the entire system. The International Association of Insurance Supervisors has recently recognized the importance of the insurance sector for financial stability and the need for greater focus on a broader set of risks to avoid “contagious risks” being transferred from one sector or jurisdiction to another.³²

These findings also underline the need for national and international efforts at collecting and disclosing data on a uniform and consistent basis. In fact, further analyses are desirable to assess the real impact of insurance companies’ soundness on the soundness of the entire financial system.³³

32. See IAIS (2003a) and (2003b).

33. The Financial Stability Forum recently recognized the need for further development of risk-assessment concepts and methods in the non-bank sector. See Financial Stability Forum (2002).

Figure 5
Regulatory governance of banking supervision
versus a broader concept (including insurance supervision)



Source: Authors' calculations using FSAP staff assessments.

Conclusions and Research Agenda

In the two decades or so that have elapsed since the New Institutional Economics school revived attention to the importance of institutions and governance structures for the proper functioning of market-based economies, empirical evidence has been growing on the primacy of institutions (and the importance of governance) for economic development and macroeconomic growth.

This paper has focused on a narrower but important part of this research agenda. It analyzes the effect of regulatory governance—governance practices adopted by financial system regulatory agencies—on financial system soundness. As much as it is a narrow issue and often taken for granted, focus on regulatory governance is gaining importance in the context of the broader financial stability agenda. The search for the determinants of financial stability is, however, ongoing. A consensus is emerging that among those determinants, governance practices of all financial system stakeholders is crucial in underpinning the “three pillars of financial stability”

(sound macroeconomic conditions, effective regulation and supervision, and robust market infrastructure).

No systematic and empirical analysis has been undertaken to test the linkage between regulatory governance and financial system soundness. The results of the exploration undertaken in this paper are encouraging. Regulatory governance does matter for financial system soundness, and thus influences financial stability. Along the road of this exploration, the paper provides additional contributions to the discussions on, and measurement of, the concepts of financial stability and regulatory governance.

First, the paper defines a financial system soundness index. This allows for the measurement of the degrees of financial (in)stability, in contrast with other approaches, which used the crisis/no crisis contrast to measure the impact of other variables on financial system development and quality. The use of an index opens doors to other applications, such as the definition of a threshold for early warning systems for banking problems.

Second, building on earlier work in Das and Quintyn (2002) that identified arrangements for independence, accountability, transparency, and integrity as the four key institutional underpinnings for good regulatory governance, the paper constructs an index of regulatory governance quality. This, too, introduces possibilities in the measurement of institutional, financial policy, and regulatory strengthening and its relationship with financial system risk factors.

Relating the two indexes to each other, we estimate the impact of regulatory governance on financial system soundness, along with the impact of a set of control variables covering the macroeconomic conditions, the structure of the financial system, and aspects of the quality of the institution and public sector governance. Throughout the specifications, the results consistently confirm the importance of good regulatory governance for financial system soundness. They also confirm that the broad institutional framework, as well as public sector governance, matter. These two determinants exert a direct impact on financial system soundness, but also operate indirectly: the impact of the regulatory governance is greater when supported by sound public sector governance.

The lessons from these findings are straightforward for financial stability policy-makers: emphasis on strengthening good regulatory governance will pay off in terms of financial system soundness. This implies that emphasis is needed on proper and balanced arrangements for independence, accountability, transparency, and integrity of regulatory agencies to improve financial system governance. At the same time, improvements in the overall

public sector governance will also contribute to institutional strengthening and soundness of the financial system.

This paper is work in progress in the area of regulatory governance issues, and more broadly, on the topic of financial stability. The concepts developed here set the stage for further research and policy applications. Besides expanding the number of countries in the sample, as and when they become available, empirical work could proceed along three lines:

- developing the FSSI for the broader financial system, given the growing interconnections among banks and other segments of the financial system. In the first place, this requires the collection of proper and consistent indicators for those non-bank segments of the financial system closely linked with the banking system. While work is in the very early stages, our preliminary findings on the lower quality of regulatory governance in the non-bank sector make this an urgent task;
- fine-tuning the FSSI index by including other indicators, such as measures of liquidity and indicators for the quality of the financial market infrastructure; and
- developing time series to ascertain whether the adoption of international standards and codes and institutional changes (such as unification of the supervisory functions), improves the quality of regulatory governance, and through it, financial system soundness.

Translation of some of the work into the policy-making field could include experiments with defining thresholds for the soundness indexes for individual countries as part of an early warning system, for instance, in the spirit of Potter (1995). Such an approach would retain the appeal of indexes and combine it with the discrete-variable approach.

Appendix 1

Construction of the FSSI Index

The financial system soundness index (FSSI) is composed of two “financial soundness indicators” (FSIs): the capital-adequacy ratio (CAR) and non-performing loans (NPLs). Several other potential FSIs could be chosen to construct the index. Evans et al. (2000) list a set of quantitative and qualitative macroprudential indicators, reflecting the CAMELS approach: measures of capital adequacy, asset quality, management soundness, earnings, liquidity, and sensitivity to market risk.

The construction of our index is, in part, guided by data limitations. We faced a trade-off between a wider set of indicators for a small number of countries, or a smaller set of indicators for a larger number of countries. For the purposes of this paper, the latter approach seemed more desirable. On these grounds, the index is still work in progress.¹ There is room to improve and fine-tune the measure when more data become available.

One problem with using aggregate measures is the choice of weights in the aggregation. Short of a well-specified model that provides theoretical weights for the individual variables that are included in our FSSI, we decided not to apply a specific weight to the two variables. We first inverted the values of the non-performing loans ratio to make the two variables consistent with each other (higher values referring to greater financial stability). The subindicators were then standardized by subtracting the mean and dividing by the standard deviation.

The index was subsequently weighted to reflect the country’s degree of financial intermediation, an approach that seems advisable when undertaking an international comparison. The weighting is done on the basis of each country’s share of bank credit to the private sector in GDP.

The index is specified as follows:

$$\text{FSSI} = \text{credit/GDP} * [1/2(\text{CAR} + \text{NPL})].$$

1. Although data were available for profitability, we did not include this measure in the final index, the rationale being that profitability as an indicator is difficult to interpret, which would make its contribution to the soundness indicator ambiguous. In highly competitive markets, profits can be relatively low, without, however, indicating a lack of soundness. Likewise, in non-competitive markets, profits can be high because of a lack of competition, or low because of inefficiencies.

Appendix 2

FSSI and the Moody's Bank Financial Strength Index: A Comparison

This appendix compares the FSSI for the banking sector constructed in this paper with Moody's bank financial strength index, which is a well-known composite index¹ of financial stability.

The rating agency defines its index as follows: "Factors considered in the assignment of Bank Financial Strength Ratings include bank-specific elements such as financial fundamentals, franchise value, and business and asset diversification. Although Bank Financial Strength Ratings exclude the external factors specified above, they do take into account other risk factors in the bank's operating environment, including the strength and prospective performance of the economy, as well as the structure and relative fragility of the financial system, and the quality of banking regulation and supervision."

Figure A2.1 compares the two measures using the mean of the indexes for 10 advanced, 10 transition, and 13 developing countries (WEO classification) for which our FSSI was calculated and for which a Moody's rating is available.

Our FSSI and Moody's index of financial strength exhibit a close pattern for advanced and developing countries. The correlation coefficient between both is 0.741 and is significant at the 0.1 per cent level. However, the mean value of our measure of financial system soundness for transition countries is greater than Moody's measure,² suggesting that Moody's evaluation of the financial strength of a transition country will in general be lower than our index.

For information, Figure A2.2 compares Moody's financial strength index and our measure of regulatory governance.

1. Moody's financial strength index is constructed by the authors according to a numerical scale assigned to Moody's (by assets) weighted average bank ratings by country.

2. Moody's maintains financial strength ratings only for the most important individual banks in the country, whereas our measure of financial soundness is a systemwide index.

Figure A2.1
Comparing two indexes of financial stability

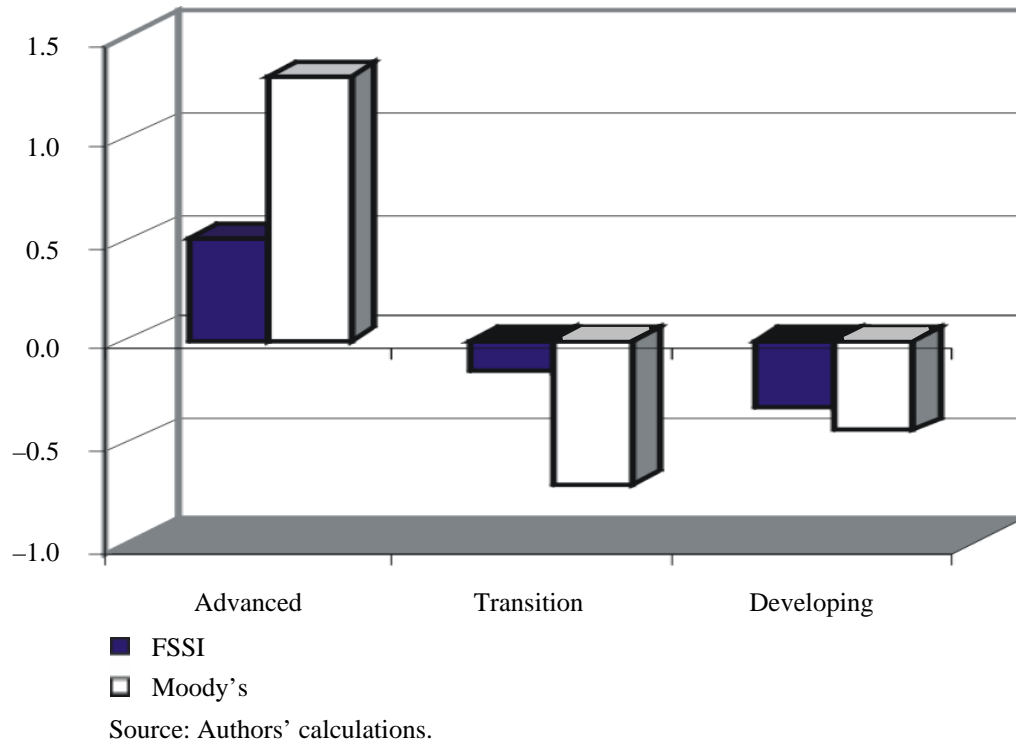
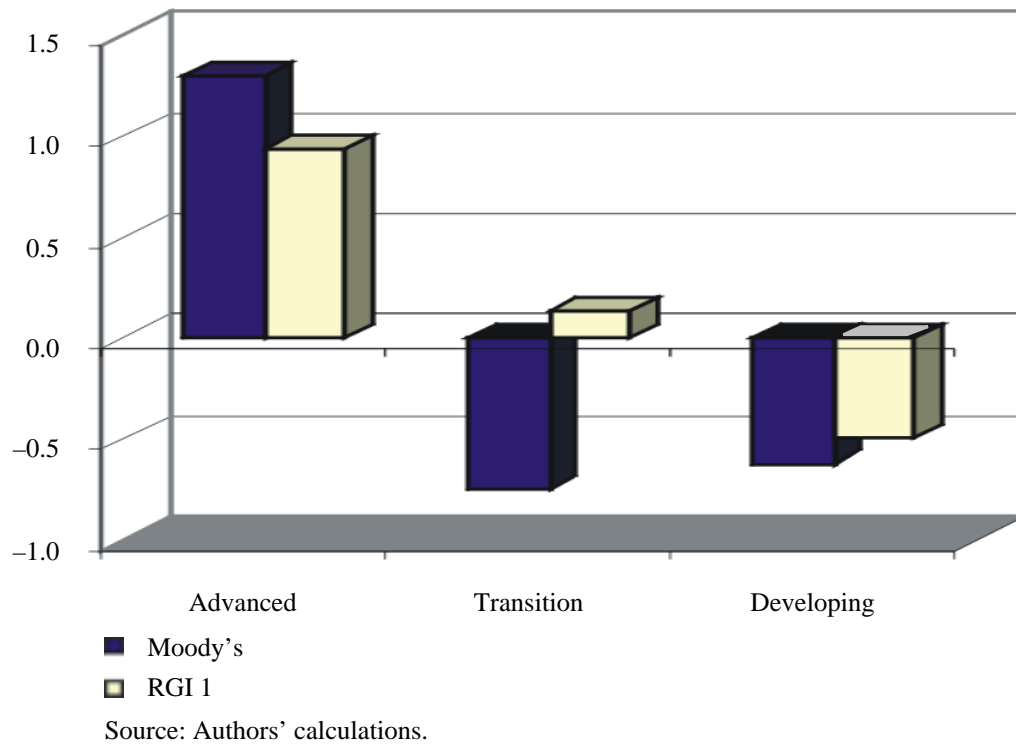


Figure A2.2
Regulatory governance and Moody's measure of financial strength



Appendix 3

Construction of the Regulatory Governance Index

The regulatory governance index captures how the different countries perform in terms of some internationally accepted practices underpinning regulatory governance. To develop this index, we used the assessments of country observance of the international standards conducted through the FSAPs.

Evaluation of governance practices under the FSAPs

Under the FSAPs, the key financial sector standards that provide information for the construction of a regulatory governance index are: (i) the IMF's Code of Good Practices on Transparency in Monetary and Financial Policies (MFP Transparency Code); and (ii) regulatory standards in the main areas of financial sector oversight—Basel Core Principles for Effective Banking Supervision (BCP); International Organization of Securities Commissions Objectives (IOSCO) and Principles of Securities Regulation; and International Association of Insurance Supervisors Insurance Core Principles (IAIS).

For the banking sector index, the value of a country's regulatory governance index was computed as the unweighted average of the overall assessments of the country's observance of the governance-related practices of the MFP Transparency Code for banking supervision and the BCP (see Tables A3.1 and A3.2). For the broader governance index, we added the assessments of observance of the governance-related practices of the IAIS and the IOSCO Core Principles (see Tables A3.3 and A3.4).¹ The MFP Transparency Code provides a comprehensive framework for evaluating the transparency aspects of accountability and integrity, in addition to transparency itself (Table A3.1). BCP, IAIS, and IOSCO provide assessments of independence.

Accountability

Accountability is composed of (i) general accountability, encompassing the availability of regulatory agencies' officials to explain their institutions' objectives and performance to the public; (ii) published accountability, where the financial agencies issue periodic public reports on the policies used in the pursuit of their objectives and the developments in the financial

1. The latter sample of countries is much smaller, because to comply with homogeneity requirements, we retained only those countries for which information was available across standards and codes assessments.

sectors under their jurisdiction; and (iii) financial accountability—disclosure of financial agencies’ audited financial statements and of the underlying accounting policies, aggregate market transactions, and operating revenues and expenses.

Integrity

The integrity of the regulator consists of public disclosure of procedures for appointment, terms of office, and dismissal of financial agencies’ officials; codes of conduct regulating personal financial affairs and conflicts of interest of staff; and legal protections for officials and staff of financial agencies.

Transparency

Transparency consists of regulatory policy transparency, comprising (i) public disclosure and explanation of the regulatory framework and financial agencies’ operating procedures, of significant changes in financial policies, and advocating public consultations of proposed substantive changes in financial regulations; and (ii) oversight of consumer protection and client asset protection schemes—specifically requiring public disclosure of the nature, form, source of financing, and performance of client asset protection schemes, and of information on consumer protection arrangements operated by financial agencies.

Transparency of regulatory operations, consisting of (i) clear definition of the broad objectives and institutional framework of financial agencies, public disclosure of their responsibilities, and procedures for appointment, terms of office, and dismissal of financial agencies’ officials; and (ii) cross-regulatory measures—interaction with other financial agencies, covering public disclosure of the relationship between various financial agencies, including formal procedures for information sharing and consultation, and between financial agencies and any self-regulatory organizations under their oversight.

Independence

The international financial sector regulatory standards focus on the independence aspect of regulatory governance. All regulatory standards require that the regulators have operational independence and that the rules and regulations are applied in a consistent manner to all regulated entities.

Construction of the Index

The construction of the index proceeded as follows.²

For each practice of each code, the country's degree of observance was coded as follows:

- 1 = non-compliance
- 2 = partial compliance
- 3 = broad compliance
- 4 = full compliance
- 9 = not applicable/not answered

In the MFP Transparency Code, some dimensions of transparency are not applicable for all practices, as shown in Table A3.1.³ Consequently, when a practice was relevant to several dimensions, it was given a higher weight according to the following rule: a practice would count double when it was relevant to two different dimensions of transparency, it would count triple if it was relevant to three dimensions, and four times if it was relevant to the four dimensions altogether. The rationale for this weighting scheme is that the practices that are relevant to several dimensions are more important.

Each country was then assigned a score on the assessments of observance of each code using the following weighting scheme:⁴

$$\text{SCORE}_{ij} = [0 * \text{non-compliance}_{ij} + 0.33 * \text{partial compliance}_{ij} + 0.66 * \text{broad compliance}_{ij} + \text{full compliance}_{ij}] * 100,$$

where i represents the country and j the specific set of standards and codes.

We then averaged each country's scores on each code to derive the country's Regulatory Governance Index.

$$\text{RGI}_i = 1/n (\sum \text{SCORE}_{ij}) \quad j = [1, n],$$

where n is the number of codes used to derive the index.

2. For more details on this scoring method, see Sundararajan, Das, and Yossifov (2003).

3. For example, periodicity of disclosure is not relevant for the implementation of practice 5.1.

4. Only the valid scores were taken into consideration (e.g., questions that were not answered by the country or were marked as not being applicable were not included in the set of questions used in the estimation of the country's score).

Table A3.1
Governance-related aspects of transparency
addressed by the MFP Transparency Code

Governance-related aspects of transparency	MFP Transparency Code practices
I. Accountability	
I.1 General	<p>5.1.3 Where applicable, the broad modalities of accountability for financial agencies should be publicly disclosed.</p> <p>7.4.2 Senior financial agency officials should be ready to explain their institution's objective(s) and performance to the public, and have a presumption in favor of releasing the text of their statements to the public.</p> <p>8.1 Officials of financial agencies should be available to appear before a designated public authority to report on the conduct of financial policies, explain the policy objective(s) of their institution, describe their performance in pursuing their objective(s), and, as appropriate, exchange views on the state of the financial system.</p>
I.2 Published	<p>6.3 Financial agencies should issue periodic public reports on how their overall policy objectives are being pursued.</p> <p>7.1 Financial agencies should issue a periodic public report on the major developments of the sector(s) of the financial system for which they carry designated responsibility.</p>
I.3 Financial	<p>7.3 Where applicable, financial agencies should publicly disclose their balance sheets on a preannounced schedule and, after a predetermined interval, publicly disclose information on aggregate market transactions.</p> <p>8.2 Where applicable, financial agencies should publicly disclose audited financial statements of their operations on a preannounced schedule.</p> <p>8.2.1 Financial statements, if any, should be audited by an independent auditor. Information on accounting policies and any qualification to the statements should be an integral part of the publicly disclosed financial statements.</p> <p>8.3 Where applicable, information on the operating expenses and revenues of financial agencies should be publicly disclosed annually.</p>
II. Integrity	<p>5.1.4 Where applicable, the procedures for appointment, terms of office, and any general criteria for removal of the heads and members of the governing bodies of financial agencies should be publicly disclosed.</p> <p>8.4 Standards for the conduct of personal financial affairs of officials and staff of financial agencies and rules to prevent exploitation of conflicts of interest, including any general fiduciary obligation, should be publicly disclosed.</p> <p>8.4.1 Information about legal protections for officials and staff of financial agencies in the conduct of their official duties should be publicly disclosed.</p>

(cont.)

Table A3.1 (cont.)
Governance-related aspects of transparency
addressed by the MFP Transparency Code

Governance-related aspects of transparency	MFP Transparency Code practices
III. Regulatory policy transparency	
III.1 General	<p>6.1.1 The regulatory framework and operating procedures governing the conduct of financial policies should be publicly disclosed and explained.</p> <p>6.1.2 The regulations for financial reporting by financial institutions to financial agencies should be publicly disclosed.</p> <p>6.2 Significant changes in financial policies should be publicly announced and explained in a timely manner.</p> <p>6.4 For proposed substantive technical changes to the structure of financial regulations, there should be a presumption in favor of public consultations, within an appropriate period.</p> <p>7.5 Texts of regulations and any other generally applicable directives and guidelines issued by financial agencies should be readily available to the public.</p>
III.2 Consumer protection and client asset protection schemes	<p>7.6 Where there are deposit insurance guarantees, policy-holder guarantees, and any other client asset protection schemes, information on the nature and form of such protections, on the operating procedures, on how the guarantee is financed, and on the performance of the arrangement, should be publicly disclosed.</p> <p>7.7 Where financial agencies oversee consumer protection arrangements (such as dispute settlement processes), information on such arrangements should be publicly disclosed.</p>
IV. Transparency of operations and functions	
IV.1 General	<p>5.1 The broad objective(s) and institutional framework of financial agencies should be clearly defined, preferably in relevant legislation or regulation.</p> <p>5.1.2 The responsibilities of the financial agencies and the authority to conduct financial policies should be publicly disclosed.</p> <p>5.1.4 Where applicable, the procedures for appointment, terms of office, and any general criteria for removal of the heads and members of the governing bodies of financial agencies should be publicly disclosed.</p>
IV.2 Transparency of interaction with other financial agencies	<p>5.2 The relationship between financial agencies should be publicly disclosed.</p> <p>5.4 Where financial agencies have oversight responsibilities for self-regulatory organizations (e.g., payment systems), the relationship between them should be publicly disclosed.</p> <p>6.1.5 Where applicable, formal procedures for information sharing and consultation between financial agencies (including central banks), domestic and international, should be publicly disclosed.</p>

Table A3.2

Governance-related IAIS insurance core principles

Governance-related core principles

CP 1. Organization of an Insurance Supervisor. The insurance supervisor of a jurisdiction must be organized so that it is able to accomplish its primary task, i.e., to maintain efficient, fair, safe, and stable insurance markets for the benefit and protection of policyholders. It should, at any time, be able to carry out this task efficiently in accordance with the Insurance Core Principles.

Table A3.3

Governance-related Basel core principles for effective banking supervision

Governance-related core principles

1. An effective system of banking supervision will have clear responsibilities and objectives for each agency involved in the supervision of banks. Each such agency should possess operational independence and adequate resources. A suitable legal framework for banking supervision is also necessary, including provisions relating to the authorization of banking establishments and their ongoing supervision; powers to address compliance with laws, as well as safety and soundness concerns; and legal protection for supervisors. Arrangements for sharing information between supervisors and protecting the confidentiality of such information should be in place.

1(1). An effective system of banking supervision will have clear responsibilities and objectives for each agency involved in the supervision of banks.

1(2). Each such agency should possess operational independence and adequate resources.

1(3). A suitable legal framework for banking supervision is also necessary, including provisions relating to authorization of banking establishments and their ongoing supervision.

1(4). A suitable legal framework for banking supervision is also necessary, including powers to address compliance with laws, as well as safety and soundness concerns.

1(5). A suitable legal framework for banking supervision is also necessary, including legal protection for supervisors.

1(6). Arrangements for sharing information between supervisors and protecting the confidentiality of such information should be in place.

Source: IMF 1999 (Table A3.1–3).

Table A3.4
Dimensions of transparency addressed by individual
practices of the MFP Transparency Code for financial policies

MFP Transparency Code practice	Dimensions of transparency			Form and content of disclosure
	Means of disclosure	Timeliness	Periodicity	
5.1				X
5.1.1	X			
5.1.2	X			
5.1.3	X			
5.1.4	X			
5.2	X			
5.3	X			
5.3.1	X			
5.4	X			
5.5				X
6.1.1	X			
6.1.2	X			
6.1.3	X			
6.1.4	X			
6.1.5	X			
6.2	X	X		
6.3	X		X	
6.4				X
7.1	X		X	X
7.2	X		X	
7.3	X	X	X	
7.3.1	X	X		
7.4				X
7.4.1		X	X	X
7.4.2	X			X
7.5	X			
7.6	X			
7.7	X			
8.1			X	X
8.2	X	X	X	
8.2.1				X
8.2.2	X			
8.3	X		X	
8.4	X			
8.4.1	X			

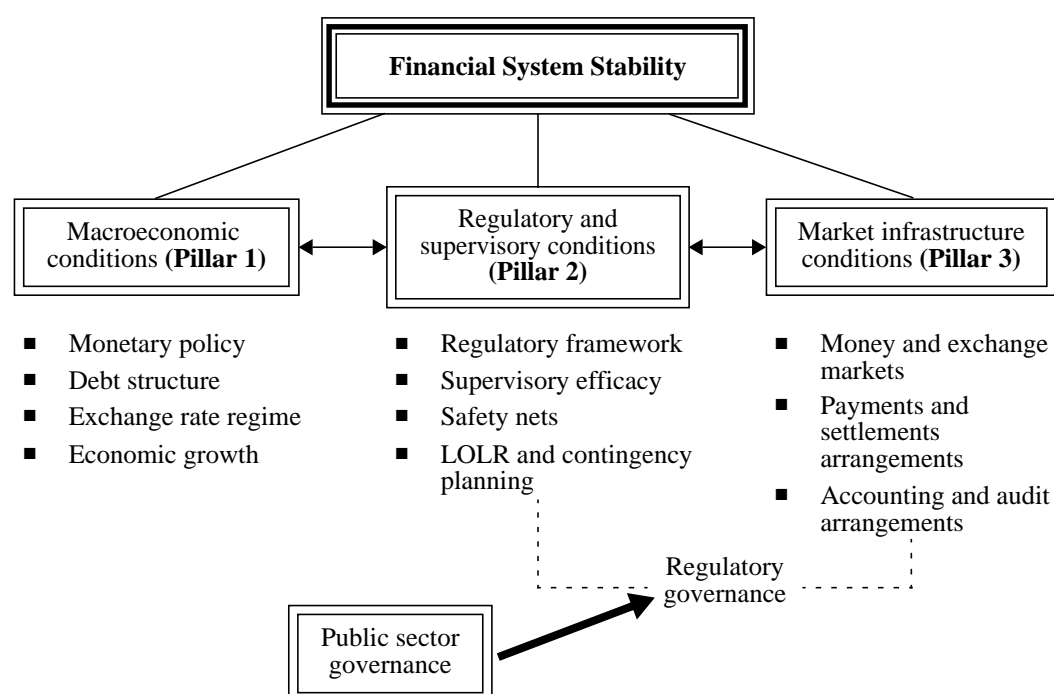
Source: IMF.

Appendix 4

The Three Pillars of Financial Stability

For national financial systems to function on a stable basis, a combination of stable macroeconomic conditions, effective regulatory and supervisory systems, and a robust market infrastructure are essential. These can be regarded as the three crucial pillars of financial stability (see Figure A4.1).

Figure A4.1
Financial system stability: The three pillars



The first pillar supports financial stability through the existence of sound and sustainable macroeconomic policies. These help ensure the policy environment essential for a well-functioning financial system, such as a well-established and consistent exchange rate regime, a credible monetary policy, and sufficient reserves to meet potential systemic liquidity shortages. The second pillar supports financial stability through the existence of a regulatory and supervisory system that strengthens the system's resilience through effective oversight on the prudential condition and financial soundness of the financial system. The elements of this pillar include aspects such as effective consolidated supervision, supervisory co-operation, and risk orientation in supervisory practices. The resilience is imparted through adoption of international regulatory practices and off-site supervisory

surveillance, ensuring that financial institutions are well capitalized and strong to absorb losses from most shocks. The third and final pillar relates to a robust financial system infrastructure. This pillar is often assumed and hence, less emphasized.¹ Several elements of this pillar are key in supporting financial stability: liquidity and market infrastructure, a reliable legal system, accounting and auditing practices, transparency and disclosure, and the corporate governance regime. The robustness of this pillar is key for the effective management of credit, market, and liquidity risk by institutions, including exchange rate risk. Transparency and well-founded disclosure help support effective market discipline by financial institutions, including a better understanding of off-balance-sheet activities and cross-border linkages.

Governance and the three pillars

Regulatory governance underpins the second and the third pillars the most, since it relates to the governance practices of those agencies that regulate and supervise and that have an oversight role on the financial infrastructure. Good regulatory governance affects the capacity to formulate, implement, and enforce financial policies and regulations, and make refinements to the financial infrastructure in response to changes in the structure of the financial system and behaviour of the stakeholders. A prerequisite for good regulatory governance, however, is the existence of a credible and broader framework of public sector governance. This is necessary to establish a firm institutional and accountable basis for the conduct of regulatory governance.

Financial stability analysis and the three pillars

These three pillars are also reflected in the framework being used in the financial stability analysis applied in the FSAP.² The framework covers vulnerabilities and capital adequacy of the financial sector, emphasizes the macrofinancial linkages, and takes into account the risks posed by the regulatory regime and associated structural impediments.

In developing the financial soundness indicators as a tool for undertaking the analysis of financial system stability, indicators have been developed for each of the three pillars. The analysis framework includes a combination of tools in addition to the risks and vulnerabilities relating to each pillar, based

1. Crockett (2003); Financial Stability Forum (2002).

2. The broader framework includes the balance-sheet approach, debt sustainability, and monitoring macroeconomic conditions.

on the analysis of the financial soundness indicators.³ In particular, reliance is given to a system's observance with internationally accepted standards in assessing financial strengths and vulnerabilities, and macrofinancial linkages between the financial sector and macroeconomic conditions.⁴

3. See Craig and Sundararajan (2003) and IMF (2003).

4. See also various IMF reviews of regulatory vulnerabilities in the banking, insurance, and securities sectors, pointing out how the shortcomings relating to regulatory governance arrangements were identified as potential risk factors affecting financial stability (IMF 2003).

Appendix 5

Table A5.1
Definitions and data sources for variables included in the regression

Variable name	Definition	Source
Financial system soundness	Aggregate economy-wide index	IMF. Authors' calculations from FSAPs
Regulatory governance (banking sector)	Composite economy-wide indicator	IMF. Authors' calculations from FSAP assessments
Regulatory governance (financial sector)	Composite economy-wide indicator	IMF. Authors' calculations from FSAP assessments
Fiscal balance	Measure of central government fiscal balance as a percentage of GDP	IFS
Short-term real interest rate	Nominal lending rate minus the contemporaneous rate of inflation	IFS
Inflation	Annual rate of change of the GDP deflator	IFS
State ownership	Percentage of banking system owned by the government	Barth, Caprio, and Levine (2001) database and authors' calculations
Foreign ownership	Percentage of banking system owned by foreign investors	Barth, Caprio, and Levine (2001) database and authors' calculations
Bank concentration	Share of deposits of five largest banks in total deposits	Barth, Caprio, and Levine (2001) database and authors' calculations
Public sector governance	Average of three politico-institutional variables: democratic accountability, bureaucratic quality, and law and order	International Country Risk Guide (ICRG)
Government effectiveness	Aggregate economy-wide index	Kaufmann and Kraay (2002)
Control of corruption	Aggregate economy-wide index	Kaufmann and Kraay (2002)
Voice and accountability	Aggregate economy-wide index	Kaufmann and Kraay (2002)
Regulatory burden	Aggregate economy-wide index	Kaufmann and Kraay (2002)
Overall freedom	Index	Freedom House (2001)

Appendix 6

Figure A6.1

Financial stability as a function of potential explanatory variables

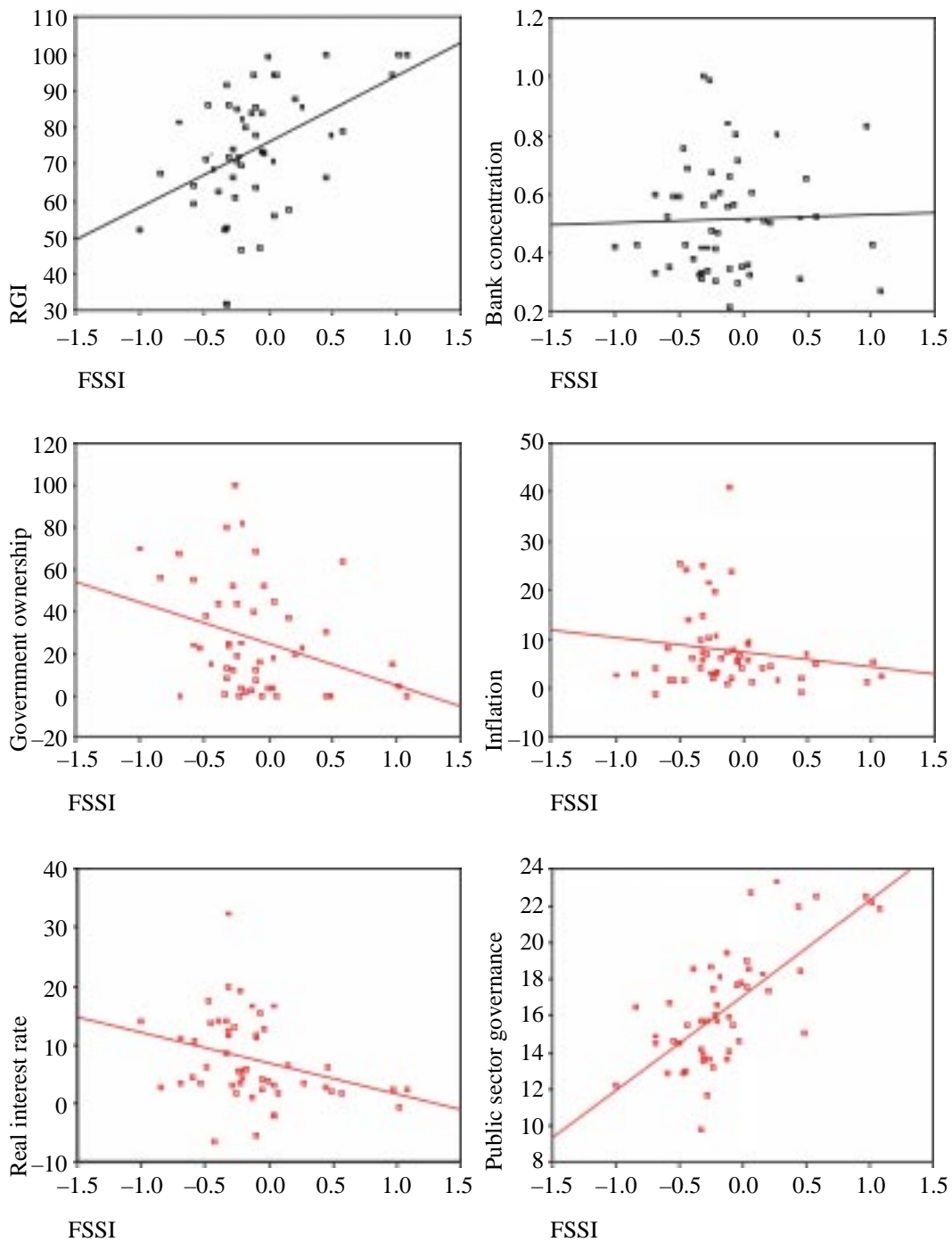


Table A6.1
Summary statistics and correlations

	Summary statistics					
	N Valid	Mean	Median	Std. Deviation	Minimum	Maximum
Financial System Stability Index	53	1.0845	0.5931	2.19304	-3.27	6.78
Regulatory Governance Index 1	51	74.8337	73.4700	15.73413	31.94	100.00
Regulatory Governance Index 2	39	71.1059	72.2200	14.75599	35.18	100.00
Per capita real GDP	53	6607.1509	2230.0000	9334.97894	260.00	38330.00
Average inflation	53	7.6528	5.5100	8.34805	-4.14	41.15
Real interest rate	50	7.5688	5.5400	7.18678	-6.35	32.41
Government ownership	51	26.255	19.000	26.3056	0.0	100.0
Foreign ownership	49	24.70	15.00	24.803	0.0	90.0
Fiscal balance	51	-2.3647	-2.2000	4.30942	-23.60	7.50
Bank concentration	53	0.5169	0.5070	0.18371	0.22	1.00
Public sector governance	51	16.5333	15.9000	3.18249	9.80	23.30

Table A6.2
Correlations: Financial system stability, regulatory governance, and other indicators

		Correlations						
		Financial System Stability Index	Regulatory Governance Index 1	Government ownership	Foreign ownership	Fiscal balance	Bank concentration	Public sector governance
Financial System Stability Index	Pearson correlation	1	0.499**	-0.347*	-0.022	0.370**	0.033	0.606**
	Sig. (2-tailed)	0.0	0.000	0.013	0.878	0.007	0.815	0.000
	N	53	51	51	49	51	53	51
Regulatory Governance Index 1	Pearson correlation	0.499**	1	-0.149	0.281	0.420**	0.241	0.442**
	Sig. (2-tailed)	0.000	0.0	0.307	0.055	0.003	0.088	0.001
	N	51	51	49	47	49	51	49
Government ownership	Pearson correlation	-0.347*	-0.149	1	-0.393**	-0.021	0.013	-0.126
	Sig. (2-tailed)	0.013	0.307	0.0	0.005	0.889	0.929	0.386
	N	51	49	51	49	49	51	49
Foreign ownership	Pearson correlation	-0.022	0.281	-0.393**	1	0.004	0.156	-0.031
	Sig. (2-tailed)	0.878	0.055	0.005	0.0	0.978	0.284	0.835
	N	49	47	49	49	47	49	47
Fiscal balance	Pearson correlation	0.370**	0.420**	-0.021	0.004	1	0.339*	0.174
	Sig. (2-tailed)	0.007	0.003	0.889	0.978	0.0	0.015	0.223
	N	51	49	49	47	51	51	51
Bank concentration	Pearson correlation	0.033	0.241	0.013	0.156	0.339*	1	0.022
	Sig. (2-tailed)	0.815	0.088	0.929	0.284	0.015	0.0	0.880
	N	53	51	51	49	51	53	51
Public sector governance	Pearson correlation	0.606**	0.442**	-0.126	-0.031	0.174	0.022	1
	Sig. (2-tailed)	0.000	0.001	0.386	0.835	0.223	0.880	0.0
	N	51	49	49	47	51	51	51

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

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Box 1**The Governance Nexus**

The governance nexus refers to the impact of governance practices at each layer—government, supervisors, financial institutions, corporate sector—on the practices of the next layer. From bottom to top, we have three components and their responsibilities:

- Financial institutions bear the ultimate responsibility for establishing good governance practices in their institutions in order to gain and keep the confidence of their clients and the markets. As lenders to, and thus stakeholders in, the corporate sector, they have a special interest in ensuring effective corporate governance by their clients (Caprio and Levine 2002). However, they can only exert effective corporate governance on firms if their own practices are sound. Good bank governance helps stimulate the efficient allocation of resources in the economy and helps achieve financial system soundness.
- Regulatory agencies play a key role in promoting and overseeing implementation of sound practices in the financial intermediaries. To achieve that goal, regulatory agencies themselves need to establish and operate sound governance practices. The channel by which regulatory governance leads to good financial sector governance runs through agency credibility. Consistently applied good governance practices help build an agency's credibility. By failing to apply good governance principles, regulatory agencies lose the credibility and moral authority to promulgate good practices in the institutions under their oversight. This could create moral-hazard problems and contribute to unsound practices in the markets.
- Good regulatory governance, in turn, cannot be sustained without good public sector governance. Good public sector governance is one of the main preconditions for good regulatory governance (and through it, for financial system soundness) and includes the absence of corruption, a sound approach to competition policies, an effective legal and judicial system, and an arm's-length approach to government ownership. As long as interference in the regulatory process—or directly in the financial system—is not costly for the politicians, regulatory governance cannot be effective.

Box 2**The Institutional Basis for Good Governance**

Adapted from Das and Quintyn (2002)

Independence

One way to reduce the likelihood of interference in the regulatory process is to establish adequate *independence* arrangements. The regulatory agency should be insulated from improper influence from the political sphere and from the supervised entities.

Two main arguments have been offered in favour of delegating to independent agencies—as opposed to a government agency, a specific ministry, or a local body—the tasks related to economic and social regulation: the advantage of resorting to and relying on expertise, particularly when responses are needed for complex situations; and the advantage of potentially shielding market intervention from political interference, thus improving transparency and stability of the output. As such, agency independence increases the possibility of making credible policy commitments.

Accountability

Effective independence, however, cannot be achieved without accountability. Accountability is essential for the agency to justify its actions against the background of the mandate given to it. Independent agents should be accountable to those who delegated the responsibility—the government or the legislature—but also to those who fall under their functional realm, and to the public at large (“stakeholders”).

Transparency

Transparency refers to an environment in which the agency’s objectives, frameworks, decisions and their rationale, data and other information, as well as terms of accountability, are provided to the public in a comprehensive, accessible, and timely manner (IMF 2000).

Transparency has increasingly been recognized as a “good” in itself, but it also serves other purposes related to the other components of governance. Policy-makers have been recognizing that globalization in general and the integration of financial markets and products in particular require a greater degree of transparency in monetary and financial policies, and in regulatory regimes and processes, as a means of containing market uncertainty. In addition, transparency has become a powerful vehicle for countering poor operating practices and policies.

Integrity

Integrity refers to those mechanisms that ensure that staff of the agencies can pursue institutional goals without compromising them through their own behaviour or self-interest. Integrity affects staff of regulatory agencies at various levels. Procedures for appointment of heads, their terms of office, and criteria for removal should be such that the integrity of the board-level appointees (policy-making body) be safeguarded. Second, the integrity of the agency’s day-to-day operations is ensured through internal audit arrangements that ensure that the agency’s objectives are clearly set and observed, that decisions are made, and accountability is maintained. Thus, ensuring the quality of the agency’s operations will maintain the integrity of the institution and strengthen its credibility to the outside world. Third, integrity also implies that there are standards for the conduct of personal affairs of officials and staff to prevent exploitation of conflicts of interest. Fourth, ensuring integrity also implies that the staff of the regulatory agency enjoy legal protection while discharging their official duties. Without legal protection, objectivity of staff would be prone to contest—and staff to bribery or threat—and the overall effectiveness and credibility of the institution would suffer.