Marrying the cyclical and structural dimensions of systemic risk

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The views expressed are those of the presenter and not necessarily those of the ECB.

Macroprudential policy conference – while the sun is shining, prepare for a rainy day

Copenhagen, 19 November 2018
<table>
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<tr>
<th>1</th>
<th><strong>Background:</strong> Compartmentalised <em>concepts</em> of systemic risk</th>
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| 2 | **Measurement:** Compartmentalised *empirics* of systemic risk:  
| | • Cyclical dimension: *The financial cycle*  
| | • Structural dimension: *Conditional distress in banks* |
| 3 | An approach to tackle the *endogeneity* of systemic risk |
| 4 | Policy considerations |
Compartmentalised...

✓ *Macroprudential policies* (system vs institution level)

✓ *Empirical approaches* (cyclical vs structural)

✓ *Academic literature* (risk buildup vs amplification/contagion)
# Policies to tackle systemic risk in *banks* and *financial systems*

## Financial system dimension

*Pre-crisis toolkit lacked instruments to tackle the financial cycle*

- Buildup of country vulnerabilities
- Country spillovers and contagion

## Financial institutions dimension

*(Micro-)prudential regulation underestimated amplification and contagion*

- Feedbacks system and bank
- Contagion across institutions

## Policy domain | Objective | Systemic risk treated as
---|---|---
Micro-prudential supervision and regulation | Ensure soundness of individual financial institutions | exogenous

**Macro-prudential oversight**

<table>
<thead>
<tr>
<th>Objective</th>
<th>Systemic risk treated as</th>
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<tbody>
<tr>
<td>Limit systemic risk</td>
<td>endogenous</td>
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<tr>
<td>Increase resilience</td>
<td>endogenous</td>
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<tr>
<td>Lean against the financial cycle</td>
<td>endogenous</td>
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### Cyclical and structural dimensions of systemic risk

<table>
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<tr>
<th>Phase</th>
<th>Type of systemic risks</th>
<th>Measurement focus</th>
<th>Dimension</th>
<th>Examples of vulnerabilities/externalities</th>
<th>Modelling approach</th>
</tr>
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<tbody>
<tr>
<td>Risk build-up</td>
<td>Cyclical risks</td>
<td>Probability of default</td>
<td>Time</td>
<td>Asset price misalignment, excessive leverage, maturity mismatch</td>
<td>Time series models, early warning models, market-based indicators</td>
</tr>
<tr>
<td>Amplification of shocks</td>
<td>Contagion and spillovers</td>
<td>Loss given default</td>
<td>Cross-sectional, cross-border</td>
<td>Interconnectedness, commonalities in exposures</td>
<td>Networks, spillover models, conditional loss probabilities, structural</td>
</tr>
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Source: ECB Financial Stability Review (2018), May
Mapping the academic literature

1/ Systemic risk indicators
2/ Amplification
3/ Interconnectedness-contagion
4/ ”Global measures”

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Leverage (credit and asset prices) and the build-up of system imbalances

- Leveraged bubbles (Fisher 1933; Jordà et al. 2015)
- Credit market frictions imply state of balance sheet matters for borrowing
  - Leverage cycles (Geanakopolos 2010)
  - Real estate as collateral constraint (Iacoviello 2005)
  - Equity and corporate bond valuations (Gilchrist et al. 2009 and 2012)

A spectral method capturing comovement of credit and asset prices

- Narrow (credit, real estate) vs broad (credit, prices across all asset markets – i.e. real estate, equity, bond)
- Method exploiting coherence (across frequencies) and comovement (across time)

“The following definition seems to capture what experts refer to as the business cycle:

The business cycle is the phenomenon of a number of important economic aggregates ... being characterized by high pairwise coherences ... This definition captures the notion of the business cycle as being a condition symptomizing the common movements of a set of aggregates.”

- T. Sargent (1987), Macroeconomic Theory, p. 282 [emphasis added]

Source: Schüler, Hiebert, Peltonen (2017), “Coherent financial cycles for G-7 countries: Why extending credit can be an asset” ESRB working paper No. 43.
An estimated financial cycle for the euro area

The financial cycle


Note: EA composite financial cycle in standardised growth rates, where 0.5 denotes the historical median after removing a nonlinear trend; 0 is the smallest and 1 the largest growth rate observed in a country’s history.
Financial cycles vs business cycles

- Longer (8-20y) vs. (2-8y) and higher amplitude
- More symmetric
- More heterogeneous across countries
- Predict banking crises better
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3. An approach to tackle the *endogeneity* of systemic risk

4. Policy considerations
Joint distress across financial institutions

Joint distress across financial institutions

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4 Policy considerations
Rubric

Endogeneity of systemic risk

As financial conditions worsen the set of events where A, B and C are in default expand...

- ... so does the amplification magnitude in case of further deterioration of financial conditions

- ... and banks deleveraging will further depress financial conditions

Endogeneity of systemic risk

Financial cycle and joint distress probability, euro area

Endogeneity of systemic risk

Financial cycle and *conditional* joint distress probabilities (log scale), euro area

Financial cycle and *conditional* joint distress probabilities (levels), euro area

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Policy considerations: Coherence and tradeoffs

National financial conditions

Vulnerability of financial institutions

Economic growth at risk

Cyclical macroprudential policies

Structural macro and micro prudential policies

Macroeconomic policies

Coherence of capital requirements?

Policy tradeoffs, lean vs clean?

Financial cycles historically more symmetric than business cycles

Notes: Boxplots show distribution of duration (in years) of cycle phases across 13 EU countries, 1970Q1-2013Q4