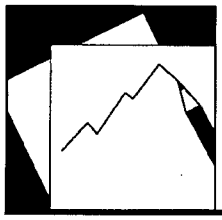
WP/01/62



IMF Working Paper

Financial System Standards and Financial Stability: The Case of the Basel Core Principles

V. Sundararajan, David Marston, and Ritu Basu

INTERNATIONAL MONETARY FUND

WP/01/62

IMF Working Paper

Monetary and Exchange Affairs Department

Financial System Standards and Financial Stability: The Case of the Basel Core Principles[1]

Prepared by V. Sundararajan, David Marston, and Ritu Basu

May 2001

Abstract

The relationship between the observance of financial system standards and financial stability is complex owing to the multitude of macroeconomic and structural factors affecting stability. Assessments of standards need to be interpreted using information on other factors affecting risks. Preliminary evidence from data on observance of Basel Core Principles (BCP) suggests that credit risk and bank soundness are primarily influenced by macroeconomic and macroprudential factors and that direct influence of compliance with BCP on credit risk and soundness is insignificant. Compliance could, however, have a sizable indirect influence through its impact on the marginal effect on soundness of macro factors.

JEL Classification Numbers: E42; E44; G21

Keywords: standards and codes; Basel Core Principles; financial system soundness

Authors' E-Mail Addresses: vsundararajan@imf.org, dmarston@imf.org, rbasu@imf.org

---

[1] An earlier draft of the paper was presented by Monetary and Exchange Affairs Department staff at the Annual Meetings Workshop on Financial System Stability—Assessment and Policy Responses, Prague, September 23, 2000. The authors wish to thank Udaibir Das, Mary Zephirin, Michael Andrews, Marc Quintyn and Obert Nyawata for comments in preparing the present version and extend special thanks to Vanya Etropolska for outstanding research assistance and to Jill Perrott for editorial assistance.

Contents Page

I. Introduction and Background

The promulgation of codes, standards and guidelines has proliferated in recent years, largely as a reaction to financial crises and the need to develop a supportive environment for financial liberalization and globalization. There are now standards, codes, and guidelines covering a number of economic and financial areas, including data dissemination; fiscal, monetary and financial policy transparency; payment systems; banking; securities and insurance supervision and regulation; accounting; auditing; insolvency; corporate governance, and public debt management.

Considerable efforts are now being made by national authorities, international financial institutions, and standard-setting bodies to assess observance of and foster implementation of these standards. The International Monetary Fund and the World Bank have developed an assessment framework through the joint Bank-Fund Financial Sector Assessment Program (FSAP) aimed at helping countries identify strengths and vulnerabilities, assess stability and development needs, and assist in developing appropriate responses. As a part of this exercise, the observance and implementation of relevant standards and codes are assessed in detail in order to provide input into the broader analysis of stability and development needs. Summary assessments of standards are then prepared as components of the Financial System Stability Assessment (FSSA) report that is derived from the FSAP process for use in Fund surveillance.[2] These summary assessments also serve as financial sector modules of the Reports on the Observance of Standards and Codes (ROSC). The ROSC process—set up by the Fund and the Bank—compiles over time the financial sector modules prepared under the FSAP, as well as other summary assessment modules prepared by Fund and Bank of other standards, such as the Special Data Dissemination Standard (SDDS), the Code of Good Practices on Fiscal Transparency, corporate governance, and other similar guidelines.[3] These summaries as well as the FSSA reports themselves—which contain a comprehensive assessment of risks and vulnerabilities in the financial system including the summary assessment of standards—could be published voluntarily on the Fund's website to inform the public. Assessments of financial sector standards are also undertaken outside of the FSAP in the context of the Fund's technical assistance program and of various lending and nonlending operations of the Bank. The ongoing efforts by different standard-setting bodies to develop assessment methodologies and new standards—including the Fund's own work on standards on data dissemination, fiscal transparency, and monetary and financial policy transparency—are summarized in Box 1.

---

[2] See IMF (2001a) for a description of the FSAP process. FSAP is a cooperative program that draws on, in addition to Fund Bank experts, experts from a large number of national supervisory agencies and central banks in order to conduct the assessment, thereby providing an element of "Peer Review" in standards assessments.

[3] IMF (2001b).

Box 1. Development and Refinement of Financial System Standards and Assessment Methodology—Role of Standard-Setting Bodies and the Financial Stability Forum

Basel Committee on Banking Supervision (BCBS)— "The Core Principles Methodology" was developed to be used in multiple contexts, including self assessments, peer or third party reviews, and reviews performed in the context of Fund surveillance, including FSAPs/FSSAs, Fund Technical Assistance programs, and World Bank lending operations. Experience with Basel Core Principles (BCP) assessment by Bank and Fund was discussed by the IMF Executive Board, and the findings communicated to the Basel Committee. The BCBS is developing a guidance document on how to perform a self assessment, to be distributed as a BCBS document.

International Association of Insurance Supervisors (IAIS)—The IAIS issued core principles and developed an assessment methodology in 2000. It has been working with multilateral institutions and others to implement the core principles and has also launched a self assessment exercise.

International Organization of Securities Commissions (IOSCO)—has promoted the implementation of the Objectives and Principles of Securities Regulations through, three self-assessment surveys, a general survey on the level of observance in broad terms and two detailed surveys for securities regulators and issuers respectively. Work is also underway by the Implementation Committee of the IOSCO, in which multilateral institutions participate, to develop detailed assessment methodology.

Committee on Payment and Settlement Systems (CPSS) - Through the recent publication of the "Core Principles for Systemically Important Payment Systems" (CPSIPS) and the joint CPSS/IOSCO "Recommendations for Securities Settlement Systems," the Committee has contributed to the set of standards, codes, and best practices that are deemed essential for strengthening the financial architecture worldwide. The IMF and the World Bank participated in the task force that prepared the draft of the CPSIPS, and have begun using the draft core principles in their TA and FSAP activities. The reports of the task force have been issued for public comment.

The Joint Forum comprising BCBS, IOSCO and IAIS issued guidelines on supervision of financial conglomerates in February 1999 and is working to compare core principles in the areas of banking, securities and insurance supervision with a view to identifying inconsistencies and gaps in coverage of regulatory standards for the financial sector.

The International Monetary Fund has developed, in consultation with national authorities and other standard-setting bodies, standards for data dissemination, fiscal policy transparency, and monetary and financial policy transparency, and guidelines for public debt management. Guidelines for Foreign Exchange Reserve Management have been issued for public comment.

The World Bank has undertaken work on guidelines for insolvency regimes, corporate governance, accounting and auditing, jointly with the Fund and other relevant organizations.

The Financial Stability Forum established a task force on implementation of standards, which reviewed the ongoing work on the standards relevant for financial stability and issued a report in March 2000. A subgroup of this task force is examining the scope for market and official incentives for implementation of standards.

The joint Bank-Fund Financial Sector Assessment Program (FSAP) is the primary mechanism for undertaking assessments related to BCP; the IOSCO, IAIS, and CPSS principles; and the Code of Good Practices on Transparency in Monetary and Financial Policies, which serve as inputs into broader assessments of stability and development needs. Some of these standards are also assessed in the context of stand-alone IMF TA programs. The FSAP provides feedback to standard-setting bodies on assessment methodologies, based on periodic meetings of experts, periodic review of experience, and outreach programs. 1/ The Joint Bank-Fund reports on Observance of Standards and Codes (ROSCs) are summary assessments of members' implementation and observance of internationally recognized standards. ROSCs are prepared in various contexts by the Fund and the Bank and published voluntarily on the Fund or Bank website.

The International Accounting Standards Committee (IASC) has issued some 40 international accounting standards, while the International Federation of Accountants has issued around 30 International Standards on Auditing.

1/ See "Outreach efforts on standards and codes stress consultation and inclusiveness," 2000.

Sources: IMF and FSF.

In elaborating on the role of those standards affecting the financial sector and the envisaged transmission process, the Financial Stability Forum (FSF) Task Force on Implementation of Standards explicitly notes in its Issues Paper[4] that:

> [t]he objective is to *promote sound domestic financial systems and international financial stability* through the implementation of internationally accepted standards for economic, financial and market activities.

The Task Force indicates that the development, adoption, and successful implementation of international standards yield both national and international benefits by helping to:

- strengthen domestic financial systems by encouraging sound regulation and supervision, greater transparency, and more efficient and robust institutions, markets, and infrastructure; and

- promote international financial stability by facilitating better-informed lending and investment decisions, improving market integrity, and reducing the risks of financial distress and contagion.

While these are strong claims in support of international standards, the FSF Task Force also recognizes that the implementation of standards in itself is not sufficient to ensure financial stability; standards are not an end in and of themselves, but a means to promote sound financial systems and sustained economic growth, which depends upon a host of other factors that interact with the effectiveness of the regulatory framework. The focus in monitoring observance of standards may need to go beyond disclosure elements of particular standards and also consider, to the extent possible, the substance of policies relative to the standard. Moreover, in a recent survey, some market participants asked whether observance of standards affects the underlying risk in a country and observed that, because many key standards are concerned with transparency—which is undoubtedly a desirable objective—the question remains whether what is being disclosed is satisfactory.[5]

These observations raise the broader issue of the direct and indirect roles the adoption and implementation of standards—and the underlying transmission mechanism—play in promoting financial system stability. The issues of transmission here relate to the questions of: (i) how reliable are the assessed standards as indicators of actual supervisory and regulatory quality, and of policy transparency, and (ii) whether satisfactory supervision and regulation, and high levels of policy transparency, are effective in reducing financial market instability. Greater clarity on these issues appears necessary because, while the goals and benefits of the adoption and implementation of standards are quite appealing, there is very little empirical evidence of the impact of observance and implementation of standards—good regulatory or transparency

---

[4] See Financial Stability Forum (2000a).

[5] See Financial Stability Forum (2000b); section II contains a further discussion of the survey.

practices, well-designed systems of risk management, etc.—on financial stability and financial development.[6]

Against this background, the paper attempts to examine the relationship between standards and financial system stability; for this purpose, the paper examines the information content of standards assessments, that is, whether the observance of standards, while clearly helping to identify gaps in the regulatory or transparency framework, also helps to determine or predict risks and stability of the financial (banking) system. Some empirical evidence is provided to address this question in the case of the Basel Core Principles.

The paper is organized as follows: section II examines the types and scope of financial system standards and analyzes the possible channels through which they could influence stability and growth. Section III discusses the case of the Basel Core Principles (BCP) and the methodology of conducting assessments and examines the manner in which compliance with the Core Principles, together with other factors, influences risks in the financial system. Section IV presents some preliminary work done on the empirical relation between the BCP assessments and soundness indicators as a basis for sharpening our perspective on the roles and uses of such assessments. Section V offers concluding remarks.

II. Standards, Stability, and Growth

A. Definition of Standards

Standards relevant for sound financial systems set out what are **widely accepted** as core principles, good practices, or guidelines in a given segment of the financial system (central banking, banking, security markets, insurance and payment systems) and cover specific functional aspects of the system (transparency, accounting, regulation and supervision, etc.). Standards should be **objective, robust, and relatively free of national biases** in order to gain wide acceptance and provide a basis for assessing and comparing the soundness of financial systems across countries.[7] In practice, however, the specificity in the formulation of standards that is needed to ensure objective assessments and cross-country comparability may not capture

---

[6] Acharya (2000) emphasizes that a host of structural and macro factors, in addition to international financial standards, are important for crisis prevention and notes that "from the vantage point of crisis prevention, excessive preoccupation with improving financial standards could detract from adequate attention to other policy factors which are possibly at least as important as financial standards in explaining such crises."

[7] For arguments for setting and monitoring a comprehensive set of international banking standards, see Goldstein (1997) and Eichengreen (1999). See Clark and Drage (2000) for a survey of recent developments in the area of standards and codes for financial stability, including a discussion of various ways of classifying standards by type.

the variety of country-specific circumstances. Therefore, to ensure wide acceptance, standards and codes are often formulated in fairly general terms in the form of core principles and broad guidelines. Country-specific assessment of observance of standards involves considerable judgment and needs to be interpreted carefully, especially as regards cross-country comparison of observance of standards. Therefore, standard-setting bodies often issue additional guidance in the form of supporting documents, compendiums of practices, and assessment methodologies that provide specific details on the range of good practices in order to facilitate implementation and assessment. Such guidance is now available for the BCP, IAIS and IOSCO core principles, and the MFP Transparency Code.

B. Types of Standards

Financial system standards can be classified into two groups: (1) **transparency and disclosure standards** and (2) **regulatory and system design standards** (see Box 2). The rationale for this categorization is that the role and transmission mechanism of transparency standards seem to be quite distinct from those of regulatory and system design standards, the latter having a direct bearing on policy conduct while the former affects policy effectiveness indirectly through market discipline and good governance. Although some standards combine **both** the transparency and regulatory elements (e.g., the BCP comprise specific core principles dealing with disclosure norms for supervised institutions), the suggested classification reflects the primary focus of the standard, that is, strengthening systems and regulations versus strengthening transparency and accountability. This distinction is useful in analyzing the impact of adherence to standards on the ultimate objectives such as policy effectiveness, stability, and growth.

Box 2. A Classification of Key Standards for Sound Financial Systems

Transparency and Disclosure

- Code of Good Practices on Transparency in Monetary and Financial Policies (IMF)
- Code of Good Practices in Fiscal Transparency (IMF)
- Special Data Dissemination Standard/General Data Dissemination System (IMF)
- International Accounting Standards (IASC)
- International Standards on Auditing (IFAC)

Regulatory and System Design

- Principles and Guidelines on Insolvency Regimes (World Bank, United Nations Commission on International Trade Law)
- Principles of Corporate Governance (OECD)
- Core Principles for Effective Banking Supervision (BCBS)
- Objectives and Principles of Securities Regulation (IOSCO)
- Insurance Supervisory Principles (IAIS)
- Core Principles of Systemically Important Payment Systems (CPSS)
- The Forty Recommendations of the Financial Action Task Force on Money Laundering (FATF)

Source: Financial Stability Forum

Transparency standards

The objectives of transparency and disclosure standards are to foster better policies and promote policy effectiveness and good governance. Good practices on transparency in monetary and financial policies can bring about these benefits, for instance, by reducing market uncertainty about future policies and clarifying the rationale for policies, thereby shaping market expectations about inflation, fostering accountability, and providing assurances of integrity. Transparency and disclosure standards for markets, for the supervised institutions, and for their counterparties can facilitate informed lending and investment decisions and foster stronger market discipline.

Good transparency by itself cannot bring about sound underlying policies, although transparency of policies, policy framework, and data can promote the adoption of sound policies and sound risk management systems, thus providing an indirect spur to sound policies. Moreover, the use of transparency as an operational complement of monetary and financial policies also has wider benefits—better-informed markets and greater scope for building policy consensus—thereby sustaining the momentum for policy reforms.

The extent to which good transparency practices contribute to better policies, greater effectiveness of policies, and system stability is in the end an empirical question, depending primarily on the content and scope of transparency in relation to the level of development

of markets and not merely on the form and timeliness of transparency. There is, however, some evidence of the impact of good transparency practices on the effectiveness and credibility of monetary policy; but the work on the impact of observance of transparency standards in the financial policy area on the effectiveness of financial policy is still in its early stages.[8] [9]

Regulatory and system design standards—links to growth and stability

The relationship between implementation of international financial system standards and economic growth derives from the role of standards in promoting an orderly process of financial sector liberalization and reforms within a framework of financial stability, and the impact of such sound financial development on economic growth. At various stages of financial sector development, different sets of standards and different components of each standard would need to be given priority in implementation, and the role of standards would also vary in the course of financial reforms. For example, the IOSCO core principles of security market regulation have a limited role as an instrument of stability and market integrity in the initial stages where markets for risky securities are underdeveloped or even nonexistent, but the same standards would still provide valuable guidance in designing legal and regulatory reforms to promote security market development. In the early stages of market development, other standards such as the IMF/World Bank guidelines on public debt management, or Basel Core Principles of Banking Supervision would have greater relevance from both stability and development points of views. Moreover, steady implementation of certain standards—accounting, transparency and disclosure insolvency regimes, and corporate governance—during the course of reforms can help build adequate infrastructure for financial system development, sustain momentum for policy reforms, promote external finance and its efficient allocation, and thereby promote economic growth.[10] Also, the relative importance of different elements within each standard and the relative priorities among various standards would evolve overtime depending upon the specific sequencing of financial sector reforms—particularly monetary and exchange system

---

[8] See references on transparency and accountability by central banks and financial agencies in Muller and Zelmer (1999), and Tarkka and Mayes (1999). See also Rogoff (2000), who notes that while increased transparency would help to achieve more efficient global markets, bank runs and country runs can still happen even in a totally transparent system, as long as banks have maturity and currency mismatches.

[9] The term "financial policies" refers to policies related to the regulation, supervision and oversight of the financial and payment systems, including markets and institutions, with a view to promoting financial stability, market efficiency, and client-asset and consumer protection. See IMF (2000a) http://www.imf.org/external/np/mae/mft/index.htm

[10] The impact of financial development on growth operating through its impact on the role of external finance in funding investments is analyzed in Rajan and Zingales (1998). The role of standards in monetary and financial policy transparency in sustaining the momentum of financial sector reforms is described in Sundararajan, Das, and Yossifov (2001).

reforms—and the pace of development of markets and openness to capital flows that ensue. For example, implementation of the BCP would have to be sequenced consistently with other components of monetary and exchange system reforms, since different elements of the BCP would become important in different stages of implementation of these reforms in order to ensure stability.[11] Similar consideration of appropriate sequencing of implementation would apply also to other regulatory and system design standards. For monetary and financial policy transparency, the costs and benefits of transparency can evolve in the course of financial sector reforms, requiring appropriate adjustments in the scope and content of transparency as financial markets develop.[12]

Adoption of good regulatory policies, sound market microstructures, and robust payment and settlement systems is clearly desirable for sound and stable financial systems; and the uniform adoption of standards across countries can also create a level playing field, promote efficiency, and facilitate mobility of capital. Moreover, with capital mobility, harmonization of standards across countries can prevent circumvention of prudential regulation through for example jurisdictions and offshore centers with differing—and sometimes—lax regulatory standards, thereby supporting global stability.

However, given the multitude of factors affecting stability and soundness, to what extent does adherence to regulatory and system design standards contribute to reducing risks in practice? A related question is whether information on adherence to regulatory/design standards adds value in assessing risks to the financial system and its stability. If yes, making available such information to the markets—so that markets can incorporate the information into their risk assessments—can provide market-related incentives for countries to adopt standards; but this raises complex questions on the timing and scope of such disclosure to the markets, and the related question of the costs and benefits of transparency in particular macroeconomic circumstances.

In this regard, the Financial Stability Forum's Follow-up Group on Incentives to Foster Implementation of Standards reviewed the possible role of market incentives, as well as official incentives, to promote implementation of standards.[13] The Follow-up Group conducted a survey of market participants on the extent to which information on the economy's observance of standards is used in their risk assessments and in pricing and credit allocation decisions. This survey revealed the limited awareness of participants of the availability of such information and the limited use of such information. Market participants noted that the relationship between

---

[11] The appropriate sequencing of prudential supervision of banks—i.e., sequencing the implementation of the BCP—in support of monetary and exchange system liberalization is discussed in Johnston and Sundararajan (1999).

[12] See IMF (2000b). http://www.imf.org/external/np/mae/mft/sup/index.htm

[13] See Financial Stability Forum (2000b).

standards observance and risk was not well established, with some being skeptical about whether observance of standards affects the underlying risk incurred in lending to a country. Market participants also tended to place more emphasis on efficient and sound legal and accounting infrastructures and on direct indicators of soundness, rather than on observance of standards, as a means of promoting a sound financial system, with regulatory or supervisory risks being overshadowed in practice by other risks, such as political risk.[14] In the light of these observations by market participants, the Follow-up Group suggested that the FSF "should encourage the IFIs, standard-setting bodies, and national authorities to better demonstrate how information on observance of standards can help provide insights on the risk factors in which market participants are most interested...[they should] undertake and publicise analytical work aimed at: (a) showing how standards were developed in recent years as a means to help reduce vulnerabilities and risks; and (b) assessing the links between non-observance of standards and financial sector vulnerability, default risk, and other relevant risks."[15]

The relationship between adherence to standards and financial stability is complex owing to the multitude of factors affecting risk exposures and contagion. Adherence to regulatory and system design standards, together with market discipline and internal governance, is expected to contain risk exposures of financial institutions and markets, promote a level playing field, and bring about systemic stability by minimizing moral hazard risks and prospects for contagion. However, risk exposures and vulnerabilities of financial institutions also depend upon several other factors, such as macroeconomic stability, quality of public debt and reserve management, market volatility, financial structure of nonfinancial firms, level of market discipline, quality of internal governance, and robustness of financial infrastructure (such as accounting, loan recovery and collateral security procedures, bankruptcy and restructuring arrangements, and reliability of the court system). For example, lack of compliance with elements of standards may not, by itself, pose significant risks in certain situations owing to the state of development of markets, a low level of market volatility, and limited vulnerabilities from macroeconomic sources. In other cases, full compliance with existing standards could be of limited value because financial innovations, market developments, and macroeconomic shocks could render the existing standards to be of little use, particularly when the standards themselves might need updating. The considerations that link standards with stability are illustrated in Figure 1.

---

[14] Interestingly, market participants seem to place much emphasis on sovereign liability management—for which guidelines are being prepared by Fund and Bank staff—as an important policy tool, and to take into account country practices in this area in judging creditworthiness. See "Emerging Markets Performed Strongly in 2000, Could Face Bumpy Though Rewarding Ride in 2001," 2001, *IMF Survey*, February 5, pp. 37, 40, and 41.

[15] Financial Stability Forum (2000b).

A key empirical question addressed in this illustrative scheme is whether adherence to regulatory standards contributes to soundness and stability of the financial system, given that there are other factors that affect stability. A second question is how one should take into account these other factors in order to provide a realistic assessment and interpretation of adherence to standards in a country. These questions are further discussed in the next section for the case of the BCP. There, some empirical evidence on the link between compliance with the BCP and measures of stability is presented to highlight the value of assessments of compliance with the these Principles as an indicator of risks and stability in the financial system.

Figure 1. Role of Regulatory Standards in Financial Stability

		Standards Observance 1/	
		LOW	**HIGH**
Risk Exposure of Financial Institutions 2/	**HIGH**	**Unstable** (e.g., many emerging markets)	**Currently stable** (Potential sources of instability need watching—e.g., some advanced market economies
	LOW	**Currently stable** (Potentially unstable—repressed pre-reform situations)	**Stable**

1/ Adherence to specified technical criteria for prudential regulation and supervision.
2/ Macro stability; public debt management; market volatility; internal governance; market discipline; corporate financial structure, legal environment, etc.

Recent debates on whether systems of prudential regulation amplify financial and economic cycles have a direct bearing on the issue of linkages between observance of standards and overall financial stability. Inasmuch as system-wide risks and overall financial stability depend upon a host of factors, including the state of economic cycles, prudential standards—which are focused on micro-prudential risk management—could be adjusted to offset the impact on risks of economic cycles, terms of trade effects, and other factors. Some observers have pointed out that simultaneous pursuit of common prudential standards by countries and institutions could by itself affect aggregate credit and output and accentuate economic cycles, an effect that reflects a "fallacy of composition."[16] In addition, proposals for counter-cyclical adjustments in prudential norms recognize the multitude of factors affecting system-wide risks that could vary over time. Of note is the inability of internal governance and market discipline to anticipate and offset risks, and hence the suggestion for public sector intervention in the form of adjustments in capital ratios and loan-loss provisioning standards

[16] See White (2000).

over time through supervisory reviews of individual banks or across-the-board adjustments.[17] However, the question of adjusting prudential regulation to achieve macroeconomic objectives poses a host of practical problems; it also raises a more fundamental issue of whether, under such circumstances, one can meaningfully talk of internationally accepted prudential standards as an anchor to foster harmonization of standards across countries and promote convergence toward commonly agreed norms. Furthermore, insofar as the convergence toward uniform prudential standards causes a destabilizing effect in the aggregate, that would call for offsetting policy actions, raising a complex issue that requires further empirical and analytical consideration.

III. Purpose and Methodology of Assessments—The Case of the Basel Core Principles

All regulatory/design standards are expressed in rather general terms—in the form of generally accepted core principles—so as to elicit wide international recognition. The 25 Core Principles (CP) that constitute the internationally accepted standards for effective banking supervision are summarized in Box 3. In practice, the assessment of adherence to these core principles is typically done by checking compliance with specified technical criteria developed by standard-setting bodies. These criteria and related assessment procedures are contained in **"The Core Principles Methodology."**

"The Core Principles Methodology" specifies a set of "essential criteria" for each CP, and called for all CP assessments to be based on these criteria which are derived largely from sound practices described in various BCBS documents. While the methodology allows a CP to be observed through different means, in order to achieve full compliance, the essential criteria generally must be met without any significant deficiencies. However, due to specific conditions in a country, the essential criteria may not be sufficient, and additional criteria also may have to be met to achieve full compliance. **"The Core Principles Methodology"** notes that "the additional criteria cover elements that further strengthen supervision and are recommended for improved financial stability and effective supervision."

"The Core Principles Methodology" also suggests a grading scheme for assessing compliance with an individual CP. The assessment uses four grades: (1) compliant, implying full compliance or only insignificant shortcomings; (2) largely compliant, where only minor shortcomings are observed, and which do not raise doubts about the authority's ability to achieve the objectives of the principle; (3) materially noncompliant, where the shortcomings raise doubts about the ability to achieve compliance, but substantive progress has been made in rectifying the deficiencies; and (4) noncompliant, when, in the judgment of the assessors, no substantive progress toward compliance has been achieved.

---

[17] Crockett (2000) and Commission Bancaire (2001).

Box 3. The 25 Core Principles

Preconditions for effective banking supervision

CP 1 deals with the legal framework for supervision; the powers, skills, resources and independence of the supervisory agency; the legal protection for supervisors; and rules for access to bank information, information sharing between supervisors and protection of secrecy.

Licensing and structure

CP 2 deals with permissible activities of banks.
CP 3 deals with licensing criteria and the licensing process.
CP 4 requires supervisors to review, and have the power to reject, all significant transfers of ownership in banks.
CP 5 requires supervisors to review major acquisitions and investments by banks.

Prudential regulations and requirements

CP 6 deals with minimum capital adequacy requirements. For internationally active banks, these must not be less stringent than those in the Basel Capital Accord.
CP 7 deals with the granting and managing of loans and the making of investments.
CP 8 sets out requirements for evaluating asset quality, and the adequacy of loan loss provisions and reserves.
CP 9 sets out rules for identifying and limiting concentrations of exposures to single borrowers, or to groups of related borrowers.
CP 10 sets out rules for lending to connect or related parties.
CP 11 requires banks to have policies for identifying and managing country and transfer risks.
CP 12 requires banks to have systems to measure, monitor and control market risks.
CP 13 requires banks to have systems to measure, monitor and control all other material risks.
CP 14 requires banks to have adequate internal control systems.
CP 15 sets out rules for the prevention of fraud and money laundering.

Methods of ongoing supervision

CP 16 defines the overall framework for on-site and off-site supervision.
CP 17 requires supervisors to have regular contacts with bank management and staff, and to fully understand banks' operations.
CP 18 sets out the requirements for off-site supervision.
CP 19 requires supervisors to conduct on-site examinations, or to use external auditors for validation of supervisory information.
CP 20 requires the conduct of consolidated supervision.

Information requirements

CP 21 requires banks to maintain adequate records reflecting the true condition of the bank, and to publish audited financial statements.

Remedial measures and exit

CP 22 requires the supervisor to have, and promptly apply, adequate remedial measures for banks when they do not meet prudential requirements, or are otherwise threatened.

Cross-border banking

CP 23 requires supervisors to apply global consolidated supervision over internationally active banks.
CP 24 requires supervisors to establish contact and information exchange with other supervisors involved in international operations, such as host country authorities.
CP 25 requires that local operations of foreign banks are conducted to standards similar to required of local banks, and that the supervisor has the power to share information with the home country supervisory authority.

This assessment of adherence to the technical criteria—**technical compliance assessment**—can help identify gaps in regulatory practices and guide the needed technical reforms. Table 1 indicates the summary of the results of CP assessments for a group of 37 countries, including 12 countries in the FSAP pilot. The results indicate that the primary areas of weak compliance have been in CP 25 (money laundering); CPs 11, 12, 13 and 14 (market and other risks and internal controls); CP 20 (consolidated supervision), CP 22 (remedial measures) and CP 7 (credit policies). See Table 1, which lists the CPs with high percentages of noncompliance.

Technical compliance assessments based on essential and additional criteria require that the assessor form a view of the typical risk profile of banks and judge the extent to which supervisors adapt their specific instruments and procedures to ensure that banks' policies, practices and systems are adequate to the risk profile and that risks are managed prudently. Information on noncompliance could imply potential risks and exposures building up in the system, point to risk areas that need to be further examined, and provide a basis for identifying reform needs and technical assistance. For example, when relevant prompt corrective action is not taken, relatively minor bank problems may grow into systemic crises. Also, when there are shortcomings in the identification and management of risks, vulnerabilities may build up in the banking system, unless prompt countermeasures are taken. Similarly, when internal control systems—both of a bank's normal activities and for the avoidance of fraud and money laundering—are weak, problems may develop in banks without being detected. Also, when supervision is not carried out on a fully consolidated basis, difficulties or losses in affiliates can cause serious problems for the bank.

Table 1. Core Principles with a High Degree of Noncompliance in the Sample

Core Principle	Noncompliance in percent
15. Money laundering	70
11. Country risk	69
13. Other risks (liquidity, operational, risk management system	65
20. Consolidated supervision	58
12. Market risks	57
14. Internal control	54
22. Remedial measures	54
7. Credit policies	46
6. Capital adequacy	43
18. Off-site supervision	42

The materiality and significance of noncompliance with a CP will also depend upon the underlying risks in a particular country's circumstances. If these risks are not significant, then noncompliance may not be an immediate problem, although it has the potential to exacerbate risk when circumstances change. For example, noncompliance with the core principle (11) relating to country risk may not be immediately material in countries where banks have minimal exposures to foreign countries. Similarly, noncompliance with CP 20 on consolidated supervision would be more serious where a financial system is integrated and liberalized than where it is segregated and with little or no cross-sectoral ownership or financial flows.[18]

"Preconditions for Effective Banking Supervision" of the BCP notes that Banking supervision is only part of wider arrangements that are needed to promote stability in financial markets. These arrangements include:

- sound and sustainable macro-economic policies;
- a well-developed public infrastructure—including (i) a system of business laws including corporate, bankruptcy, contract, consumer protection and private property laws; (ii) comprehensive and well-defined accounting principles and rules that command wide international acceptance; (iii) a system of independent audits; (iv) effective banking supervision; (v) well-defined rules governing, and adequate supervision of, other financial markets; and (vi) a secure and efficient payment and clearing system.
- effective market discipline;
- procedures for efficient resolution of problems in banks; and
- mechanisms for providing an appropriate level of systemic protection (or public safety net).[19]

Addressing the deficiencies in these general preconditions is particularly important for stability. Weak accounting rules (especially lack of adequate loan loss provisioning rules and procedures), inefficient judicial and legal systems, or inadequately-skilled auditors may imply that vulnerabilities are less likely to be identified in time, or are not forcefully addressed, even when formal regulations and rules may be in place. For example, weaknesses in accounting,

---

[18] This sense of materiality of compliance is also evident in the Basel Committee's guidance note on self-assessments (Basel Committee, 2001). In this document, countries with limited resources are encouraged to consider a phased self-assessment of a judicious selection of essential core principles, given the particular circumstances/risks of the country.

[19] See *Core Principles for Effective Banking Supervision*, Section II. See also Caprio and Honohan (1999) for a discussion of why strengthening the technical quality of bank regulations, supervisory system and related incentives alone may not be enough in many country circumstances to ensure appropriate banking strategy and eliminate the need for more far-reaching reforms.

loan valuation and other practices may raise serious questions about the adequacy of bank capital, regardless of how rigorously capital is defined, and how high reported capital ratios are. In addition, weak market discipline and underdeveloped markets sometimes reflect the dominant role of government in directing and processing credit, and can constrain the scope and conduct of supervision.

In addition, the risk profile of a banking system is not static and could rapidly evolve due to institutional reforms, innovation, macroeconomic developments, external shocks, and this would affect the significance of regulatory standards. The significance and materiality of compliance and noncompliance with CPs could change in line with the scope and pace of financial reforms and innovation, and the impact on risk exposures of changes in macroeconomic and financial environment. As a result, priorities for the implementation of core principles could change, and a need for additional measures—including, when appropriate, the need to exceed the standards or design new standards—could arise. These dynamic environmental factors, which affect the risks and vulnerabilities in the financial system and their likely evolution, should be examined in interpreting the technical assessments of standards and judging the contribution of standards observance to overall stability. Such broader **stability-oriented assessment of standards**—which takes into account, in addition to technical compliance, other sources of risks and vulnerabilities, institutional preconditions, and sectoral interlinkages, is illustrated in Figure 1 and Box 4.

Such a comprehensive approach to standards assessment is a key aspect of the FSAP/FSSA exercise: assessments of vulnerabilities and risks on the one hand and of standards implementation on the other are combined to formulate an overall stability assessment. This process presents information on standards in an appropriately broader context, thereby helping interpret the standards observance from the perspective of its contribution to stability. A recent review of experience with BCP assessments, prepared by Fund staff, confirmed the proposition that there are advantages in conducting these assessments in a broader context that takes into account institutional precondition and other circumstances affecting risks and vulnerabilities. Thus, a distinction should be made between technical compliance assessments that focus mainly on technical criteria and gaps in practices, procedures, and regulations, and stability-oriented assessments of standards, which take into account a broader range of factors affecting risks and stability, as illustrated in Box 4.

Box 4. Types and Purposes of Standards Assessments

- Technical Compliance Assessment (TCA)
  - Adherence to essential and technical criteria
  - Identification of gaps in regulatory practices and reform needs
- Stability-Oriented Assessment
  - Adherence to essential and technical criteria
  - Institutional preconditions
  - Sectoral linkages
  - Vulnerabilities and risks that help identify materiality of compliance and reform priorities
  - Analysis of the extent to which standards observance contribute to stability

IV. Information Content of BCP Assessments—Does Compliance Indicate Stability?

This section presents a preliminary empirical examination of the nature of the relationship between the level of technical compliance with BCP and measures of financial system stability and soundness. The transmission from standard compliance to stability is complex, involving for example, issues of lags between institutional changes, actual practice and eventual effect on performance; the interaction between the complementary preconditions for effective supervision and compliance with other core principles; and the impact of other macroeconomic variables and institutional factors affecting financial stability and how these interact with the regulatory factors. Moreover, while compliance with some core principles (such as introducing risk management systems) could be expected to have a near-term impact on stability, the effect of compliance with others relating, for example, to information disclosure is likely to be more indirect and the impact on market discipline and soundness would only occur with some lag. Keeping in mind these considerations, the exercise below seeks to distill some stylized relationships—both direct and indirect—between regulatory compliance and soundness and to test their robustness empirically.

A *BCP noncompliance indicator* (BCP) was constructed, based on the **Core Principle Assessments (CPA)** undertaken for 35 countries in 1999–2000 by the Fund and the Bank using the latest assessment methodology, of which 12 countries were covered under the FSAP, and the remaining 23 under various Bank operations and under Fund TA.[20] The index of

[20] The countries included were Albania, Algeria, Bahrain, Brazil, Bulgaria, Cameroon, Canada, Colombia, El Salvador, Estonia, Ghana, Guinea, Hungary, India, Indonesia, Iran, Ireland, Kazakhstan, Kenya, Kuwait, Latvia, Lebanon, Macedonia, Madagascar, Mauritius, Moldova, Morocco, Nepal, Nigeria, Philippines, Romania, South Africa, Turkey, Ukraine, and Yemen.

noncompliance is based on a detailed examination of individual practices, drawing on the referenced assessments, where each of the CPs was rated according to the four-grade scale of compliance recommended by "The Core Principles Methodology." The index is constructed as an unweighted aggregation of the number of CPs for which a country was assessed as being either materially noncompliant or noncompliant, vis-à-vis all 25 CPs and their subparts. The CPA rating, ranging from 0 to15, was based on the number of principles for which a country was materially noncompliant or noncompliant, with a higher number indicating greater noncompliance.

Correlation coefficients and their statistical significance are presented in Table 2 and Figures 2 and 3 for a group of indicators representing BCP noncompliance, credit risk and bank soundness, macro stability, and banking developments.[21] Banking soundness and credit risk are measured respectively by the spread on the local currency–denominated lending rate in relation to a short-term, risk-free rate (SPREAD), representing system-wide risk premia, and by the ratio of nonperforming loans to aggregate loans of the banking sector (NPLLOAN). Macroeconomic stability indicators included real GDP per capita (GDP), changes in real or nominal real effective exchange rate (REER or NEER) and real risk-free lending rate (REALRF); banking development indicators included the ratio of broad money (M2) to GDP (M2GDP), liquid asset ratios (LIQUID), and growth in nominal or real loan (LOANGR or REALOANGR). The definitions of these variables—used in the correlation and regression analysis—are presented in Box 5.

The observed correlations suggest that the credit risk and banking soundness indicators have significant association with selected macroeconomic and banking indicators but not with BCP compliance. More specific observations are as follows:

The measure of banking soundness (SPREAD) is significantly correlated with macro factors, such as changes in the real effective exchange rate (REER), and also shows some weak but sizable association with banking indicators representing financial depth (M2GDP) and bank liquidity (LIQUID). The signs of the correlation coefficients seem plausible. For example, a larger appreciation of the real exchange rate is associated with higher credit risk/lower soundness, possibly through detrimental competitive effects on the traded goods sector.

---

[21] Correlations were computed based on data for the 35 countries for which BCP assessments were completed in 1999–2000 by the Bank and the Fund. Correlation results were broadly similar when the outlier data for two high-income countries in the sample (Canada, Ireland) were excluded.

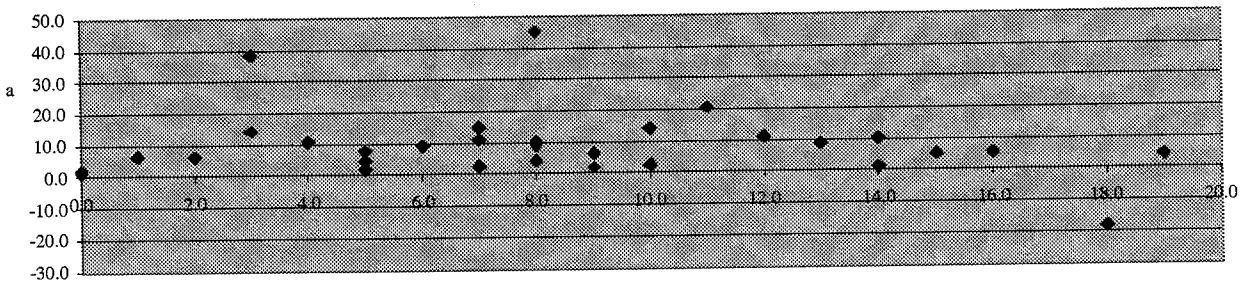
Table 2. Correlations Between Bank Soundness Indicators, Technical Compliance, and Macro-Soundness Factors

	NPLLOAN	GDP	M2GDP	BCP	REER	NEER	LIQUID	REALRF	LOAN GR	REAL LOANGR
SPREAD	-0.04	-0.11	-0.25	-0.23	0.44	-0.14	-0.28	-0.05	0.21	0.01
p-value	(0.84)	(0.56)	(0.17)	(0.21)	(0.01)***	(0.43)	(0.12)	(0.80)	(0.26)	(0.97)
Obs	28	31	32	32	32	32	32	32	30	30
NPLLOAN		-0.32	-0.02	0.04	0.25	-0.01	0.35	0.13	0.23	-0.26
p-value		(0.09)*	(0.91)	((0.83)	(0.19)	(0.97)	(0.05)***	(0.52)	(0.23)	(0.18)
Obs.		29	30	30	30	30	30	28	29	29
BCP	0.04	-0.54	-0.11		0.01	0.03	0.25	0.21	-0.17	-0.10
p-value	(0.83)	(0.00)***	(0.52)		(0.97)	(0.84)	(0.39)	(0.26)	(0.34)	(0.57)
Obs.	30	34	35		35	35	35	32	33	33

Source: Staff estimate
* Significant at 10 percent level.
** Significant at 5 percent level.
*** Significant at 1 percent level.

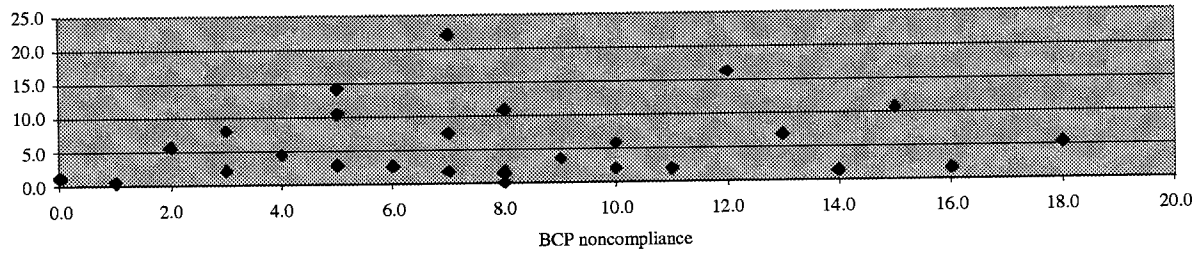
Figure 2. Financial Soundness and BCP Noncompliance

SPREAD and BCP Noncompliance - No Significant Correlation with Short-Run SPREAD



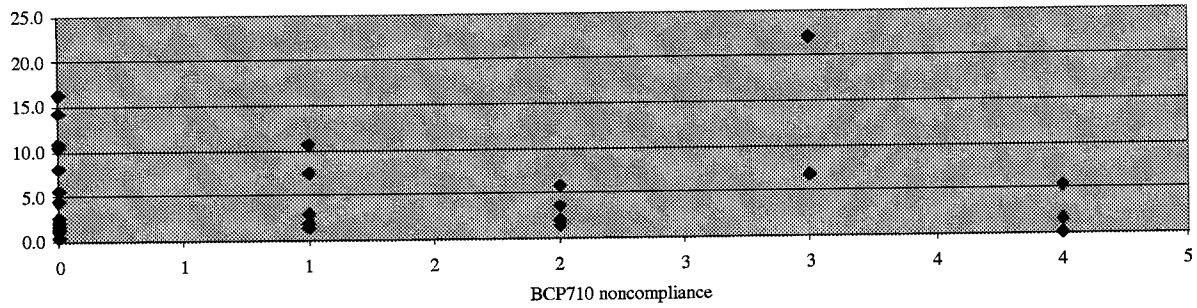
Source: IFS and MAE staff estimates

NPLLOAN and BCP: No Significnat Correlation



Source: Bankscope and MAE staff estimates

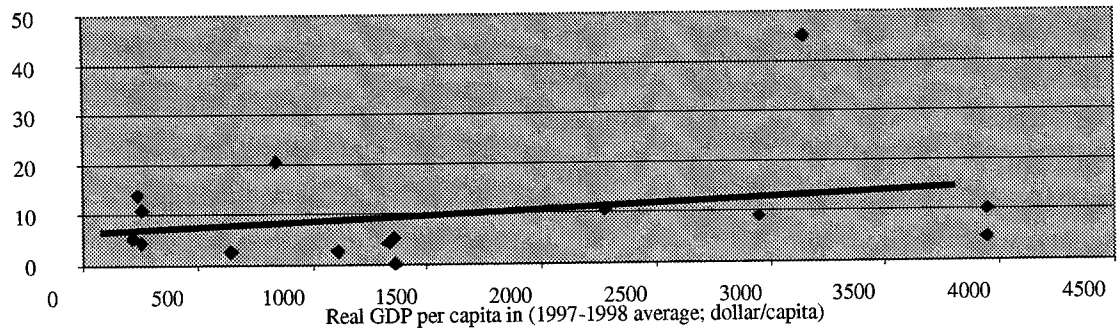
NPLLOAN and BCP Noncompliance - No Significant Relationship Exists



Source: Bankscope and MAE staff estimate

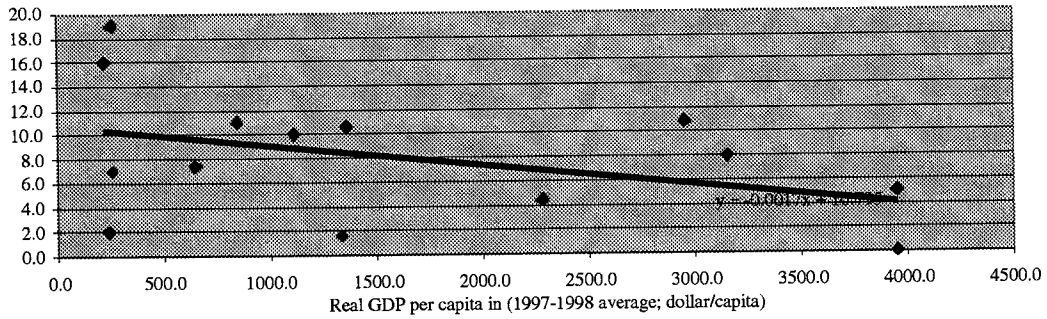
Figure 3. Correlation: Macro Factor with Soundness and BCP

SPREAD and GDP



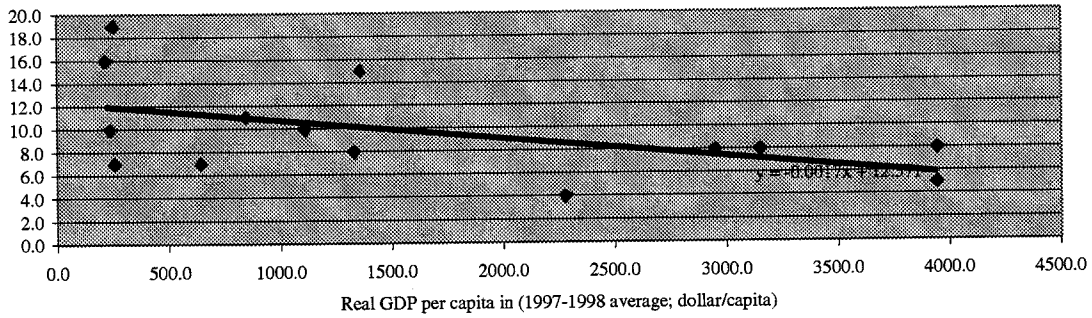
Source: IFS and MAE staff. estimates

NPLLOAN and GDP: Significant Negative Correlation



Sourse: Bankscope, IFS and MAE Staff Estimate.

BCP and GDP: Significant Negative Correlation



Source: IFS and MAE Staff Estimate.

Box 5: Empirical Analysis: Variable Definitions

Variables representing financial market soundness/risk

- **SPREAD: Short-run (less than a year) local currency–denominated lending rate spread** measured over the corresponding risk-free rate. Source: IFS.
- **NPLLOAN: ratio of nonperforming loans to aggregate loans of the banking sector** — for the aggregated banking sector—1997–1998 average data. Source: Bankscope and FSAPs.

Variables representing macro factors

- **GDP: real GDP per capita** — 1997–1998 average in constant U.S. dollars/**M2GDP: ratio of broad money to GDP**—1997–1998 average reflecting overall size and degree of financial sector development, likely to enhance banking soundness/reduce SPREAD/NPLLOAN. Source: IFS.
- **REER: appreciation of real effective exchange rate**—average change in the real effective exchange rate over the 1996–1998 period: likely to hinder ability to pay/soundness through detrimental effects on trade account and increase SPREAD/NPLLOAN. Source: IFSINS.
- **NEER: appreciation of nominal effective exchange rate**—average change in nominal effective exchange rate over the 1996–1998 period: likely to enhance ability to pay/soundness, particularly through positive wealth effects on foreign debt and reduce SPREAD/NPLLOAN. Source IFSINS.

Variables capturing banking sector development

- **M2GDP: ratio of broad money to GDP**—1997–1998 average reflecting overall size and degree of financial sector development, likely to enhance banking soundness/reduce SPREAD/NPLLOAN. Source: IFS.
- **REALOANGR/ LOANGR: real/nominal loan growth** based on 1997–1998 average data (in U.S. dollars for LOANGR calculations) for deposit money banks. This variable was used to control for business cycle developments. Increase in loan growth is likely to increase SPREAD/NPL. However, it could potentially increase loans faster than NPL thereby leading to a reduction in NPLLOAN. Source Bankscope, IFS, staff estimates.
- **LIQUID: ratio of liquid asset to customer and short term funding**—1997–1998 average: a prudential measure of liquidity, likely to reduce overall market risk premium thereby reducing SPREAD. However it is likely to coexist positively with NPLLOAN as observed in the correlation analysis. Source: Bankscope.
- **REALRF: real risk-free factor**—1997–1998 average: nominal risk-free lending rate purged of inflation rate. This variable is likely to capture both market liquidity and real debt burden/ability to pay. For this reason the sign on this coefficient is ambiguous a priori; the regression analysis will reveal if the debt burden measure prevails, indicated by a positive coefficient. Source: Staff estimate based on Bankscope and IFS data.

Variables representing institutional factors

- **BCP: noncompliance with Basel Core principles.** The index is constructed as an unweighted aggregation of the number of CPs that a country were assessed as being either materially noncompliant or noncompliant, vis-à-vis the overall 25 CPs and subparts. The CPA rating, ranging from 0 to 15, was based on the number of principles for which countries were materially noncompliant or noncompliant with a higher number indicating greater noncompliance. Source: IMF and World Bank.

- **The measure of credit risk—the ratio of nonperforming loans to total loans (NPLLOAN)—shows a significant negative association with real per capita (GDP), and a significant positive association with bank liquidity;** the latter possibly indicates a substitution from risky loan assets to less risky liquid assets in countries where NPL is higher. Other macro and banking variables have only weak and insignificant association with bank soundness. Interestingly, NPLLOAN ratio, which is a lagging indicator of soundness, shows a negligible correlation with lending rate spread, which could be interpreted as a contemporaneous indicator.

- **BCP noncompliance has a significantly negative correlation with real per capita GDP, but shows no significant association with credit risk and bank soundness.** Moreover, the negative correlation between BCP noncompliance and bank soundness indicators—although insignificant statistically—is counterintuitive.

While the correlation analysis is informative, and signs of coefficients seem generally plausible, the lack of significant association between BCP noncompliance and bank soundness or credit risk indicators, and the wrong sign of these correlations is inconsistent with the widely held belief that noncompliance with good supervisory practices would weaken bank soundness. In order to examine this linkage more closely, a regression analysis was performed to test whether BCP noncompliance indicators have a direct or indirect impact on credit risk and soundness when allowance is made for other factors affecting soundness and risk.

For this purpose, the following regression equation is postulated for estimation and testing:

$$\text{NPLLOAN or SPREAD} = \alpha + \text{DUMMY} + \beta_1\,\text{BCP} + \beta_2\,\text{BCP*X} + \beta_3\,\text{GDP/M2GDP} + \beta_4\,\text{REER} + \beta_5\,\text{NEER} + \beta_6\,\text{REALRF} + \beta_7\,\text{LOANGR/REALOANGR} + \beta_8\,\text{LIQUID} + \beta_9\,\text{DUMMY} + \text{error term} \quad (1)$$

Where expected signs of the coefficients are likely to be as follows: $\beta_1>0$, $\beta_4>0$ and $\beta_3<0$, $\beta_5<0$; signs on β_2, β_6, β_7 & β_8 are ambiguous

The equation states that credit risk or bank soundness is likely to depend upon the level of economic financial development, factors representing macro stability and developments in the banking sector that could affect the level of risks, and institutional factors (such as the extent of compliance with Basel Core Principles) that indicate how well risks are managed.

The dependent variable in the equation corresponds to the two measures of financial sector soundness described above. While the nonperforming loan ratio provides a credit risk–related measure of soundness, the spread measure captures overall banking soundness. Furthermore, significant difficulties remain in obtaining data on NPL that are comparable across countries owing to the differences in loan classification rules, accounting norms, and supervisory practices among countries. Two sets of regression equations—with NPLLOAN and SPREAD as the dependent variables, respectively—were estimated and allowed for fairly robust inferences about determinants of bank soundness, notwithstanding issues regarding data deficiencies, to be drawn. It should be noted, however, that the results are based on OLS specifications and can perhaps be investigated further with simultaneous equation/instrumental variable specifications.

In the above specification, the DUMMY variable assumes a value of unity for the two high-income countries (Canada and Ireland) and zero otherwise in order to allow for a possible shift in intercept and thereby account for the outlier values for the soundness indicators. The soundness and credit risk indicators are also likely to be influenced by the stage of the business cycle of the countries in the sample.[22] However, by using two-year averages for these variables (see Box 5), the business cycle effects can largely be ignored in the cross-country regressions.

Both direct and indirect effects of BCP noncompliance were tested. The indirect effect of BCP noncompliance is captured by including an interactive term, BCP*X, in the equation, where X stands for one of the right-hand variables influencing credit risk and soundness indicators. This interactive term allows for the possibility that BCP noncompliance may influence the marginal effect of other variables on risk and soundness, in addition to any direct effect. For example, a high degree of regulatory compliance (low BCP noncompliance) can reduce the size of the interactive regression coefficient of loan growth in the equation, thereby reducing the size of the adverse impact of an increase in loan growth on soundness.

Estimated regression equations for NPLLOAN ratio as the dependent variable are presented in Tables 3 and 4, and for SPREAD in Tables 5 and 6. Separate equations were estimated for nominal loan growth (Tables 3 and 5) and for real loan growth (Tables 4 and 6), respectively, as explanatory variables. The main findings are as follows:

- The overall goodness of fit is generally stronger for the estimated equations for NPLLOAN (Tables 3 and 4). The regression results confirm that real exchange rate appreciation (REER)—possibly through detrimental trade balance effects—and high real risk-free rates—due to higher real debt burden—increases credit risk consistently across all regression specifications; liquidity risk (LIQUID) seems to be positively and significantly associated with credit risk (Models 2a, 3a, 3b, 3c), thereby supporting the hypothesis that high NPLLOAN ratios are likely to coexist with high values of LIQUID, since the latter possibly indicates a prudential liquidity measure and/or asset switching from risky to less risky liquid assets.

[22] The default rates on loans, and the transition from one credit rating to another are highly sensitive to the state of the business cycle. See some evidence for the United States in Treacy and Carey (1998).

Table 3. Determinants of Bank Soundness (NPLLOAN), Nominal Loan Growth

	GDP	DUMMY	LOANGR	LIQUID	NEER	REER	REALRF	BCP	BCP* LOANGR	Constant	ADJ-R^2
Model 1	-0.001	13.66	0.04	0.07	-0.08	0.47	3.58	0.19	-0.01	-0.76	
P-Value	(0.16)	(0.17)	(0.55)	(0.11)	(0.46)	(0.01) ***	(0.05) **	(0.54)	(0.16)	(0.87)	0.35
Observation											26
Model 1a	-0.001	12.79	-0.05	0.07	-0.10	0.42	2.95	-0.06		2.96	
P-Value	(0.15)	(0.21)	(0.22)	(0.16)	(0.39)	(0.01) ***	(0.10) *	(0.82)		(0.45)	0.31
Observation											26
Model 2	-0.001	13.00		0.07	-0.07	0.46	3.11	0.12	-0.01	0.75	
P-Value	(0.16)	(0.18)		(0.11)	(0.51)	(0.01) ***	(0.05) *	(0.67)	(0.07) *	(0.84)	0.38
Observation											26
Model 2a	-0.001	12.89		0.08	-0.04	0.25	2.55	-0.11		2.16	
P-Value	(0.16)	(0.23)		(0.09) *	(0.55)	(0.08) *	(0.07) *	(0.68)		(0.60)	0.19
Observation											27
Model 3	-9.51e-05		0.03	0.09	-0.05	0.45	3.12	0.24	-0.01	-2.63	
P-Value	(0.68)		(0.67)	(0.05) *	(0.63)	(0.01) ***	(0.08) *	(0.44)	(0.19)	(0.56)	0.31
Observation											26
Model 3a	-0.000		-0.05	0.08	-0.07	0.41	2.56	0.01		1.00	
P-Value	(0.44)		(0.17)	(0.07)*	(0.54)	(0.02)**	(0.15)	(0.98)		(0.78)	0.28
Observation											26
Model 3b	-0.000			0.10	-0.03	0.24	2.37	-0.05		0.03	
P-Value	(0.45)			(0.04)**	(0.66)	(0.09)*	(0.09)*	(0.84)		(0.99)	0.17
Observation											27
Model 3C	-0.000			0.09	-0.05	0.45	2.79	0.19	-0.01	-1.44	
P-Value	0.62			(0.05)**	(0.66)	(0.01)***	(0.08)*	(0.50)	(0.06)*	(0.68)	0.34
Observation											26
Model 3 1/	-0.001		0.05	0.08	-0.08	0.47	3.63	0.20	-0.01	-1.10	
P-Value	(0.20)		(0.55)	(0.13)	(0.48)	(0.01)***	(0.06)*	(0.54)	(0.1 8)	(0.83)	0.33
Observation											24
Model 3a 1/	-0.001		-0.05	0.06	-0.09	0.42	2.90	-0.06		3.32	
P-Value	(0.15)		(0.21)	(0.20)	(0.42)	(0.01)***	(0.11)	(0.82)		(0.43)	0.29
Observation											24

Source: Staff Estimate

1/ Model excludes outliers, Canada and Ireland.

* Significant at 10 percent level.

** Significant at 5 percent level.

*** Significant at 1 percent level.

Table 4. Determinants of Bank Soundness (NPLLOAN): Real Loan Growth Specification

	GDP	DUMMY	REAL LOANGR	LIQUID	NEER	REER	REALRF	BCP	BCP*REAL LOANGR	Constant	ADJ-R^2
Model 1	-0.001	13.36	0.04	0.07	-0.10	0.40	3.26	0.18	-0.01	0.16	
P-Value	(0.15)	(0.19)	(0.65)	(0.13)	(0.40)	(0.02)**	(0.05)**	(0.59)	(0.24)	(0.97)	0.32
Observation											26
Model 1a	-0.001	13.26	-0.05	0.06	-0.09	0.37	3.69	-0.07		2.55	
P-Value	(0.14)	(0.20)	(0.25)	(0.18)	(0.41)	(0.02)**	(0.03)**	(0.80)		(0.52)	0.30
Observation											26
Model 2	-0.001	13.12		0.07	-0.08	0.39	3.35	0.11	-0.01	1.04	
P-Value	(0.15)	(0.19)		(0.13)	(0.44)	(0.01)***	(0.04)**	(0.70)	(0.11)	(0.78)	0.35
Observation											26
Model 2a	-0.001	12.89		0.08	-0.04	0.25	2.55	-0.11		2.16	
P-Value	(0.16)	(0.23)		(0.09) *	(0.55)	(0.08) *	(0.07) *	(0.68)		(0.60)	0.19
Observation											27
Model 3	-0.000		0.03	0.09	-0.06	0.38	2.96	0.24	-0.01	-1.95	
P-Value	(0.56)		(0.70)	(0.06)*	(0.54)	(0.02)**	(0.07)*	(0.47)	(0.25)	(0.64)	0.29
Observation											26
Model 3a	-0.000		-0.05	0.08	-0.07	0.35	3.39	0.00		0.44	
P-Value	(0.43)		(0.21)	(0.08)*	(0.55)	(0.03)**	(0.04)**	(0.99)		(0.90)	0.27
Observation											26
Model 3b	-0.000			0.10	-0.03	0.24	2.37	-0.05		0.03	
P-Value	(0.45)			(0.04)**	(0.66)	(0.09)*	(0.09)*	(0.84)		(0.99)	0.17
Observation											27
Model 3c	-0.000			0.09	-0.06	0.37	3.03	0.19	-0.01	-1.16	
P-Value	(0.53)			(0.06)*	(0.59)	(0.02)**	(0.06)*	(0.53)	(0.10)*	(0.74)	0.32
Observation											26
Model 3 1/	-0.001		0.05	0.07	-0.10	0.40	3.24	0.20	-0.01	-0.20	
P-Value	(0.20)		(0.64)	(0.15)	(0.41)	(0.02)**	(0.06)*	(0.58)	(0.27)	(0.97)	0.30
Observation											24
Model 3a 1/	-0.001		-0.05	0.06	-0.09	0.37	3.68	-0.07		2.94	
P-Value	(0.13)		(0.24)	(0.23)	(0.44)	(0.03)**	(0.03)**	(0.80)		(0.48)	0.28
Observation											24

Source: Staff Estimate

1/ Model excludes outliers, Canada and Ireland.

* Significant at 10 percent level.

** Significant at 5 percent level.

*** Significant at 1 percent level.

Table 5. Determinant of Bank Soundness (Log SPREAD): Nominal Loan Growth Specification

	GDP (In logs)	DUMMY	LOANGR	LIQUID (In logs)	NEER	REER	REALRF (In logs)	BCP	BCP * LOANGR	Constant	ADJ-R^2
Model 1	-0.21	-1.34	0.01	-0.26	-0.02	0.03	4.32	-0.04	8.41E-05	-0.44	
P-Value	(0.21)	(0.07) *	(0.49)	(0.25)	(0.21)	(0.39)	(0.12)	(0.41)	(0.93)	(0.82)	0.32
Observation											27
Model 1a	-0.21	-1.33	0.01	-0.26	-0.02	0.02	4.39	-0.03		-0.48	
P-Value	(0.20)	(0.06) *	(0.04) **	(0.24)	(0.17)	(0.37)	(0.09) *	(0.31)		(0.79)	0.36
Observation											27
Model 2	-0.22	-1.46		-0.29	-0.02	0.03	3.51	-0.06	0.0008	-0.12	
P-Value	(0.20)	(0.04) **		(0.23)	(0.28)	(0.31)	(0.15)	(0.11)	(0.05) **	(0.95)	0.34
Observation											27
Model 2a	-0.16	-1.58		-0.23	-0.01	0.03	3.10	-0.04		-0.67	
P-Value	(0.36)	(0.03) **		(0.33)	(0.29)	(0.21)	(0.14)	(0.22)		(0.72)	0.35
Observation											29
Model 3	-0.34		0.02	-0.29	-0.03	0.03	5.51	-0.01	-0.0003	0.09	
P-Value	(0.05) **		(0.28)	(0.24)	(0.18)	(0.37)	(0.06) *	(0.81)	(0.79)	(0.97)	0.22
Observation											27
Model 3a	-0.35		0.01	-0.29	-0.03	0.03	5.30	-0.02		0.25	
P-Value	(0.04) **		(0.03) **	(0.22)	(0.17)	(0.32)	(0.06) *	(0.60)		(0.89)	0.25
Observation											27
Model 3b	-0.31			-0.26	-0.01	0.04	3.87	-0.03		0.21	
P-Value	(0.08) *			(0.31)	(0.35)	(0.16)	(0.09) *	(0.49)		(0.91)	0.23
Observation											29
Model 3c	-0.36			-0.30	-0.02	0.03	4.29	-0.04	0.0008	0.73	
P-Value	(0.04) **			(0.22)	(0.32)	(0.26)	(0.11)	(0.27)	(0.05) **	(0.70)	0.21
Observation											27
Model 3 1/	-0.24		0.01	-0.32	-0.02	0.03	3.73	-0.05	0.0004	0.08	
P-Value	(0.19)		(0.78)	(0.21)	(0.30)	(0.39)	(0.22)	(0.35)	(0.72)	(0.98)	0.11
Observation											25
Model 3a 1/	-0.23		0.01	-0.30	-0.02	0.02	4.19	-0.03		-0.25	
P-Value	(0.19)		(0.05) **	(0.22)	(0.20)	(0.40)	(0.12)	(0.35)		(0.89)	0.15
Observation											25

Source: Staff Estimate

1/ Model excludes outliers, Canada and Ireland.

* Significant at 10 percent level.

** Significant at 5 percent level.

*** Significant at 1 percent level.

.

Table 6. Determinant of Bank Soundness (Log SPREAD); Real Loan Growth Specification

	GDP (In logs)	Dummy	REAL LOANGR	LIQUID (In logs)	NEER	REER	REALRF (In logs)	BCP	BCP * REAL LOANGR	Constant	ADJ-R^2
Model 1	-0.21	-1.44	0.002	-0.27	-0.02	0.03	3.38	-0.05	0.0006	-0.27	0.28
P-Value	(0.24)	(0.06) *	(0.89)	(0.26)	(0.34)	(0.25)	(0.21)	(0.26)	(0.56)	(0.89)	
Observation											27
Model 1a	-0.20	-1.42	0.01	-0.26	-0.02	0.03	3.67	-0.04		-0.53	
P-Value	(0.24)	(0.05) **	(0.09) *	(0.26)	(0.22)	(0.25)	(0.16)	(0.32)		(0.77)	0.30
Observation											27
Model 2	-0.21	-1.45		-0.27	-0.02	0.03	3.27	-0.05	0.0008	0.20	
P-Value	(0.23)	(0.05) *		(0.24)	(0.30)	(0.24)	(0.19)	(0.13)	(0.07) *	(0.91)	0.31
Observation											27
Model 2a	-0.16	-1.58		-0.23	-0.01	0.03	3.10	-0.04		-0.67	
P-Value	(0.36)	(0.03) **		(0.33)	(0.29)	(0.21)	(0.14)	(0.22)		(0.72)	0.35
Observation											29
Model 3	-0.35		0.01	-0.30	-0.02	0.04	4.28	-0.03	-0.0005	0.48	
P-Value	(0.05) **		(0.77)	(0.24)	(0.33)	(0.21)	(0.14)	(0.51)	(0.64)	(0.81)	0.15
Observation											27
Model 3a -	-0.34		0.01	-0.29	-0.02	0.04	4.52	-0.02		0.25	
P-Value	(0.05) **		(0.07) *	(0.24)	(0.23)	(0.21)	(0.10)	(0.63)		(0.90)	0.18
Observation											27
Model 3b	-0.31			-0.26	-0.01	0.04	3.87	-0.03		0.21	
P-Value	(0.08) *			(0.31)	(0.35)	(0.16)	(0.09) *	(0.49)		(0.91)	0.23
Observation											29
Model 3c	-0.35			-0.30	-0.02	0.04	4.04	-0.04	0.0008	0.63	
P-Value	(0.05) **			(0.23)	(0.32)	(0.20)	(0.13)	(0.30)	(0.07) *	(0.74)	0.19
Observation											27
Model 3 1/	-0.25		-0.01	-0.37	-0.01	0.03	2.55	-0.06	0.001	0.63	
P-Value	(0.18)		(0.67)	(0.17)	(0.55)	(0.29)	(0.36)	(0.18)	(0.32)	(0.77)	0.08
Observation											25
Model 3a 1/	-0.21		0.01	-0.30	-0.02	0.03	3.48	-0.03		-0.29	
P-Value	(0.23)		(0.12)	(0.24)	(0.26)	(0.29)	(0.20)	(0.35)		(0.88)	0.08
Observation											25

Source: Staff Estimate

1/ Model excludes outliers, Canada and Ireland.

* Significant at 10 percent level.

** Significant at 5 percent level.

*** Significant at 1 percent level.

- Although the results indicate that BCP noncompliance has no direct effect on NPLLOAN ratio, one could infer from the regression coefficient for the interactive term that higher BCP noncompliance results in higher NPL by accentuating the marginal effect on credit risks associated with low loan growth (Models 2 and 3c in Tables 3 and 4).

The results from the NPLLOAN regressions should be interpreted with caution because of data deficiencies mentioned above. We address this problem by analyzing a SPREAD model of banking soundness. Results from this regression—as reported below—seem to complement the credit risk/NPLLOAN analysis. As before, the SPREAD analysis reveals that macro and banking factors are the most significant determinants of banking soundness, with BCP noncompliance playing an indirect role. More specifically:

- Macroeconomic indicators (real GDP per capita) and debt burden (REALRF) measures appear to have a statistically significant impact on lending rate spreads (SPREAD), with higher levels of income and real risk-free debt leading to lower/higher spreads respectively (see Models 1a, 3, 3a, 3b, 3c; Tables 5 and 6). Also, the results indicate that higher loan growth leads to higher spreads, implying detrimental credit effects of rapid loan growth (Models 1a, 3a; Tables 5, 6).

- BCP noncompliance does not have a significant direct impact on spreads in any of the regression equations.

- However, there is some evidence that BCP noncompliance affects the lending rate spreads indirectly by influencing interactively the marginal impact of loan growth on spread. This is seen from the statistical significance of the interaction terms—products of BCP and loan growth—in several regressions (Models 2 and 3c in Tables 5 and 6).

- This suggests that higher BCP noncompliance amplifies the detrimental effect of an increase in loan growth on credit risk.

In summary, macroeconomic factors and certain prudential indicators in banking seem to be the significant factors influencing credit risk and bank soundness, while BCP noncompliance does not seem to have any direct effect on credit risk and soundness in the near term; however, BCP noncompliance could influence credit risk and soundness indirectly through its interaction with other macroeconomic and banking factors.

V. Concluding Remarks

While observance and implementation of standards are widely believed to benefit national and global financial stability, the relationship between observance of standards and near-term financial stability is complex; and the transmission mechanism from standards implementation to overall stability differs according to type of standard. In particular, a

distinction between transparency and disclosure standards on one hand and regulatory and system design standards on the other is crucial to understanding the nature of transmission mechanisms and, hence, their appropriate use in risk analysis through self- and independent assessments.

Available regulatory and system design standards (and some transparency and disclosure standards as well) tend to be formulated in rather general terms in the form of broadly applicable core principles and good practices in order to gain wide international acceptance. However, the specificity of practices in each standard that are needed to increase the consistency and objectivity of assessments and enable cross-country comparisons is found in the assessments methodologies, which are still at various stages of development.

A preliminary analysis of the results of Bank-Fund assessments of Basel Core Principles—based on "The Core Principles Methodology"—was undertaken in order to examine empirically the linkage between measures of compliance with Basel Core Principles and indicators of credit risk and bank soundness. It was found that while macroeconomic and banking development indicators (real GDP per capita, real exchange rate appreciation, real interest rate, liquidity and others) seem to account for some of the cross-country variation in credit risk and soundness, there is no discernible direct association between the extent of compliance with BCP and indicators of credit risk and soundness. Nevertheless, there is some evidence that BCP compliance influences soundness and risk taking indirectly through its interactive effect on other macro or banking variables affecting soundness and credit risk.

The finding that BCP compliance needs to be interpreted in terms of its interaction with other variables affecting risk and soundness has operational implications. In particular, this finding would reinforce the argument presented in section III for distinguishing between technical compliance assessment and stability-oriented assessment, so that the types of assessments of standards reflect the purpose of the assessments. The technical compliance assessments that identify the level of compliance with technical criteria help to highlight gaps in regulatory practices and are likely to be useful for formulating reform plans and current and prospective development needs in the areas covered by the standards. However, such technical assessments by themselves may not be indicative of the level of risks or near-term prospects for stability. A more comprehensive stability-oriented assessment of relevant standards is needed for a proper analysis of risks and stability. Such an assessment would take into account other macro economic, banking, and institutional circumstances affecting risks and stability—in addition to information on compliance with technical criteria—and would interpret the materiality and significance of standards assessments in the light of this additional information and in particular, judge the extent to which observance of standards helps address the risks in the system. Such comprehensive assessments, however, are resource-intensive; hence considerable care would be needed in determining the purpose of assessment and in setting priorities on which standard to assess in view of the purposes.

REFERENCES

Acharya, Shankar N., 2000, "New International Standards for Financial Stability: Desirable Regulatory Reform or a Runaway Juggernaut," prepared for the Commonwealth Secretariat (unpublished).

Basel Committee on Banking Supervision, 2001, "Conducting a Supervisor Self-Assessment—Practical Application," Basel Committee Publications No. 81 (April) (Basel: Bank for International Settlements). Available on the BIS website, www.bis.org .

_____,1999, "The Core Principles Methodology," Basel Committee Publications No. 61 (October) (Basel: Bank for International Settlements). Available on the BIS website, www.bis.org .

_____, 1997, "Core Principles for Effective Banking Supervision," Basel Committee Publications No. 30 (September) (Basel: Bank for International Settlements). Available on the BIS website, www.bis.org .

Caprio, Gerard, and Patrick Honohan, 1999, "Restoring Banking Stability: Beyond Supervised Capital Requirements," *Journal of Economic Perspectives*, Vol. 13 (Fall), No. 4, pp. 43–6.

Clark, Alastair, and John Drage, 2000, "International Standards and Codes," *Financial Stability Review* (Bank of England), Issue 9, pp. 162–168 (December).

Commission Bancaire, 2001, "A Stabilizing Proposal: Dynamic Provisioning" (April 26) (Paris: Banque de France, Commission Bancaire Secretariat General).

Crockett, Andrew, 2000, "Marrying the Micro- and Macro-Prudential Dimensions of Financial Stability," remarks before the eleventh International Conference of Banking Supervisors, BIS/FSF, Basel, Switzerland (September).

Eichengreen, Barry J., 1999, *Toward a New International Financial Architecture: A Practical Post-Asia Agenda* (Washington: Institute for International Economics).

"Emerging Markets Performed Strongly in 2000, Could Face Bumpy Though Rewarding Ride in 2001," 2001, *IMF Survey*, February 5, pp. 37, 40, and 41.

Financial Stability Forum, 2000a, "Issues Paper of the Task Force on Implementation of Standards" (March 15). Available on the FSF website, fsforum.org.

_____, 2000b, "Report of the Follow-Up Group on Incentives to Foster Implementation of Standards" (August 31). Available on the FSF website, fsforum.org.

Goldstein, Morris, 1997, "The Case for an International Banking Standards," *International Economics 47* (Washington: Institute for International Economics).

International Monetary Fund, 2001a, "IMF Reviews Experience with the Financial Sector Assessment Program (FSAP) and Reaches Conclusions on Issues Going Forward," Public Information Notice No. 01/11 (February 5). http://www.imf.org/external/np/sec/pn/2001/pn0111.htm

_____, 2001b, "Assessing the Implementation of Standards—An IMF Review of Experience and Next Steps," Public Information Notice No. 01/17 (March 5). http://www.imf.org/external/np/sec/pn/2001/PN0117.htm.

_____, 2000a, *Code of Good Practices on Transparency in Monetary and Financial Policies* (last updated August 3, 2000). http://www.imf.org/external/standards/index.htm.

_____, 2000b, *Supporting Document to the Code of Good Practices on Transparency in Monetary and Financial Policies* (July 24). http://www.imf.org/external/np/mae/mft/sup/index.htm.

Johnston, R. Barry, and V. Sundararajan, eds., 1999, *Sequencing Financial Sector Reforms: Country Experiences and Issues* (Washington: International Monetary Fund).

Muller, Philippe, and Mark Zelmer, 1999, "Greater Transparency in Monetary Policy: Impact on Financial Markets," Bank of Canada Technical Report No. 86 (August). Available on the Bank of Canada website, www.bankofcanada.ca.

"Outreach Efforts on Standards and Codes Stress Consultation and Inclusiveness," 2000, *IMF Survey*, August 14, pp. 257, 264, and 265.

Rajan, Raghuram, and Luigi Zingales, 1998, "Financial Dependence and Growth," *American Economic Review*, Vol. 88 (June), No. 3, pp. 559–86.

Rogoff, Kenneth, 1999, "International Institutions for Reducing Global Financial Instability," *The Journal of Economic Perspectives*, Vol. 13 (Fall), No. 4, pp. 21–42.

Sundararajan, V., Udaibir Das, and Plamen Yossifov, 2001, "Transparency of Monetary and Financial Policies: Issues Relating to Measuring Transparency and Its Relevance to Financial Sector Reform," forthcoming IMF Working Paper (Washington: International Monetary Fund).

Tarkka, Juha, and David Mayes, 1999, "The Value of Publishing Official Central Bank Forecasts," Bank of Finland Discussion Paper No. 22/99 (December), pp. 1–37. Available on the Bank of Finland website, www.bof.fi.

Treacy, William F., and Mark S. Carey, 1998, "Credit Risk Rating at Large U.S. Banks." *Federal Reserve Bulletin*, The Federal Reserve Board, Washington D.C. (November). Available at http://www.federalreserve.gov/pubs/bulletin/1998/98index.htm.

White, William R., 2000, "What We Have Learned From Recent Financial Crises and Policy Responses?" BIS Working Papers No. 84 (January). Available at http://www.bis.org/publ/works84.htm.