Macroprudential Stress Testing

The Uruguayan Experience
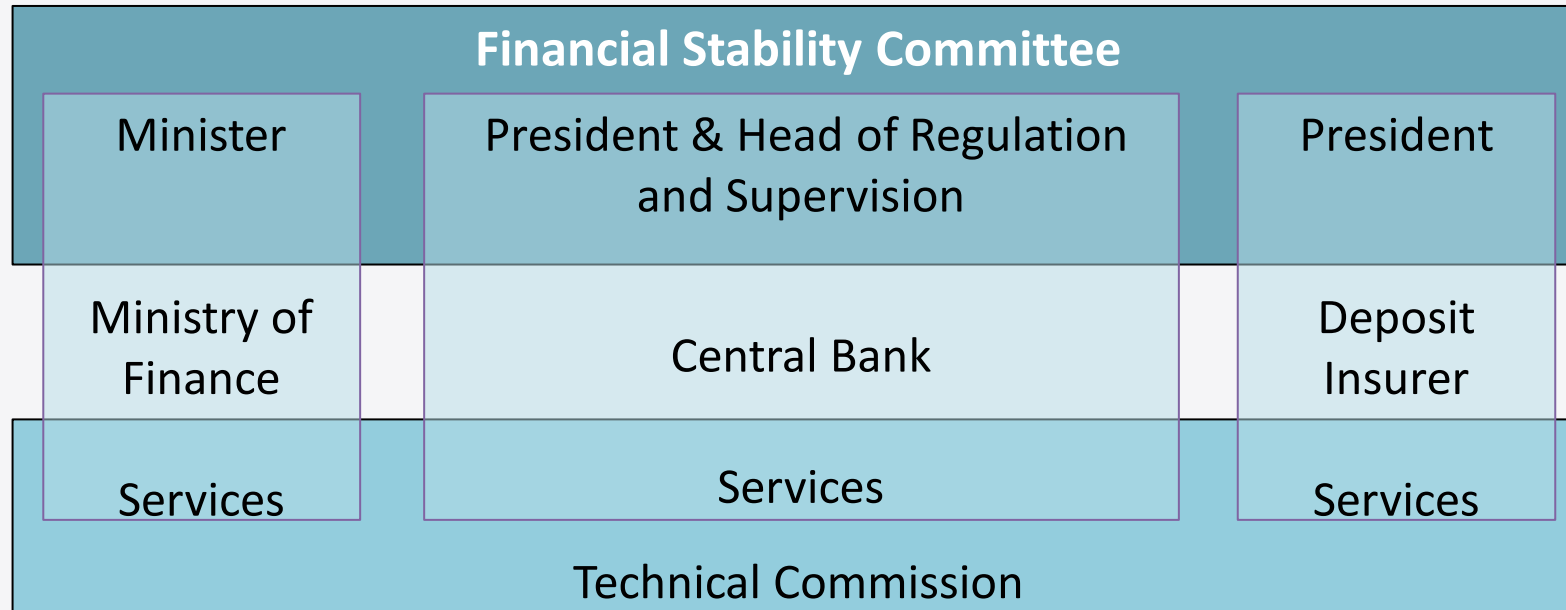
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Disclaimer

The opinions expressed in this presentation are those of the author and do not represent the views of the Banco Central del Uruguay
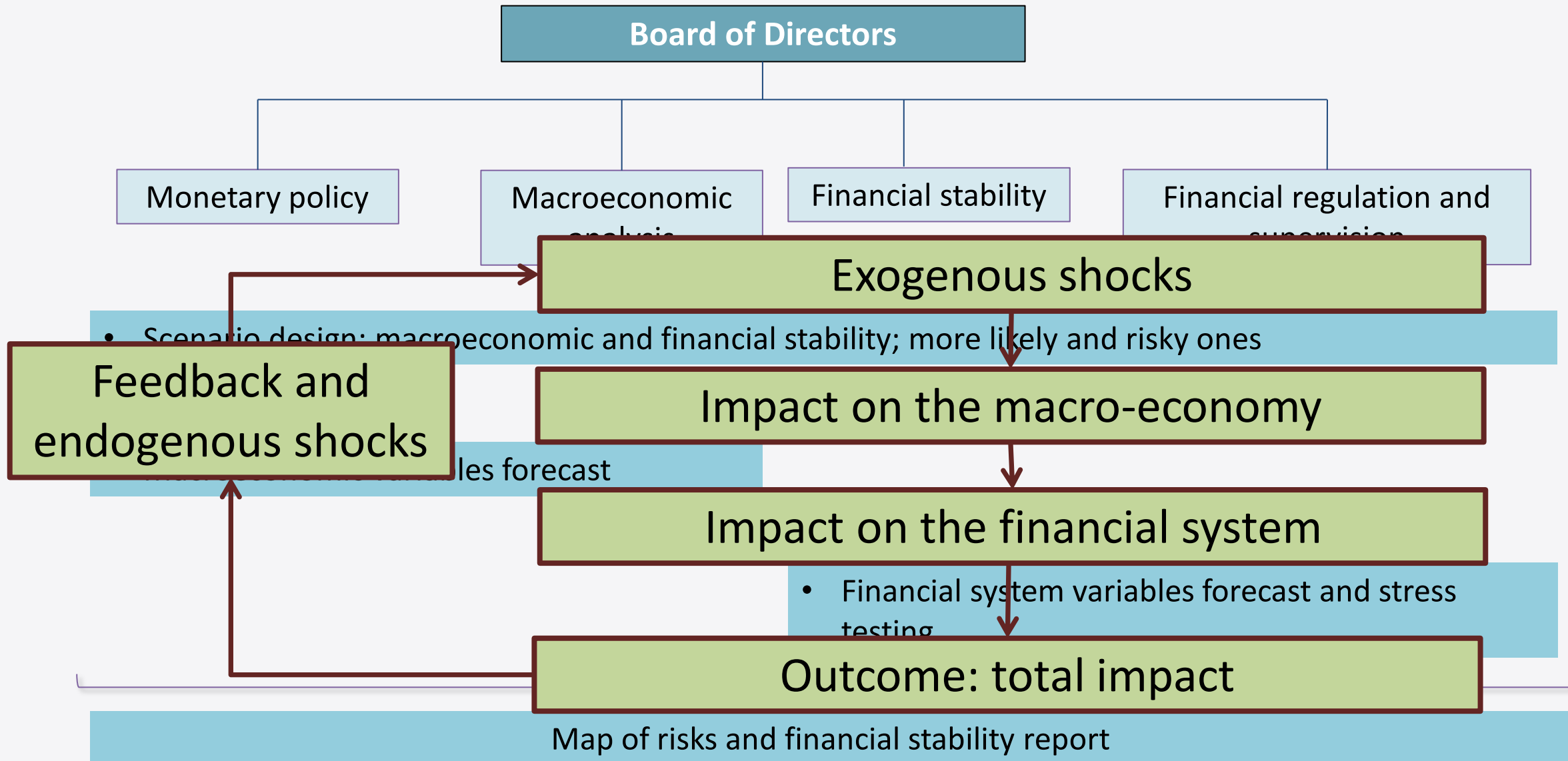
Outline of the presentation

- The Financial Stability Net in Uruguay.

- Dimensions of Financial Stability.

- GaR for scenarios design.

- Macroprudential stress testing.

- Zombie lending and the COVID shock.

- Importance of trade credit.

- Summary.

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Financial Stability Net in Uruguay

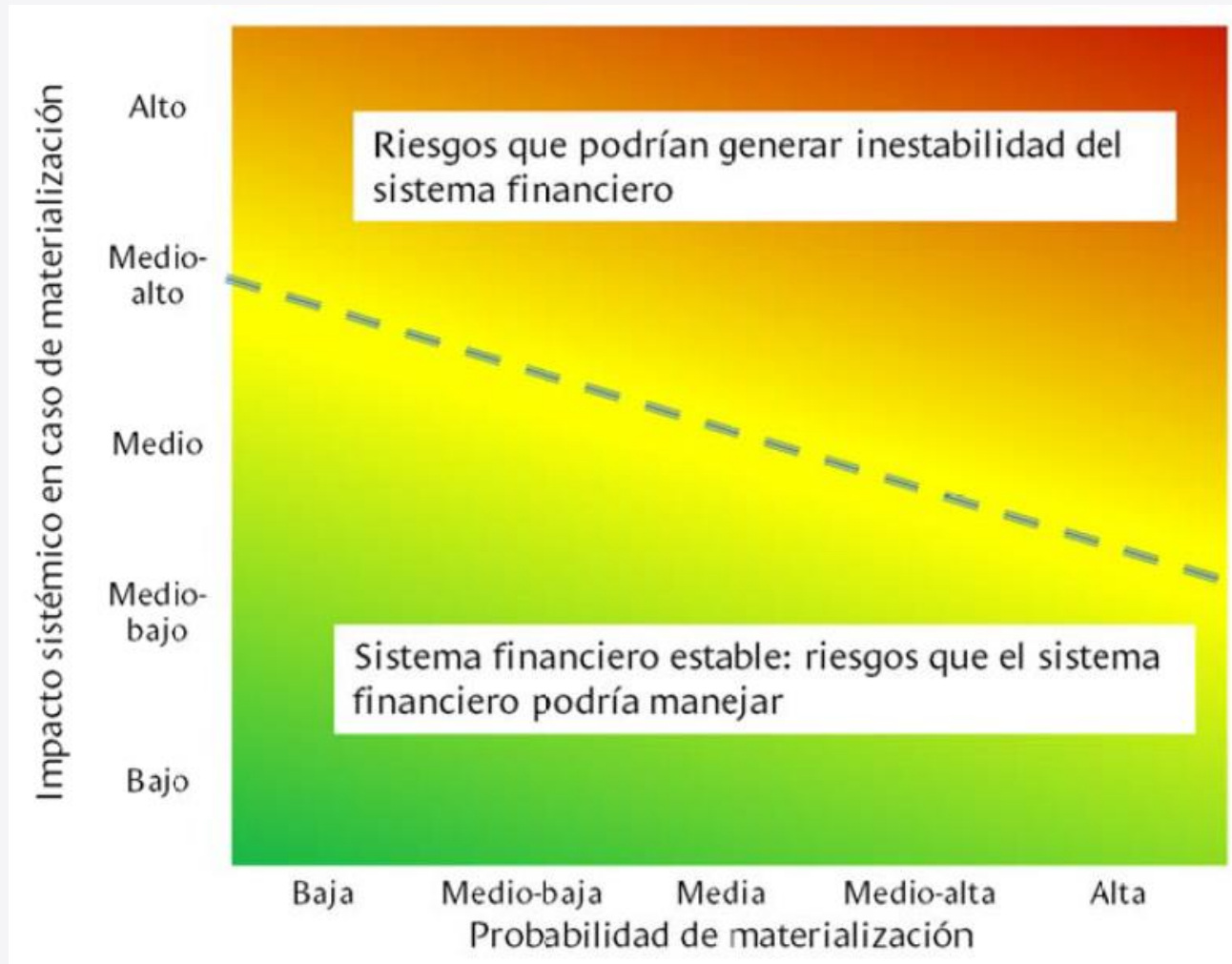| Financial Stability Committee		
Minister	President & Head of Regulation and Supervision	President
Ministry of Finance	Central Bank	Deposit Insurer
Services	Services	Services
Technical Commission		

- Systemic risk assessment and research.
- Information sharing and policy coordination.
- Policy decisions remain on individual agencies.
- Common language: map of risks and financial stability report.

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Financial Stability in the Central Bank

Board of Directors

Monetary policy | Macroeconomic analysis | Financial stability | Financial regulation and supervision

Exogenous shocks

- Scenario design: macroeconomic and financial stability; more likely and risky ones

Impact on the macro-economy

Feedback and endogenous shocks

Macroeconomic variables forecast

Impact on the financial system

- Financial system variables forecast and stress testing

Outcome: total impact

Map of risks and financial stability report

Financial Stability Risks Map

Financial (in)Stability Index

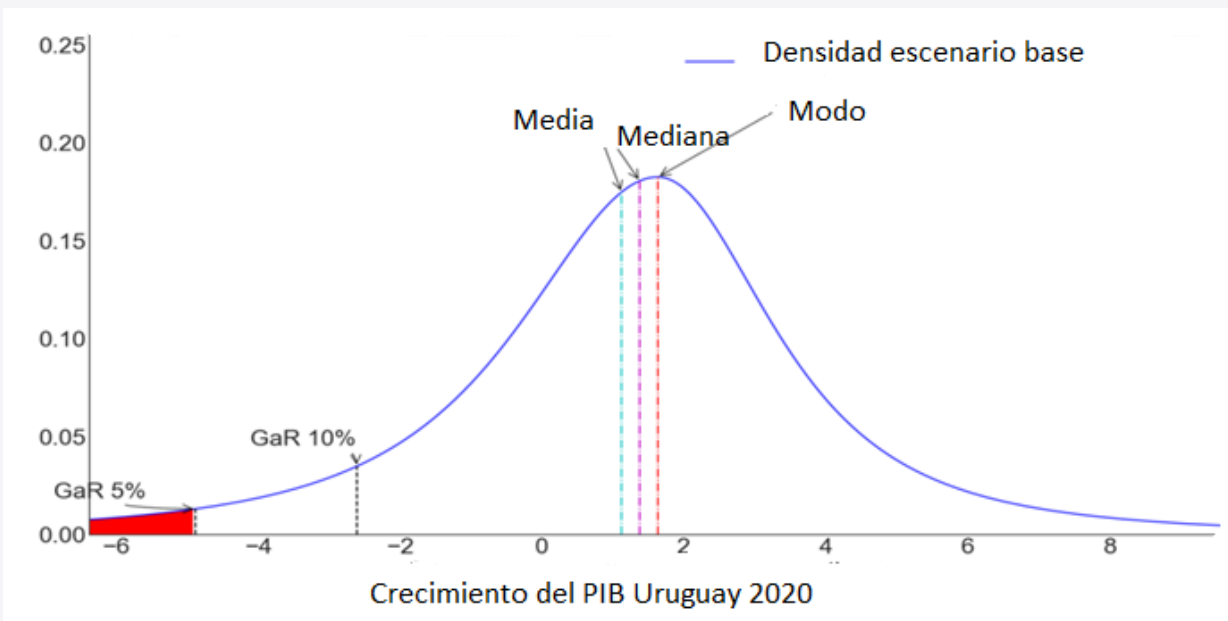## Global Index of Financial Instability
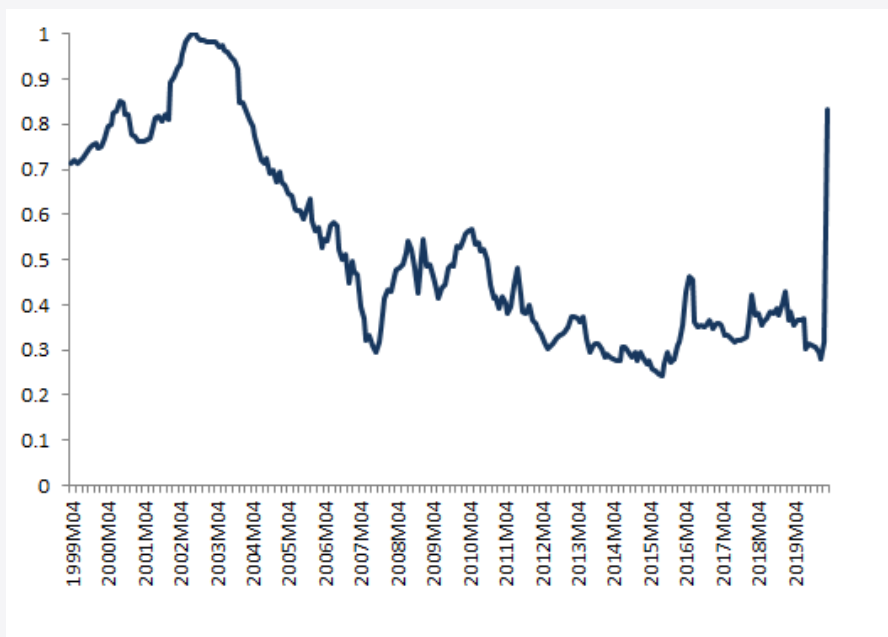

Sectoral Indexes of Financial Instability
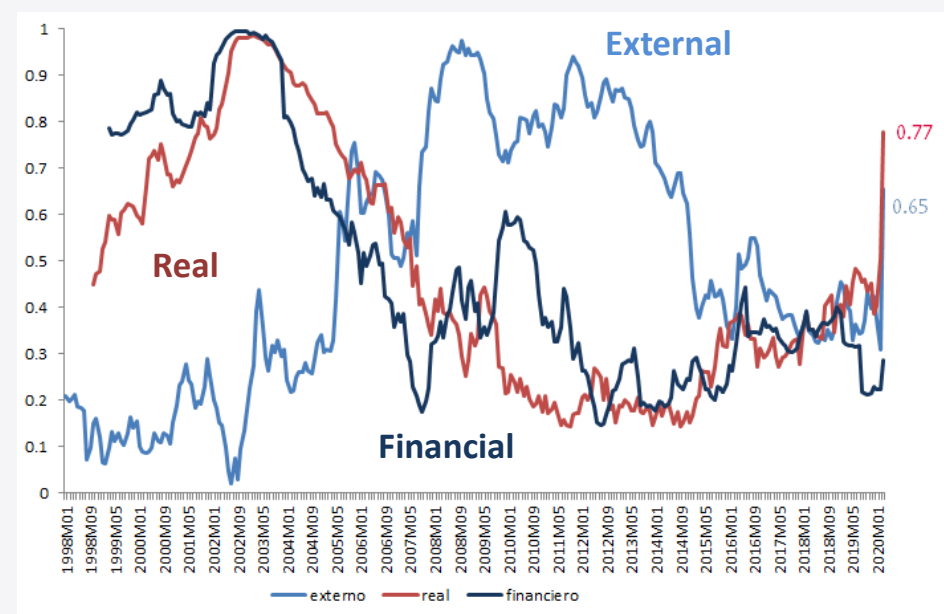
- The domestic financial crisis of 2002 affected the real and financial dimensions.
- Global financial crisis of 2008 mostly affected the external dimension, limited effect on financial.
- COVID shock affected mostly the real and external dimensions.

Landaberry, V. (2015): "Modelos e Indicadores de la Situación de Estabilidad Financiera: metodología y aplicación", Documento de Trabajo 010-2015, Banco Central del Uruguay.

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High uncertainty about 2020 GDP growth

Growth at Risk: distribution of GDP growth

Alternative Growth forecasts 2020

Fuente: BCU, FMI, Banco Mundial
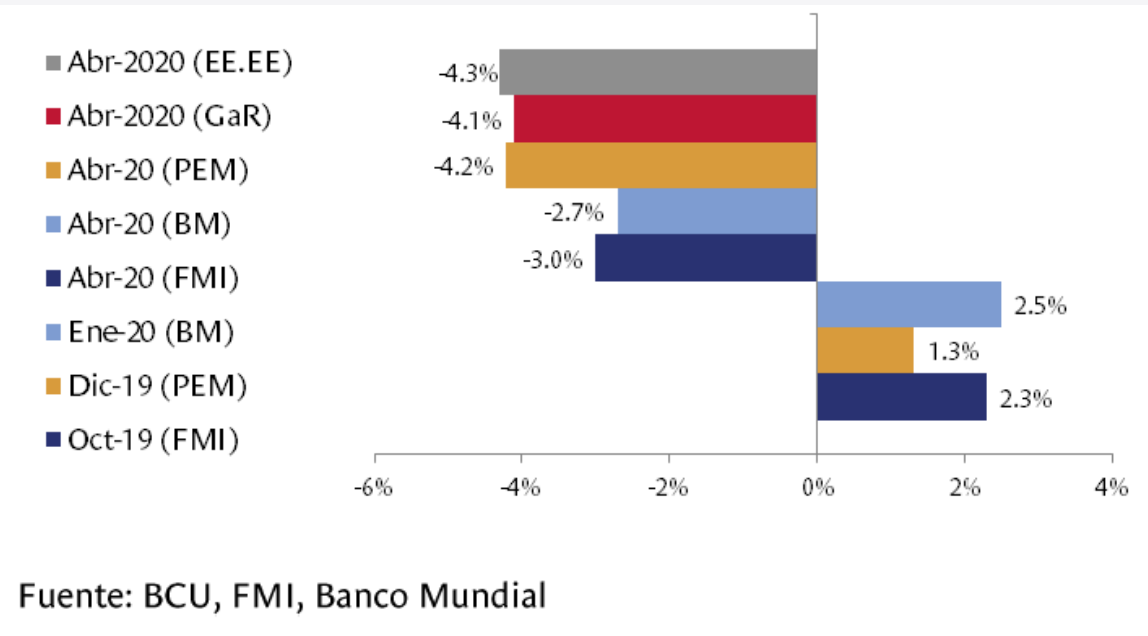
Growth at Risk in 2020

Growth Distribution - Forecast 2020
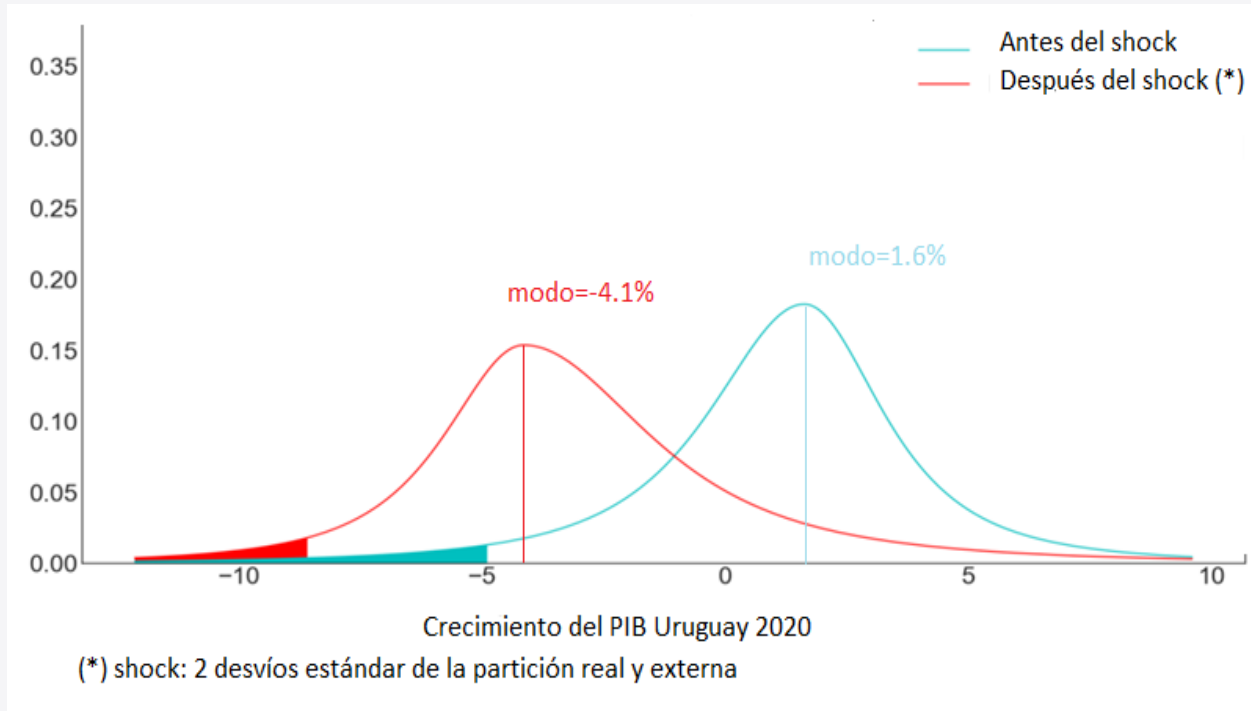
	Baseline	COVID
Mode	1.6%	-4,1%
GaR 10%	-2,6%	-6.9%
GaR 5%	-4,9%	-8.6%
P(growth<0)	29%	83%

- Using GDP data up-to Q4 2019 updated with high frequency information, simulated the effect of COVID by a 2 standard deviation shock to the external and real dimensions.

Alternative Growth Scenarios after COVID

GDP (Average 2019 = 100)
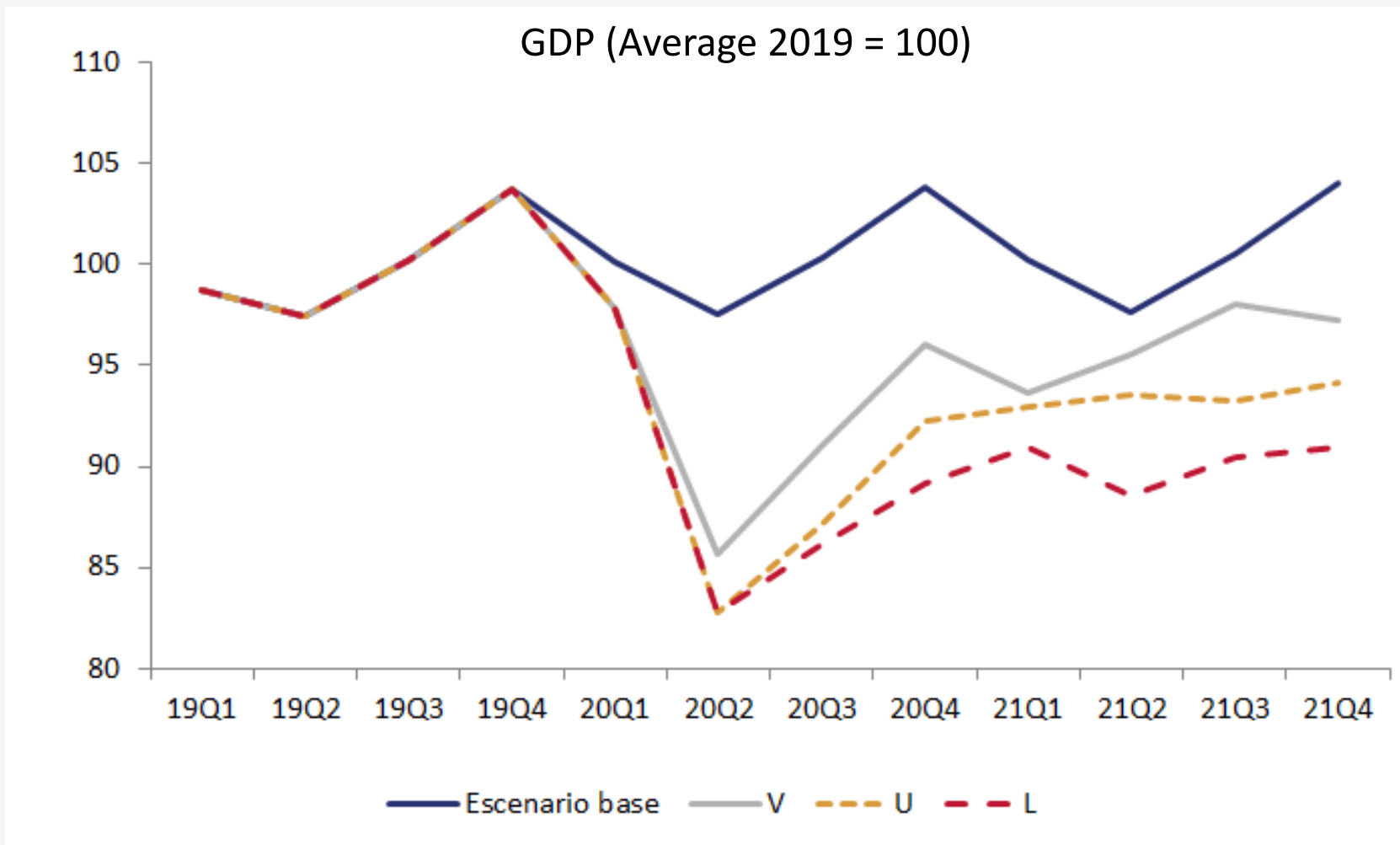
Stress testing

- Top-down exercise with granular data from banks' balance sheet as input.

- Macroeconomic/risk scenario forecasts are also inputs.

- Considers solvency and liquidity risks.

- Models are estimated using monthly data from 2001.

- This allows us to evaluate systemic risk and, through the sensitivity análisis, to assess banks' capital requirements.
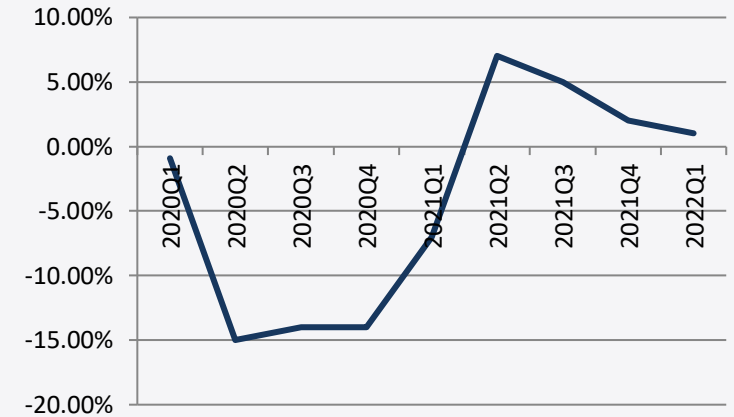
Example: COVID risk scenario

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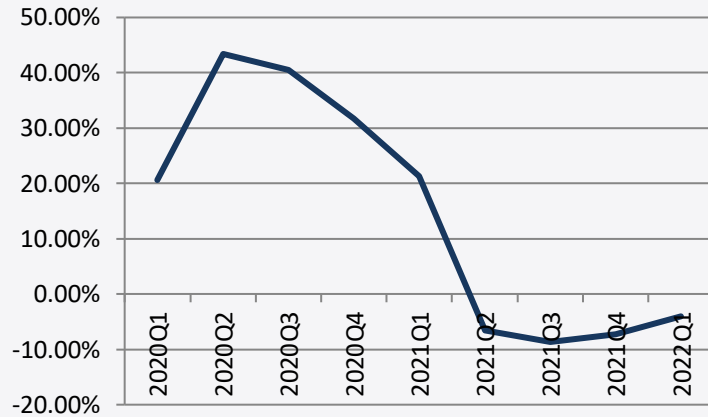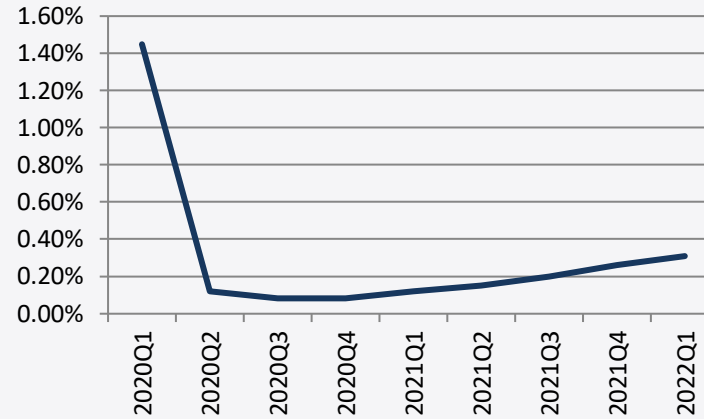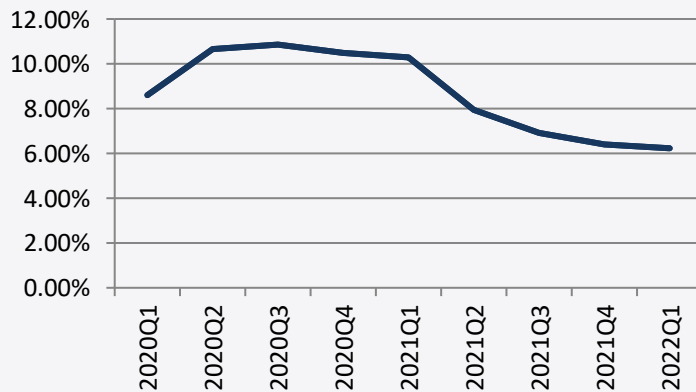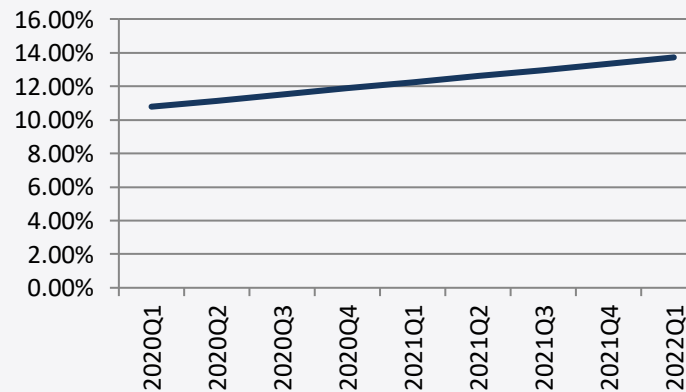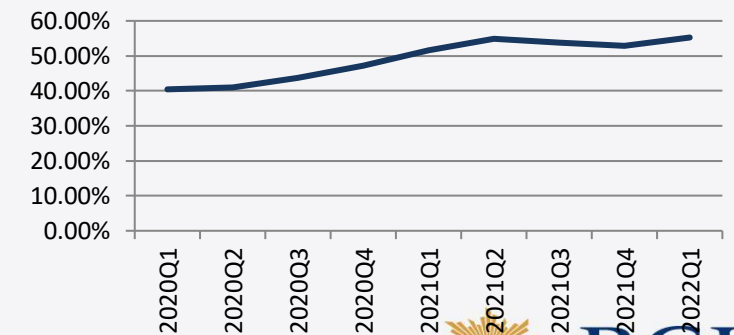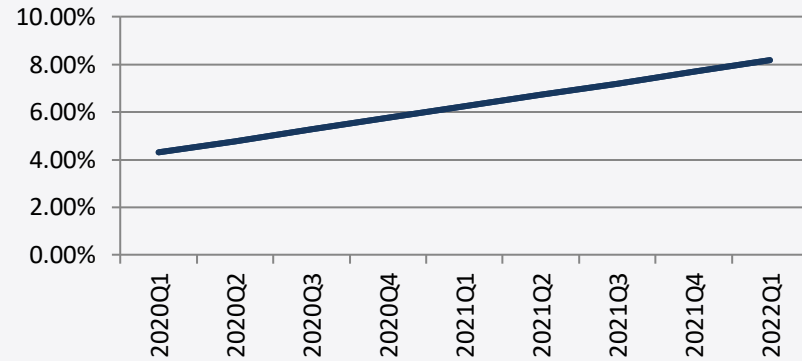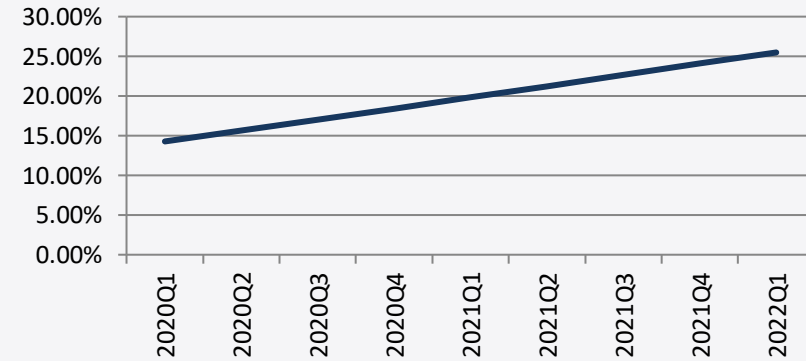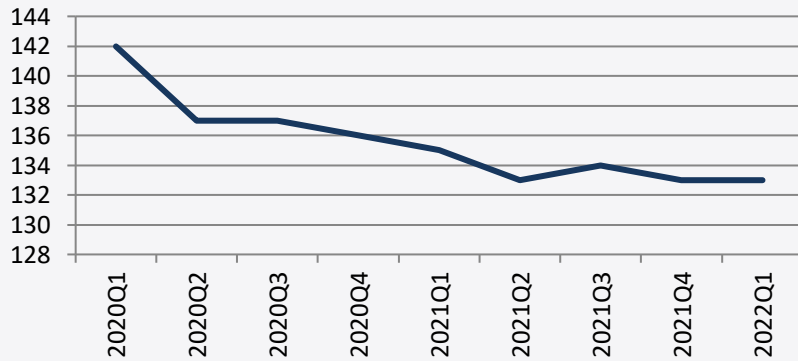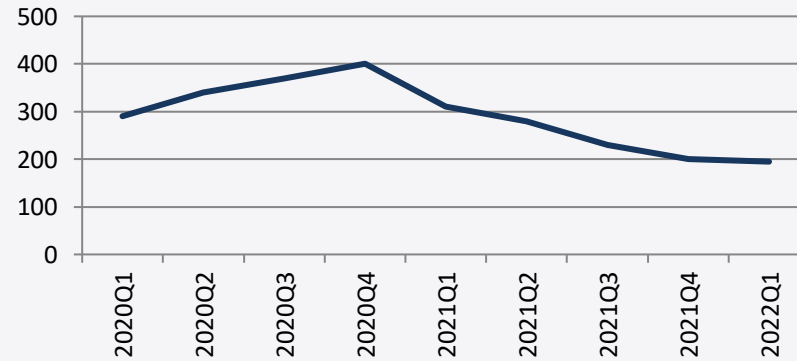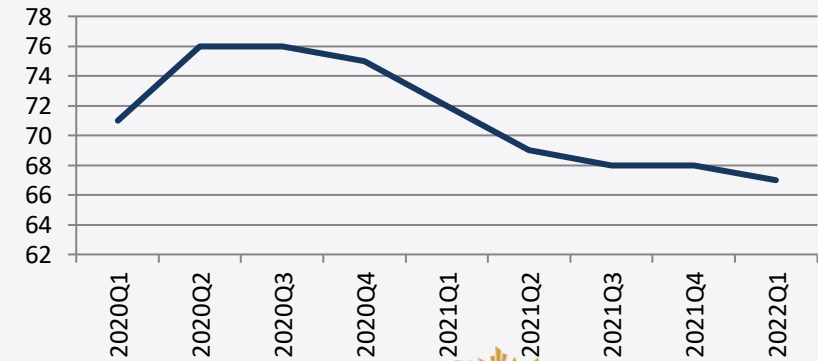
Zombie lending and the COVID shock

- Zombie lending: to continue extending credit to troubled firms.

- Banks avoid increasing provisioning requirements while being exposed to distressed borrowers.
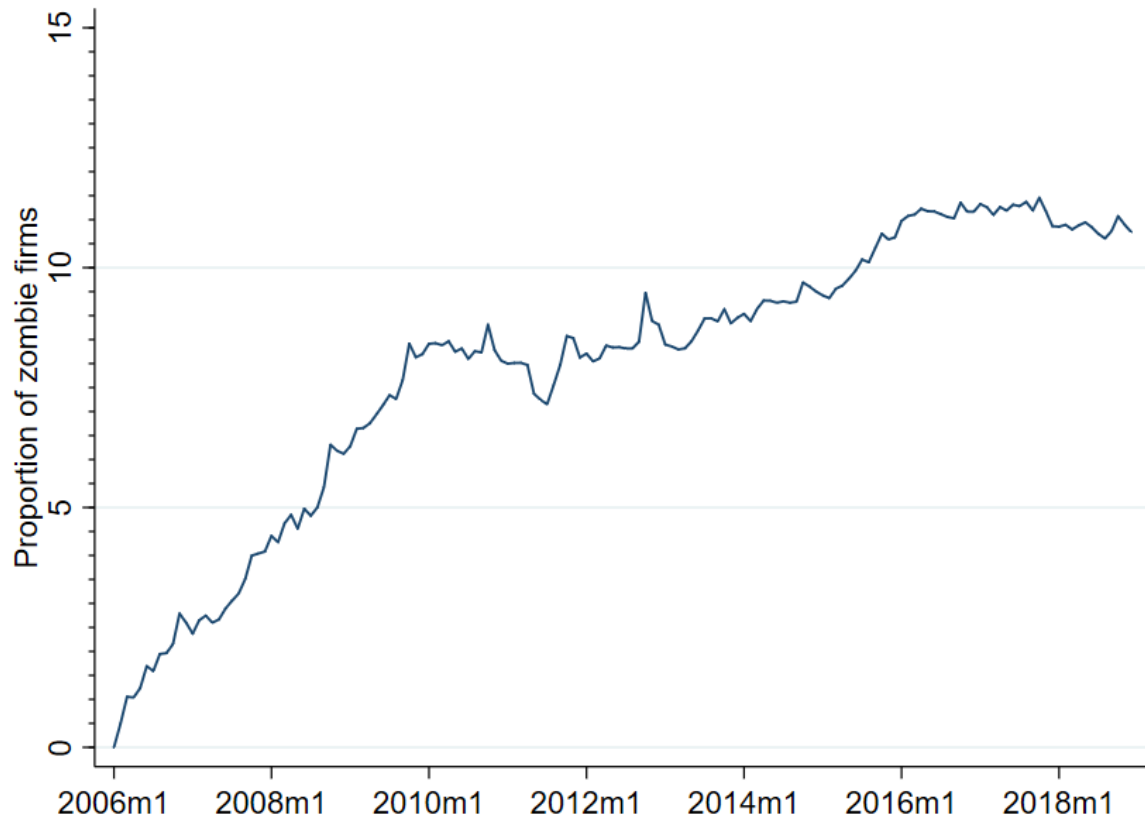
- We identify zombie firms by analyzing changes in loans´ repayment schedule using data from the Credit Registry.

- What would be the proportion of NPL if all zombie firms go bust? (very tough stress test).

Dassatti, C.; Lluberas, R., Rodríguez-Tous, F. (2020): "Anatomy of Zombie Lending", *Mimeo*, Banco Central del Uruguay.

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Zombie lending and the COVID shock

Proportion of zombie firms (in %)

Proportion of credit to zombie firms (in %)

Dassatti, C.; Lluberas, R., Rodríguez-Tous, F. (2020): "Anatomy of Zombie Lending", *Mimeo*, Banco Central del Uruguay.

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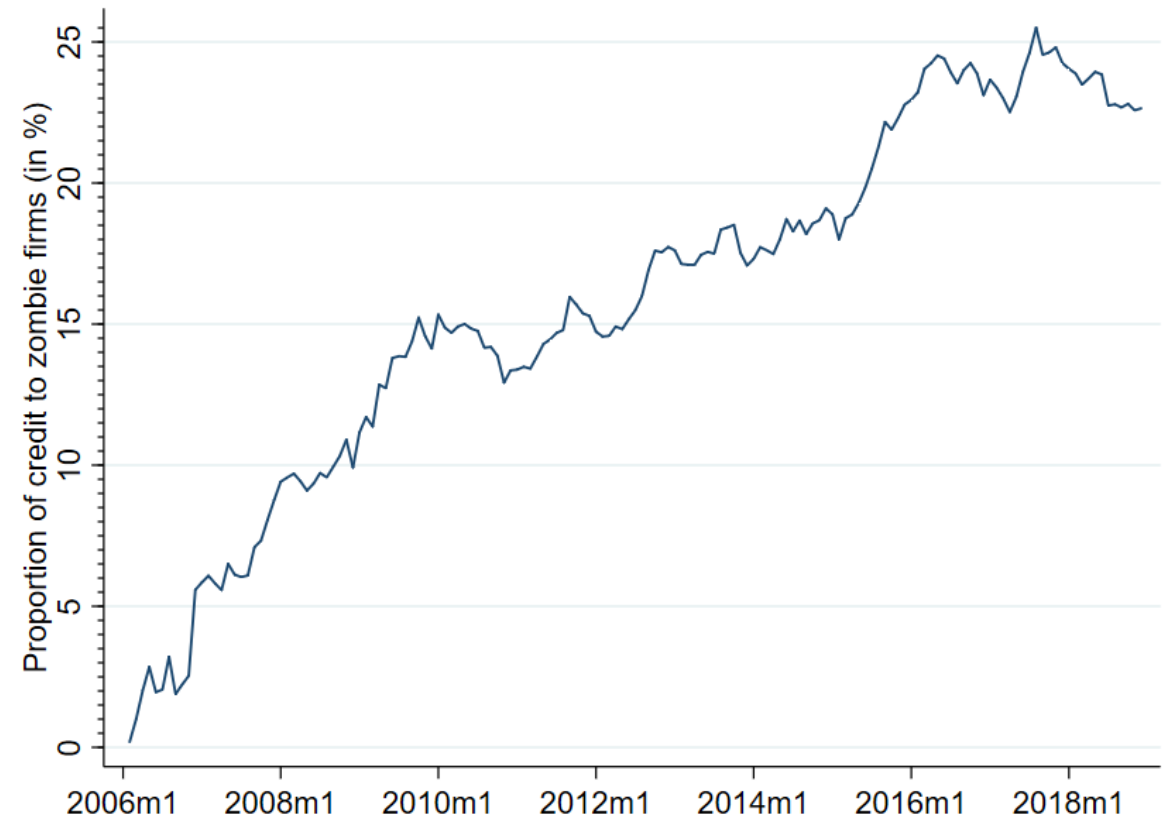
The importance of trade credit
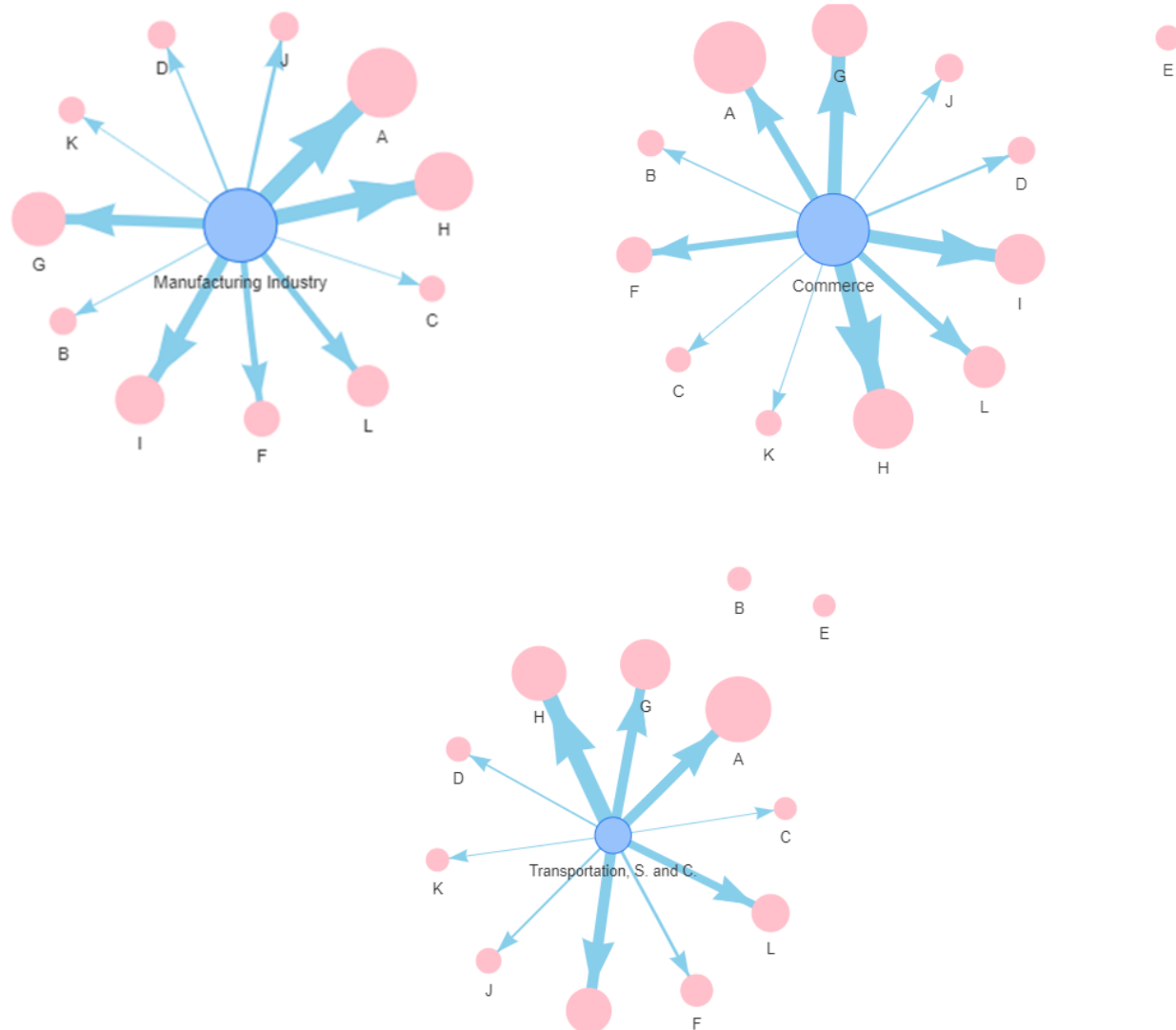
	Financial to trade credit ratio
Manufacturing	74%
Electricity, gas and water	0%
Construction	35%
Trade	45%
Hotels and restaurants	0%
Transportation, storage and communications	100%
Education	128%
Others	30%
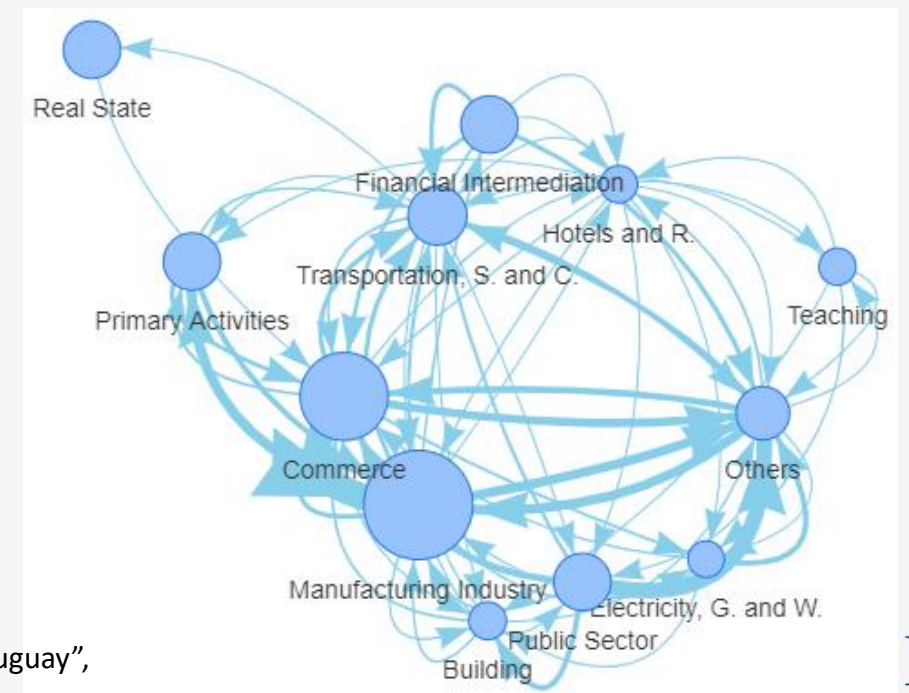
Barón, A.; Landaberry, V.; Lluberas, R., Ponce, J. (2020): "Commercial and banking credit network in Uruguay", *Mimeo*, Banco Central del Uruguay.

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Summary

- Regular macro stress tests in Uruguay (at least twice a year).
- We had to re-think the methods and data used due to the high uncertainty about GDP growth after the COVID shock.
- Still work in progress but GaR looks like a promising method to understand risks and for scenarios design going forward.
- Key in economies with shallow credit markets to understand the banking system indirect exposure through trade credit.
- Identification of Zombie lending useful to assess the effect of tail risks.

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