Identifying and Mitigating Systemic Risks: A framework for macro-prudential supervision

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Financial crisis highlighted the need to focus on systemic risk

- **Unprecedented reach of the financial crisis:**
  - The interconnectedness of financial institutions, markets and systems
  - The potential systemic risk posed by instruments, entities and markets that were either weakly regulated or fell outside the regulatory perimeter

- **Genesis of the crisis also highlighted:**
  - Rapid financial innovation that outpaced risk management and supervisory practices
  - Weaknesses in self regulation and market discipline
  - Incentives for regulatory arbitrage

- **Redesign will require**
  - A macro-prudential orientation for financial sector oversight
  - Need to focus on the sources of systemic risk.
What is macro-prudential?

• **Micro prudential** focuses on the safety and soundness of individual institutions
  – Protection of individual depositors/investors
  – Focuses on capital/liquidity/risk management compared to risks on an individual institution’s balance sheet

• **Macro prudential** focuses on the soundness and stability of the financial system
  – Protection of the financial system as a whole, to maintain flow of financial services and prevent disruptive financial crises
  – With a focus on mitigating systemic risk
What is systemic risk?

• **Negative Externalities**
  – Risks that are not internalized and can significantly impact the financial system

• **Disruption to the flow of financial services**
  – Including temporary disruptions or a sharp increase in costs of services
  – Source of disruption may be external or from within the financial system

• **Significant spillovers to the real economy**
  – Either through demand or supply of goods and services
What should be covered?

- **Financial institutions**
  - Credit intermediation, savings, risk management, payment services, supporting primary and secondary markets

- **Financial markets and instruments**
  - Funding channels, liquidity, risk management
  - Financial infrastructure for clearing and settlement, trading, pricing

- **All types of financial intermediaries or markets are potentially systemic to some extent.**
Identifying systemically important entities, markets or instruments

- Systemic importance will be graduated and not binary, reflecting the potential systemic impact
- Time varying, conditioned by the economic environment
  - Under weak economic conditions
    - Higher correlation of losses
    - Higher risks of contagion from otherwise unimportant elements
- Conditioned by the structure of the financial system
  - Robustness of other elements to withstand shocks
  - And the frameworks to deal with financial institution and market failures
- Conditioned by geographical context
  - National, regional or international
- High degree of judgment needed founded on a detailed knowledge of the financial system
Assessment Criteria

**Primary indicators** related to:

**Size** – the amount of services provided by the component
  - Important but even more so when linked with:
    - Interconnectedness;
    - Complex business models and group structures
  - Relevant in assessing clusters of institutions that may be individually small but are exposed to common risk factors.

**Lack of Substitutability** – difficulty of other components to provide the same services

**Interconnectedness** – financial distress in one institution or market raises the likelihood of distress in others through provision of funds and services, funding or confidence factors.

**Contributing Factors:**

- **Vulnerabilities:** Leverage, Liquidity and maturity mismatches, complexity
- **Institutional framework that can mitigate systemic risk**
  - Robustness of clearing and settlements and technical infrastructure to withstand failures and shocks
  - Crisis management framework and capacity to resolve failing institutions and transfer their activities quickly to other entities
Quantitative Analysis

• **Use of indicators**
  – Simpler, and draws on readily available information
  – Useful when systemic importance is relatively stable
  – Better at capturing some aspects (size) than others (substitutability, interconnectedness)
  – Less useful in capturing emerging trends or handling entities that fall outside the regulatory perimeter

• **Models**
  **Network Analysis**
  – Used to analyze the degree of interconnectedness
  – Based on a construction of a matrix of gross inter institution exposures (most often inter-bank exposures)
  – Effect of spillovers from a shock to one institution on the system can be simulated
  – Draw back is the limited availability of date on bilateral exposures and which can change rapidly

• **Portfolio models of risk based on market data**
  – Used to identify common risk factors or to track how distress in one institution may affect others
  – Advantage -- based on publicly available information, but market perceptions vary greatly between normal and crisis times

• **Stress testing and scenario analysis**
  -- Help to address the state-contingent nature of systemic importance
Network Analysis: A Diagrammatic Representation of Systemic Interbank Exposures

Trigger failure (initializes algorithm)

Contagion rounds (algorithm internal loop)

Final failures (algorithm converges)
Approaches used in practice

• **Countries use a variety of approaches**
  – Depends on the characteristics of the financial system and data availability;

• **Generally use more than one method**
  – Combine both quantitative and qualitative analysis, sometimes with scoring of the individual components
  – Network analysis has been applied by several central banks
  – Combined with analysis of exposures to common risk factors and models of contagion

• **Increasing emphasis on macro-financial linkages**
Implications

- Need a framework to conduct assessments and update them on a regular basis
- Need to calibrate the nature and scope of regulation to reflect systemic relevance
- Need to adopt a functional approach to regulation rather than one based on type of institutions
- Potential need to extend the perimeter of regulation
- Potential need to update the design and coverage of contingency plans, safety nets and crisis management arrangements
- Need to develop a flexible policy response to mitigate emerging macroprudential risks
Design of a Framework

• Institutional arrangements
  – Appropriate independence, resources and accountability
  – Powers to designate systemically important entities, collect necessary information, and take corrective actions
  – Coordination and delineation of authority with other agencies (supervisors, central banks, resolution authorities)

• Application of appropriate assessment techniques
  – System-wide assessment updated on a regular basis
  – Information and methodologies
  – Periodic review of the adequacy of the framework

• Cross-border cooperation
  – Information sharing
  – Joint assessments
  – Roles of international/regional bodies
Extending the perimeter of regulation

- Different regulatory approaches and solutions
  - Systemic importance of the unregulated sector will depend, inter alia, on the robustness of the regulated sector to withstand shocks and the capacity to handle failures
  - Potentially systemic entities need not all be regulated in the same way
- Part of the response is to enhance the regulatory and risk management frameworks of systemic institutions within the regulated sector
  - Reducing the probability of failures
  - Improving resolution capacity and contingency planning
  - Strengthening core financial infrastructure
- Part of response is to level the regulatory playing field between banks, insurance and securities, and in treatment of financial groups -- to reduce the incentives and scope for regulatory circumvention and arbitrage
- Part will be to extend the perimeter of regulation in a graduated manner depending on the systemic importance of the institutions
  - Minimum reporting requirements
  - Risk management frameworks scaled to size and complexity
  - Minimum capital and liquidity requirements
Policy responses

- **International initiatives**
  - Capital charges for systemic risk (Basel Committee, others)
  - Leveling the regulatory playing field (Joint Forum)
  - Extending the perimeter of regulation e.g. hedge funds, rating agencies (IOSCO)
  - Crisis management frameworks for systemically important entities (FSB)
  - Filling information gaps (IMF/FSB/BIS others)
  - Advancing methodological approaches

- **National authorities**
  - Creation of systemic risk regulators/oversight boards (e.g. US, EU)

- **IMF**
  - Technical advice on institutional frameworks, methodologies, policy responses
  - Prioritizing assessments to reflect systemic risk