



Second annual ECB macroprudential policy and research conference, 11- 12 May

Session 2

Assessing risk and resilience in the financial system

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Choosing Stress Scenarios for Systemic Risk Through Dimension Reduction

Matthew Pritsker

Pritsker (2017): Contribution



- **A very relevant and important question:**
 - How to properly choose stress scenarios?
- **Clear challenges to answer the question**
 - *High dimension*
 - *Testability*
- **The paper properly addresses them**
 - *On high dimension:* Extracts small set of principal factors using cutting-edge statistical methodologies, such as Zhong et al. (2012).
 - *On testability:* uses an objective-based approach to *discipline* the scenario design process

Pritsker (2017): Contribution (ctd.)



Contributes to both the *practice* and *theory* of regulatory stress testing

- **Practical**
 - Improves scenario designs for both loan book and trading book
- **Theoretical** (relative to the literature, e.g., Kapinos and Mitnik, 2014):
 - Dimension reduction
 - Methodological
 - Objectives

Pritsker (2017): A Few Suggestions



- **Plausibility of the scenarios**
- **Implementational costs**
- **Communication with the authorities**



- **Criteria of choosing**
 - Variables
 - Shock magnitudes
- **Typical time spent in discussing scenarios**
- **Most difficult issues encountered?**



- **Advanced economies:**

- *GDP growth projection*
- Projection of financial variables (swap curve, residential prices, commercial real estate prices, etc.).

- **EMEs:**

- *GDP growth projection*
- Whether the theoretically ideal set of variables fits the country-specific data
- Projection of exchange rate and following interest rate movements

- **Low-income economies:**

- Limited capacity and slow response
- *GDP growth projection*
- Whether the theoretically ideal set of variables fits the country-specific data

Stress-Test Analytics for Macprudential Purposes

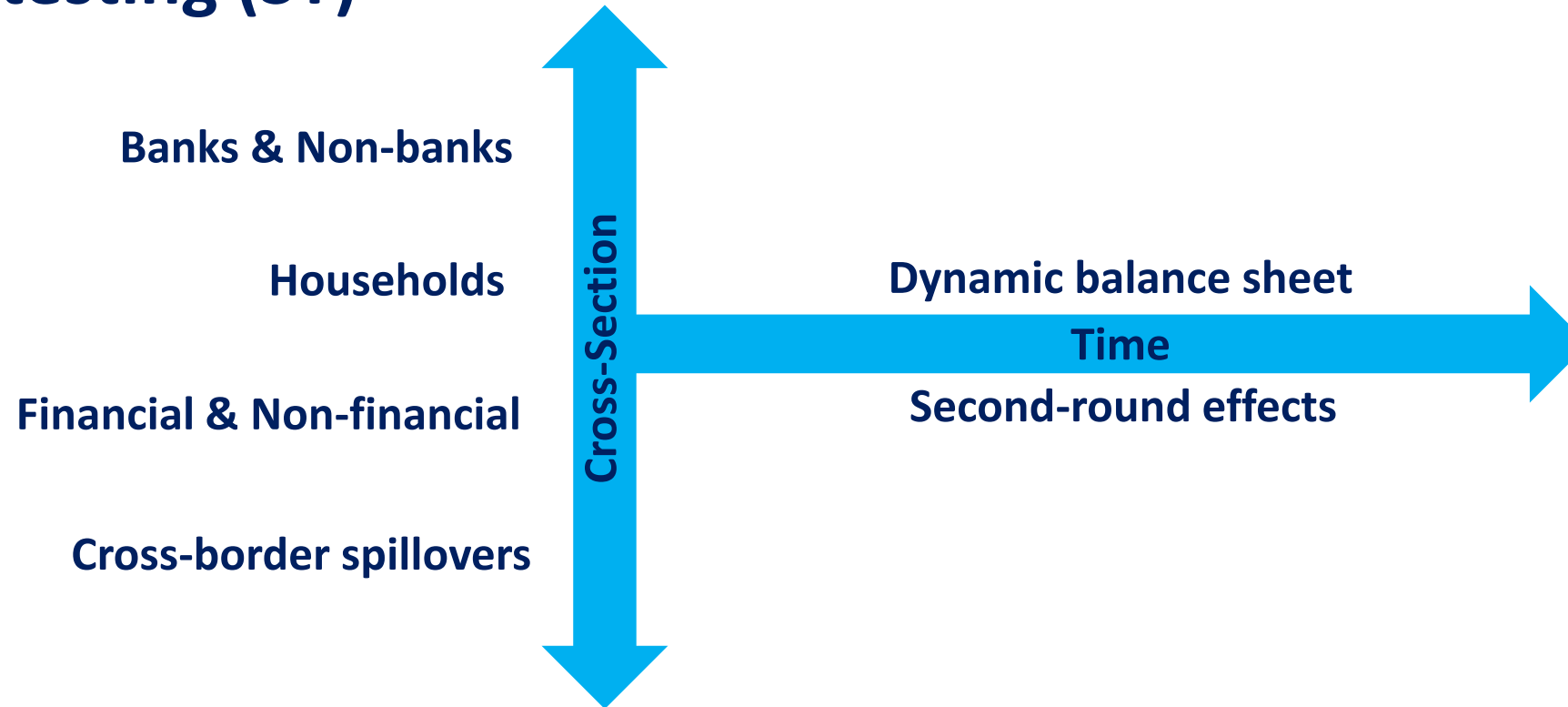
in the euro area

Edited by Stéphane Dees, Jérôme Henry and Reiner Martin

STAMP€: Achievements



- Covered the core elements of macropru stress testing (ST)



STAMP€: Achievements (ctd.)



- **Detailed and cutting-edge research in each part/module**
 - Second-round effects
 - Financial & Non-financial
- **Integrated different modules using a “four-pillar structure”**
 - Scenario design
 - Satellite
 - Balance sheet
 - Feedback
- **Overall, a significant step forward in providing an analytical framework for macropru ST**
 - Supports the EU-wide ST exercises
 - Provides a tool for assessing macropru policy instruments
 - Stimulates productive discussions among all stakeholders

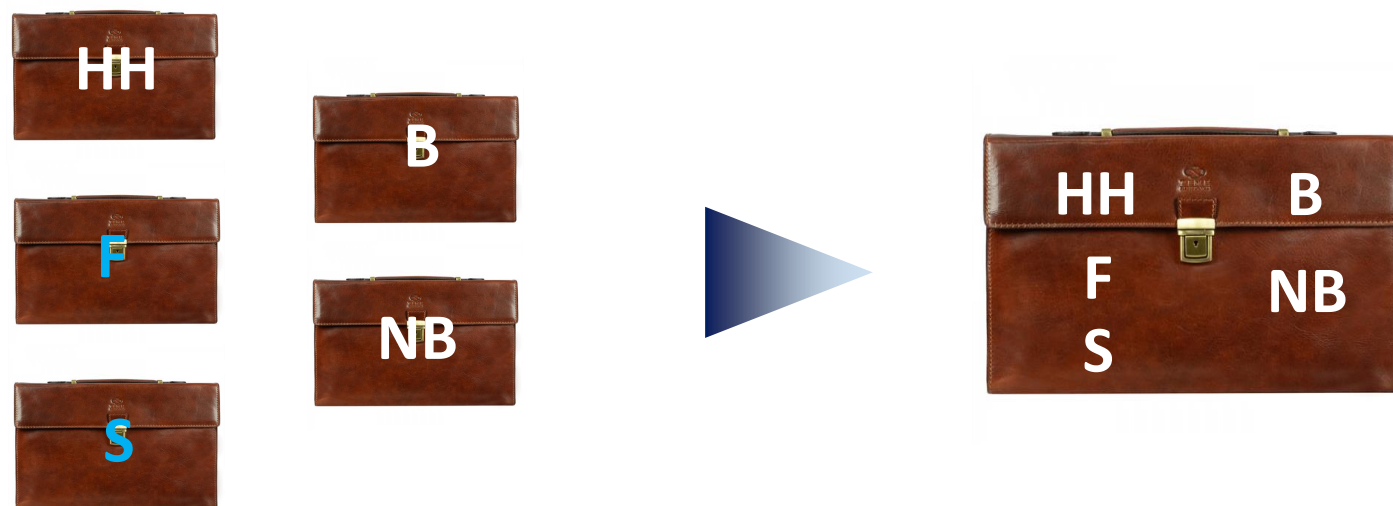


- **Integrate corporate sector into the ST framework**
- **Incorporate the “doom loop”**
- **Broaden the scope to macro criticality**

STAMP€ and Stress Testing: Possible Ways Forward



- Enhance coherence among different modules
- Improve portability to a diverse set of economies
- Need a less granular and coherent “one-stop” framework?



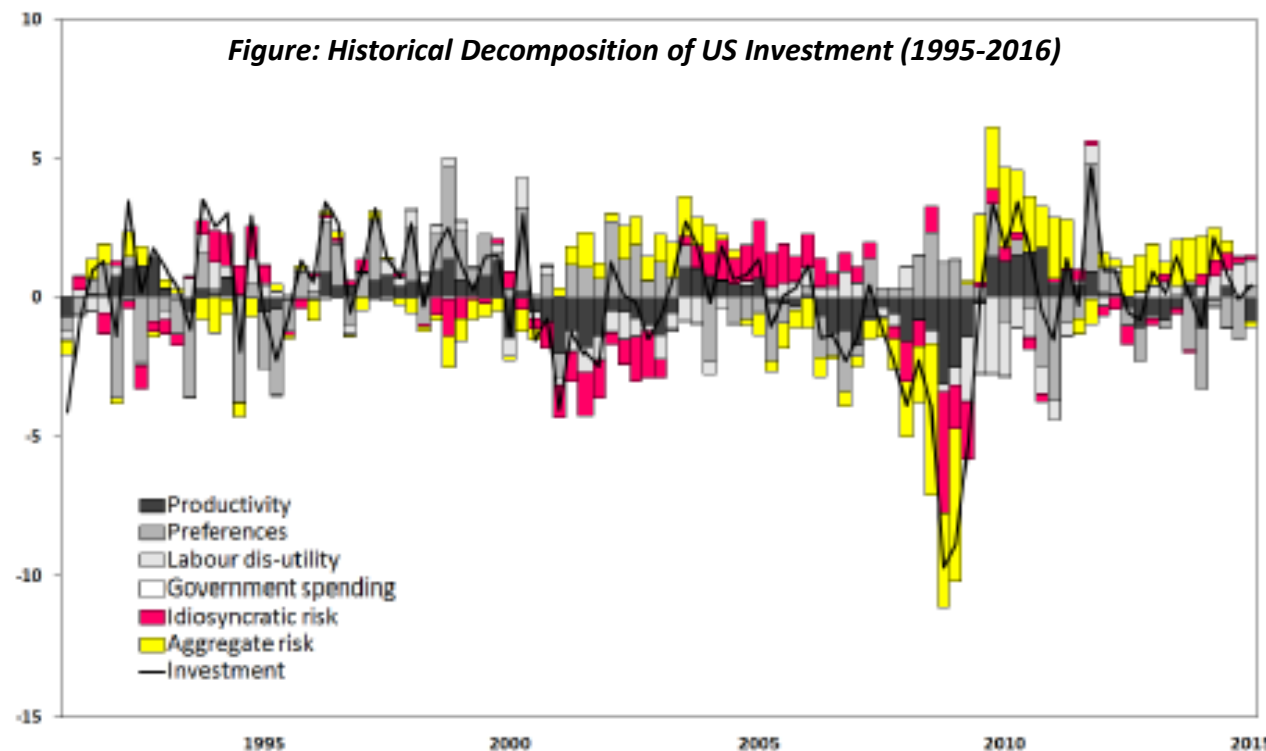
Structural Approach (Lipinsky)

- **A coherent macroprudential framework**

- Combine solvency and liquidity effects.
- Built on a unified dynamic macro-financial model.

- **Macro criticality**

- US investment (percentage change, black line) explained by financial and non-financial shocks.
- Solvency and liquidity situation of banks (red and yellow bars) critical for macro.
- Note: In technology boom-bust period (around 2000) liquidity was less of an issue.

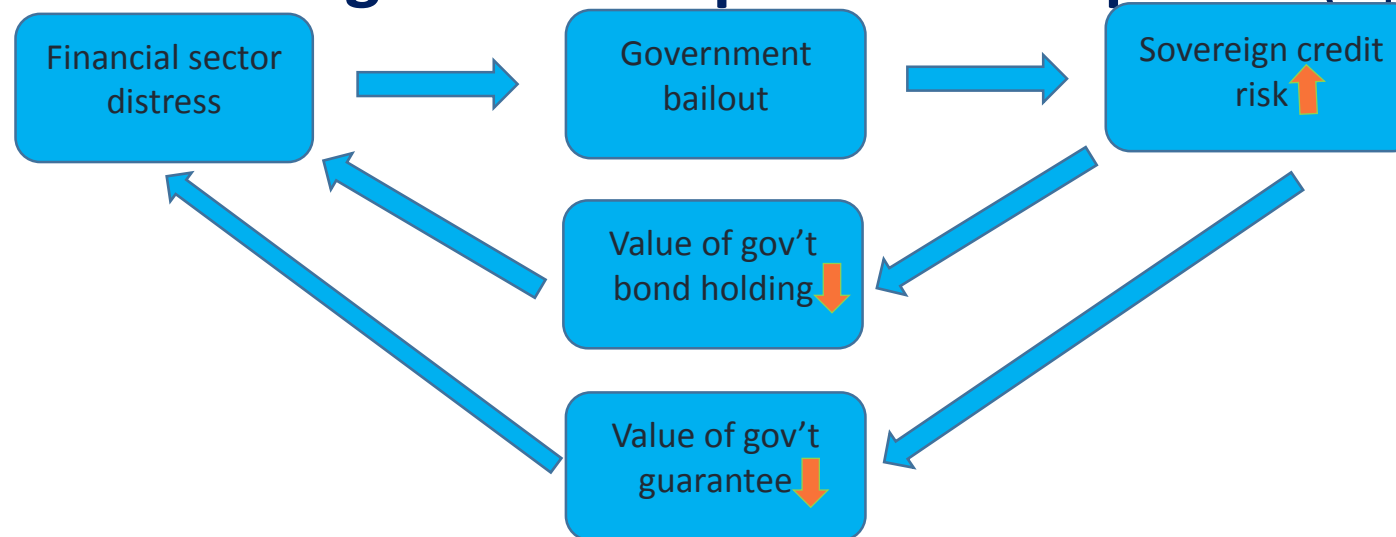


Related Work at the Fund (ctd.)

- **Reduced-form Approach** (Segoviano)

- STAMP€: “All channels of financial contagion, both direct and indirect, between all key macrofinancial sectors ideally need to be included. This is a challenging and possibly *unattainable* goal.” (Page 215)
- A reduced-form approach has the potential of achieving that goal.
- CIMDO approach → quantify the systemic-risk-amplification loss → go back and reduce the bank’s capital by that loss → incorporated into macropru ST.

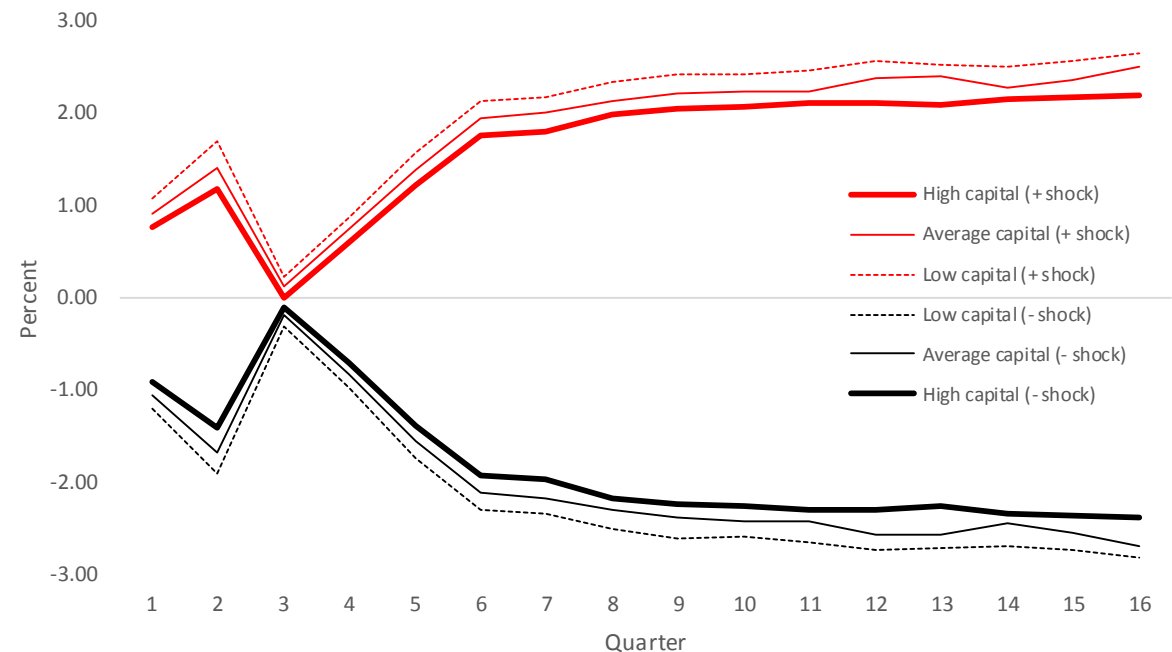
- **Incorporate the sovereign-bank loop into macropru ST** (Lipinsky and Zhao, ongoing)



- **Empirical robust results of lending channel: Catalan et al. (2017)**
- **Non-linear effects**

Increase (red line) and decline (black line) in loan growth

upon change in capital ratio (+10 and -10 percentage point shocks to capital ratios)





Thank You

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