Setting Up Financial System Stability Function: Challenges & Opportunities

World Bank / International Monetary Fund / Federal Reserve System
Seminar for Senior Bank Supervisors from Emerging Economies

Martin Čihák (IMF)

Views expressed here do not necessarily represent those of the IMF, the World Bank, or the Federal Reserve System.
Setting up financial stability function: overview

1. Conceptual issues
2. Tools
3. Governance
4. Communication
5. Conclusions
What is financial stability?

- High-level vs. operational definition
- Wide vs. narrow definition
- Negative vs. positive definition
Example 1: negative definition

- Financial stability is the absence of financial instability
  - Market failure or externalities in financial system
  - Substantial enough to threaten with aggregate economic activity

- Consequences:
  - Undesirable outcomes of market imperfections: excess leverage, inadequate risk management, financial panics
  - Accompanied by long-lasting distortions
Example 2: positive definition

- A supportive environment in which the financial system facilitates a relatively efficient allocation of resources
  - Allowing households to engage in optimal consumption and savings decisions
  - Promoting investment in most-productive activities
  - Redistributing risks efficiently across households and business enterprises
Financial stability and other policy goals

- Macroeconomic: stability, development
- Macro-prudential: financial stability
- Other financial: deepening, inclusion, effectiveness
- Micro-prudential: safety and soundness
Financial stability dimensions

**Macroeconomic Conditions**
- Monetary policy
- Debt structure
- Exchange regime
- Economic growth

**Regulatory and Supervisory Conditions**
- Regulatory framework
- Supervisory efficacy
- Contingency planning and management

**Market and Infrastructure Conditions**
- Money, FX, and securities markets
- Payment and settlement systems
- Accounting and auditing
- Legal framework
Framework for financial stability analysis

1. Overall assessment of financial stability
2. Development needs assessment
3. Formulation of a coordinated reform program
Setting up financial stability function

1. Conceptual issues
2. Tools
3. Governance
4. Communication
5. Conclusions
**Tools: list**

- **IMF Financial Stability and Macroprudential Policy Survey (2010)**
  - Caps on loan-to-value ratio
  - Limits on maturity mismatch
  - Caps on debt-to-income ratio
  - Reserve requirements
  - Caps on foreign currency lending
  - Countercyclical capital requirements
  - Ceilings on credit or credit growth
  - Time-varying/dynamic provisioning
  - Limits on net open currency positions/currency mismatch
  - Restrictions on profit distribution

  - Balance sheet tools
  - Tools that influence terms and conditions on new lending
  - Market structure tools
Tools: list
Tools: discussion

• **Single**: use when risk is well-defined from a single source
• **Multiple**: do not overdo; avoid imposing costs that are too high

• **Broad-based**: if granular data not available, risks generalized
• **Targeted**: supplement with broader measures as needed to limit the scope for circumvention; avoid excessive complexity

Source: WP/11/238
Tools: discussion

• **Fixed**: adjust parameters if needed with changing circumstances
• **Time-varying**: design sound and transparent principles governing the adjustments

• **Rules**: when risk of inaction is high, risk management and supervision capacity is weak
• **Discretion**: do not overdo; use when have deep structural changes and rapidly evolving risks

• Simplicity vs. complexity
• Symptoms vs. underlying issues (incentives)

Source: WP/11/238
Tools: coordination with other policies

- Establish mechanisms to resolve conflict
- Assign clear accountability
- Assign clear governance arrangements

Source: WP/11/238
Setting up financial stability function

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Governance: recent data may seem paradoxical

- EU countries are only 14% of WB/IMF member countries but they account for 65% of banking crises in 2008-2012. At the same time, they have above-average governance.

Note: The (supervisory) governance ratings reflect supervisory independence and accountability.
What do regressions for 142 countries tell us?

- New World Bank survey on bank regulation and supervision
  - probit regressions: regulation in crisis vs. non-crisis countries

- Crisis hit countries: weak regulation and supervision practices...
  - More complex, less stringent measures of minimum capital (broader, reliance on banks’ own risk assessment); also somewhat lower actual levels of capital
  - Less strict regulatory treatment of bad loans and loan losses
  - Banks faced fewer restrictions on non-bank activities

- … and weak incentives for private sector to monitor risks
  - E.g., generous deposit protection coverage
  - Unclear whether incentives for market discipline improved after the crisis; scope for improving disclosures and monitoring incentives

Governance issues

- Emerging consensus: supervision needs to be more intrusive, proactive, risk-based, and result-oriented

- Requires improving incentive structures for supervisors, so that the capture traps are avoided (clearer mandate, more independence and accountability, more and higher skilled professionals with better compensation)

- However, by nature of supervisory work, the contract between the supervisor and society is incomplete, given the range of contingencies that can occur. It is thus challenging to define and implement supervisory governance arrangements in a way that every possibility of political, industry and other capture can be eliminated.

- So, the first best solution—defining the governance arrangements to address all incentive issues—has its limitations.
Governance issues: discussion

- Possible solution (IMF SDN 13/05, IMF WP 11/261)

- Two well-defined “pillars”, one in charge of macroprudential supervision and one in charge of microprudential supervision

- If the pillars are institutionally separated, a system of checks and balances to reduce the opportunities for political, industry and self-capture.
Institutional framework: selected “desirables”…

General

1. Central bank should play an important role in macroprudential policymaking.
2. Complex and fragmented regulatory structures should be avoided.
3. Participation of the treasury in the policy process is useful, but a leading role poses risks.

Effective identification, analysis, and monitoring of systemic risk

7. Mechanisms for effective sharing of information to assess risks should be in place.
8. At least one institution involved in assessing systemic risk should have access to all relevant information. It should be the one that disposes of the best expertise to assess systemic risk.
9. Mechanisms are needed to challenge dominant views of one institution.

Source: IMF Staff Discussion Note “Institutional Models for Macroprudential Policy” (SDN/11/18)
Institutional frameworks in practice

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Institutional frameworks in practice

Source: IMF Staff Discussion Note “Institutional Models for Macroprudential Policy” (SDN/11/18)
## Stylized models for macroprudential policy

<table>
<thead>
<tr>
<th>Features of the model/Model</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
<th>Model R 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Degree of institutional integration of central bank and supervisory agencies</td>
<td>Full (at a central bank)</td>
<td>Partial</td>
<td>Partial</td>
<td>Partial</td>
<td>No</td>
<td>No (Partial*)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>2. Ownership of macroprudential policy mandate</td>
<td>Central bank</td>
<td>Committee “related” to central bank</td>
<td>Independent committee</td>
<td>Central bank</td>
<td>Multiple agencies</td>
<td>Multiple agencies</td>
<td>Committee (multinational; regional)</td>
<td></td>
</tr>
<tr>
<td>3. Role of MOF/treasury/government</td>
<td>No (Active*)</td>
<td>Passive</td>
<td>Active</td>
<td>No</td>
<td>Passive</td>
<td>Active</td>
<td>No (Active*)</td>
<td>Passive (European Commission; Economic and Financial Committee)</td>
</tr>
<tr>
<td>4. Separation of policy decisions and control over instruments</td>
<td>No</td>
<td>In some areas</td>
<td>Yes</td>
<td>In some areas</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>5. Existence of separate body coordinating across policies</td>
<td>No</td>
<td>No</td>
<td>No (Yes*)</td>
<td>No</td>
<td>Yes</td>
<td>Yes (de facto**)</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Examples of specific model countries/regions</td>
<td>Czech Republic/Ireland (new)</td>
<td>Malaysia/Taiwan/Thailand/United Kingdom (new)</td>
<td>Brazil/France (new)/United States (new)</td>
<td>Belgium (new)/The Netherlands/Armenia</td>
<td>Australia</td>
<td>Canada/Chile/Hong Kong/SAR*</td>
<td>Korea**/Lebanon/Mexico</td>
<td>Iceland/Peru/Switzerland/EU (ESRB)</td>
</tr>
</tbody>
</table>

Source: IMF Staff Discussion Note “Institutional Models for Macroprudential Policy” (SDN/11/18)
Stylized roles of micro- and macroprudential policies towards systemic risk in advanced economies

<table>
<thead>
<tr>
<th>Model I: Australian Model</th>
<th>Model II: EU/US Model</th>
<th>Model III: UK Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systemic risk identification and analysis</td>
<td>Macroprudential</td>
<td>Macroprudential</td>
</tr>
<tr>
<td>Action request to limit systemic risk</td>
<td>Microprudential</td>
<td>Macroprudential</td>
</tr>
<tr>
<td>Tools control/activation to limit systemic risk</td>
<td>Microprudential</td>
<td>Microprudential</td>
</tr>
</tbody>
</table>

Source: IMF Staff Discussion Note “Macroprudential and Microprudential Policies: Toward Cohabitation” (SDN/13/05)
Another proposal: incentive audits

Incentive breakdowns: key role in crisis run-up

- Bank managers’ incentives to boost short-term profits and create banks that are “too big to fail”
- Regulators’ incentives to forebear and withhold information from other regulators in stressful times
- Credit rating agencies’ incentives to keep issuing high ratings for subprime assets.
Incentive audits: a primer

• Basic idea: regularly and systemically evaluate structural factors affecting incentives for risk-taking in the financial sector. Re-orienting financial regulation to have at its core identifying incentive misalignments on an ongoing basis.

• Standard approaches to assessing financial stability (e.g., stress tests) provide useful insights into actual levels of risk. Incentive audits complement this by identifying distortions and frictions that contribute to the buildup of excessive risk.

• The incentive audit-based approach seeks to eliminate the risk at source.

Incentive audits: design

High level questions:
- market structure,
- government safety nets
- legal and regulatory framework

Key elements
that motivate and guide financial decision making: contract design, banking powers, banking relationships, structure of ownership and liabilities, industrial organizations, existence of guarantees, and the adequacy of safety nets.

Specific areas, including:
(i) ownership and control structures; (ii) institutional framework for oversight of; (iii) adequacy of data and disclosures on risk exposures; (iv) implicit and explicit guarantees; (v) corporate governance culture, risk management and compensation; (vi) incentive compatibility of financial regulations; and (vii) issues posed by financial innovation.
Incentive audits, while new, have precedents


- A 2,400-page, published report
- Notes the rapid growth of the Icelandic banks as a major contributor of the crisis
- Documents the underlying “strong incentives for growth”, such as the banks’ incentive schemes and high leverage of major owners.
- Maps out the network of conflicting interests of the owners who were also the banks’ largest debtors
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Communication on financial stability

“Banks are well prepared to withstand increased delinquency and loan losses, which have been extremely low to date…”
“Nowhere has it been suggested that the banking systems of individual countries should be subjected to size limitations…”


“Low probability that in 2008 existing risks might materialize to the extent that it will have an impact on bank performance…”

### Motivation: diverse country experiences during crisis

<table>
<thead>
<tr>
<th>Country</th>
<th>FSR Year(s)</th>
<th>Crisis Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>No FSR (until 2011)</td>
<td>Major crisis</td>
</tr>
<tr>
<td>Iceland</td>
<td>FSR since 2000 (2005)</td>
<td>Major crisis</td>
</tr>
<tr>
<td>Latvia</td>
<td>FSR since 2003</td>
<td>Major crisis</td>
</tr>
<tr>
<td>Canada</td>
<td>FSR since 2002</td>
<td>Little crisis impact</td>
</tr>
<tr>
<td>Australia</td>
<td>FSR since 1999</td>
<td>Little crisis impact</td>
</tr>
</tbody>
</table>
FSRs: a rapidly growing “industry”
Bank regulation and FSRs

Source: Calculations based on 2011 update of World Bank's Banking Regulation and Supervision Database. Data for 142 jurisdictions.
**Global trends reflect the evolving experience with FSRs**

- **USA**
  - US recently published its first FSR
  - Report is published by the Financial Stability Oversight Council (FSOC)
  - Central bank is represented in the publishing body, but not the sole publisher

- **Ireland**
  - Ireland ceased to publish its FSRs from 2008 onwards

- **United Kingdom**
  - Bank of England’s (BoE) FSR went through a major revamp in 2006
  - Existing elements shortened and new features added

- **France**
  - Banque de France stopped publishing its FSR in 2007
  - FSRs currently for internal use only
  - Central bank website contains a link to FSRs, but the FSRs are a collection of articles or conference materials on a featured topic

- **Israel**
  - Bank of Israel stopped issuing FSRs as a stand-alone publication in 2005
  - Financial stability issues are covered as a chapter in its annual report
Common trends observed in FSR publications

- **Coverage**
  - Coverage of issues in FSRs tends to *increase over time*

- **Market-based indicators**
  - *Increasing use* of market-based indicators such as credit-default swaps

- **Data publication**
  - *Increasing* number of central banks publishing underlying data
Other basic attributes of FSRs have not changed significantly in the last 15 years

- Several countries have switched frequency of FSR publication, but globally, the balance between annual and semi-annual frequency has remained unchanged.

FSR publication frequency:

- Average length of FSR has declined somewhat, but not significantly.
- Several countries have revamped their FSRs, but the typical report structure has not changed much.
Eight case studies of FSRs

- Eight countries selected with a view to having a reasonably balanced coverage; geographically, advanced vs. emerging markets
- Analyzed based on “good practices” proposed by Čihák (2006) – CCC framework

<table>
<thead>
<tr>
<th>Country</th>
<th>Type</th>
<th>Crisis 2008</th>
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<tr>
<td>Canada</td>
<td>Advanced</td>
<td>Minimal crisis</td>
</tr>
<tr>
<td>Iceland</td>
<td>Advanced</td>
<td>Major crisis</td>
</tr>
<tr>
<td>Latvia</td>
<td>Emerging market</td>
<td>Major crisis</td>
</tr>
<tr>
<td>Korea</td>
<td>Emerging market</td>
<td>Minimal crisis</td>
</tr>
<tr>
<td>Spain</td>
<td>Advanced</td>
<td>Crisis in 2008</td>
</tr>
<tr>
<td>Brazil</td>
<td>Emerging market</td>
<td>Minimal crisis</td>
</tr>
<tr>
<td>South Africa</td>
<td>Emerging market</td>
<td>Minimal crisis</td>
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<tr>
<td>New Zealand</td>
<td>Advanced</td>
<td>Minimal crisis in 2008</td>
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Framework introduced in Čihák (2006)

“Three Cs”

<table>
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<tr>
<th>A. Aims</th>
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<tr>
<td>E. Structure and other features</td>
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E.g.: Is it clear what data were used to arrive at the results presented in the report? (5 % weight)

Based on methodology used by Fracasso, Genberg, and Wyplosz (2003) to assess central banks' inflation reports. They showed that for inflation reports, higher 'quality' measured this way was associated with lower dispersion in inflation expectations and lower inflation, on average.
Framework introduced in Čihák (2006)

“Three Cs”

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E.g.: Is the overall assessment of financial stability presented consistently with previous reports? (5% weight)
Based on methodology used by Fracasso, Genberg, and Wyplosz (2003) to assess central banks' inflation reports. They showed that for inflation reports, higher 'quality' measured this way was associated with lower dispersion in inflation expectations and lower inflation, on average.

### Framework introduced in Čihák (2006)

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E.g.: Does the report use a wide range of tools, both quantitative (stress tests etc) and qualitative (supervisory, market participant surveys, etc.)? (5 % weight)
Report’s objective: clearly indicated
Definition of financial stability: mixed experience

Financial stability definition is typically featured at the beginning of the report.

Definition of financial stability included?

- Yes
  - Canada
  - Iceland
  - Korea
  - South Africa

- No
  - Brazil
  - Latvia
  - New Zealand
  - Spain

Aims or objectives: clearly indicated in most of the FSRs:
  - Objectives are usually presented at the beginning of the report.
  - Significant variation in FSR objectives across the reports:
    - Identify and analyze risks to the financial system.
    - Provide information for major participants in the financial industry to evaluate and manage risks.
    - Stimulate dialogue and discussions on financial stability issues.
    - Highlight efforts and policies of regulatory authorities in mitigating risks.
Less attention to analysis on contagion risks and interconnectedness in the FSRs reviewed

- **Not reported regularly** in the sample FSRs
- Some countries perform *ad-hoc* analysis depending on current macroeconomic and financial conditions:
  - Korea (Nov 2010 FSR, box article), and
  - South Africa (March 2011 FSR, working paper appendix)

- All countries’ FSRs feature a *regular assessment* of corporate sector and households
- Description of the health of household and corporate sector and impact on banks
- **No analysis or explanation** of linkages or exposures among domestic banks, except for:
  - Korea (Nov 2010 FSR, box article), and
  - South Africa (March 2011 FSR, working paper appendix)

- **No analysis** on sovereign exposures of the banking system reported in our sample FSRs
Forward looking views, assessments or projections are neither consistently nor comprehensively reported

- Bulk of analyses and discussions concentrate on current level of ratios and indicators

- FSRs reviewed seldom include statements, assessments or even survey results such as:
  - "Going forward, substantial upward pressure on real estate prices seem to still exist."
  - "...a modest increase in the aggregate rate of impairment are likely to continue into 2011."

- Nonetheless, most of the sample FSRs do provide qualitative outlook on credit risk
Four countries’ FSRs in our sample reported stress test results on a regular basis

- FSRs for Canada, Korea, Latvia and Brazil report at least one type of stress test results in each publication
- In some cases, stress tests done by other regulators: Australia Prudential Regulatory Authority (APRA) in New Zealand’s FSR, Financial Supervisory Authority (FME) in Iceland’s FSR and ECB in Spain’s FSR
Reporting of stress test results across countries (2008-2011)

Legend
For each of these questions, a response of ‘yes’ gets a value of 1, while a 0 is assigned to a ‘no’

• Assumptions: Are the assumptions to the stress tests included whenever the results of a stress test are reported?
• Graphically: Does the reporting of the stress test results include any graphical presentations, either as a diagram or in a table?
• Granular: Do the FSRs report stress test results beyond aggregated level i.e. there is some degree of granularity e.g. no. of institutions, percentage of banks?
• Methodology: Is the methodology of the stress test s explained in the FSR?
• Text: Are the results to the stress tests reported as part of regular text of the report?
FSR discussion on policies tends to extend beyond macroprudential policies

- Ideally, policy discussions (regardless of type) should be tied to impact on financial stability

- E.g. new responsibilities granted to central bank and announcement of new mandates

- E.g. measures on improving access to financing for SMEs, merger between exchanges

- Policies and measures to mitigate the impact of the global financial crisis, especially post-Lehman

- E.g. developments and progress on financial stability made at the G-20, analysis and reforms regarding the Basel II framework

Financial sector development

Monetary policy

Regulatory updates and changes

Crisis-type policies

Broad discussions

Microprudential

Macroprudential

FSRs policy discussions
Scope to improve standardization in FSR … … and to be more open about data constraints

- FSRs with standardized period of coverage also have standardized timing of release
- Most FSRs rarely caution or raise concerns on data gaps issues

![Bar chart showing the number of countries for various FSR features]

- All FSRs feature an English version
- Semi-annual publication
- Standardized period of coverage
- Standardized timing of FSR release
- Regular publication of supporting materials
- Raise concern on data gaps

<table>
<thead>
<tr>
<th>Feature</th>
<th>No. of countries</th>
</tr>
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<tbody>
<tr>
<td>All FSRs feature an English version</td>
<td>8</td>
</tr>
<tr>
<td>Semi-annual publication</td>
<td>7</td>
</tr>
<tr>
<td>Standardized period of coverage</td>
<td>5</td>
</tr>
<tr>
<td>Standardized timing of FSR release</td>
<td>4</td>
</tr>
<tr>
<td>Regular publication of supporting materials</td>
<td>4</td>
</tr>
<tr>
<td>Raise concern on data gaps</td>
<td>2</td>
</tr>
</tbody>
</table>
Empirical link between FSRs and financial stability?

- **Bank-level transparency reduces likelihood of banking problems and thus enhances financial stability**
  - Nier (2005)

- **Some evidence that FSR quality matters, but limited data. Income level and time since first publication affect FSR quality**
  - Čihák (2006)

- **Little evidence of a direct relationship between “FSR transparency” and financial stability**
  - Oosterloo et al (2007)

- **FSR communication about financial stability moves financial stock prices in the expected direction and reduces price volatility**
  - Born et al (2011)
Baseline model (probit/panel with random effects)

\[ FS_{i,t} = \beta_1 + \beta_2 FSR_{i,t} + \beta_3 MACRO_{i,t-1} + \beta_4 BANK_{i,t-1} + \beta_5 IQ_{i,t-1} + \mu_{i,t} \]

**Dependent variable:**
- Probability of a banking crisis
- Moody’s Banking Sector Financial Strength Rating
- Stock market volatility
- ICRG sovereign financial risk rating
- 1-year median banking system EDF

**Independent variables:**
- Two alternative FSR specifications:
  - FSR publication dummy
  - FSR quality index (CCC framework as in Čihák, 2006)
- MACRO: Macroeconomic controls
- BANK: Banking controls
- IQ: Institutional quality controls
Heckman model

- To address endogeneity/selection bias, a two equation model:

\[
FSR_{i,t} = \alpha_1 + \alpha_2 \text{Crisis}_{i,t-3} + \alpha_3 GDP_{i,t-1} + \alpha_4 \text{Credit} / GDP_{i,t-1} + \alpha_5 FSRN_{i,t-1} + \varepsilon_{i,t}
\]

\[
FS_{i,t} = \gamma_1 + \gamma_2 FSR_{i,t} + \gamma_3 MACRO_{i,t-1} + \gamma_4 BANK_{i,t-1} + \gamma_5 IQ_{i,t-1} + \lambda_t + \nu_{i,t}
\]

- \( FSR_{i,t} = 1 \) if country \( i \) published an FSR at time \( t \), =0 otherwise
- \( \text{Crisis}_{i,t-3} = 1 \) if country \( i \) had a banking crisis at \( t-3 \), =0 otherwise
- \( GDP_{i,t-1} \) and \( \text{Credit} / GDP_{i,t-1} \) are GDP per capita and credit over GDP at \( t-1 \)
- \( FSRN_{t-1} \) = total number of countries publishing FSRs at \( t-1 \)
- \( \lambda_t \) is the inverse of the Mills ratio (defined as the normal probability density of the prediction in the first equation, divided by the cumulative normal density).
- Meaning of the other variables same as in the baseline model
### Summary results

<table>
<thead>
<tr>
<th>Control variables:</th>
<th>Banking crisis 1/ (probit model)</th>
<th>Moody's BSFS rating 2/ (GLS panel)</th>
<th>Stock market volatility 3/ (GLS panel)</th>
<th>Sovereign risk rating 4/ (GLS panel)</th>
<th>MKMV’s EDF 5/ (GLS panel)</th>
</tr>
</thead>
<tbody>
<tr>
<td>M2 to reserves (t-1)</td>
<td>0.007*** (0.002)</td>
<td>0.026*** (0.008)</td>
<td>0.000 (0.000)</td>
<td>0.000 (0.001)</td>
<td>0.016 (0.015)</td>
</tr>
<tr>
<td>Depreciation</td>
<td>0.029** (0.012)</td>
<td>0.037* (0.020)</td>
<td>0.001 (0.001)</td>
<td>0.000 (0.001)</td>
<td>0.444*** (0.071)</td>
</tr>
<tr>
<td>Real GDP growth (t-1)</td>
<td>-0.048 (0.035)</td>
<td>-0.006 (0.078)</td>
<td>-0.001 (0.003)</td>
<td>-0.005 (0.004)</td>
<td>-0.441*** (0.216)</td>
</tr>
<tr>
<td>Growth of private credit over GDP (t-1)</td>
<td>0.823* (0.450)</td>
<td>1.988** (0.836)</td>
<td>0.053 (0.049)</td>
<td>0.083 (0.057)</td>
<td>-1.495 (4.398)</td>
</tr>
<tr>
<td>Credit-to-deposit ratio (t-1)</td>
<td>1.235*** (0.327)</td>
<td>1.524*** (0.461)</td>
<td>0.099*** (0.031)</td>
<td>0.085** (0.037)</td>
<td>2.665 (3.521)</td>
</tr>
<tr>
<td>Cost-to-income ratio (t-1)</td>
<td>1.372*** (0.455)</td>
<td>1.413* (0.722)</td>
<td>0.023 (0.034)</td>
<td>0.101** (0.046)</td>
<td>4.100 (2.984)</td>
</tr>
<tr>
<td>Governance index (t-1) 7/</td>
<td>-0.591*** (0.290)</td>
<td>-0.397 (0.408)</td>
<td>-0.156*** (0.026)</td>
<td>-0.214*** (0.033)</td>
<td>-9.340*** (2.715)</td>
</tr>
<tr>
<td>Lambda (inverse of Mills’ ratio) 8/</td>
<td>-1.200*** (0.610)</td>
<td>0.197*** (0.056)</td>
<td>-10.476*** (3.539)</td>
<td>-4.855*** (0.733)</td>
<td>-4.158*** (0.338)</td>
</tr>
</tbody>
</table>

### FSR variables:

| FSR publication dummy 9/ | -0.137 (0.282) | -0.012 (0.026) | -3.233* (1.883) | -0.182 (0.459) | 0.080 (0.123) |
| FSR composite quality rating 10/ | -1.413*** (0.496) | -0.101** (0.040) | -5.544** (2.789) | 1.468 (1.264) | 0.014 (0.178) |

| Number of observations | 822 | 194 | 195 | 104 | 356 | 100 | 565 | 194 | 158 | 98 |
| R2 | 0.44 | 0.45 | 0.64 | 0.66 | 0.14 | 0.34 | 0.03 | 0.08 | 0.17 | 0.17 |
| Model $\chi^2$ | 111.0 | 58.2 | 113.5 | 90.6 | 110.3 | 107.4 | 58.6 | 26.3 | 30.8 | 17.2 |

Note: *** $p<0.01$, ** $p<0.05$, * $p<0.1$. 

**Macroeconomic controls**

**Banking controls**

**Other controls**

**Variables of interest**
FSRs effectiveness depend on their quality

- Higher-quality reports (those that are clear, consistent, and have good coverage) are associated with more stable financial environments, even after controlling for macro, banking, and other factors.

- Publication of an FSR by itself does not have a robust empirical link to financial stability.

- Despite some improvements in recent years, FSRs still leave much to be desired in terms of clarity/coverage/consistency over time.
Setting up financial stability function

1. Conceptual issues
2. Tools
3. Governance
4. Communication
5. Conclusions
Conclusions: unfinished business

- Search for “effective policy framework for financial stability” ongoing
- Despite progress, still data issues (clarity on what are the “blind spots”)
- Need to know more on impact of policies on financial stability
- Slow progress on addressing underlying incentive issues
- Work to do on analysis of interconnectedness, forward-looking communication
Thank you

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