

Macroprudential Theory : an overview

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ACADEMIC RESEARCH ON MACROPRU

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It has exploded since the Global Financial Crisis:

- Empirical research has started exploiting availability of new data sets.
- Policy oriented research has developed a new generation of DSGE models.
- Theoretical research has tried to identify new reasons and propose new instruments for public intervention, both in crisis prevention and in crisis management

This presentation is only about the third category (theoretical research).

PRINCIPLES BEHIND (MACROPRU) REGULATION

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Like for any form of regulation, one needs to identify:

- Reason for intervention (what is the market failure one tries to correct?)
- Instruments of intervention (which are the most appropriate for fulfilling the objective?)
- Precise objective of intervention (how can one assess the success or failure of the regulation?)

For accountability reasons: necessity to perform periodic cost-benefit analyses.

SYSTEMIC CRISES

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Main rationale for macroprudential regulation:

- financial systems are subject to **systemic crises** that disrupt the functioning of these systems and damage the real economy.
- Macropru regulation is there to limit the frequency and size of these crises (**crisis prevention**) and
- to minimize the damage when they occur (**crisis management**).

CRISES PREVENTION

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It has three different dimensions:

1. Cross section: identifying systemic institutions and propose specific tools to deal with them.
2. Time series: debate on the scope of intervention: only preventing systemic crises or “curbing the credit cycle” (AIKMAN et al 2014)
3. Network analysis: what determines fragility of a system and risk of contagion?

IDENTIFYING SYSTEMIC INSTITUTIONS

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Different ways to measure contribution of bank i to systemic risk

- ADRIAN BRUNNERMEIER (2011): **DELTA CoVar** = Increase in Value at Risk of the financial system, conditionally on bank i being in distress.
- ACHARYA et al (2012): **Marginal Expected Shortfall**= expected loss of bank i conditional on system being in distress
- BROWNLESS ENGLE (2012): **SRISK**= a bank's contribution to the deterioration of banks' aggregate capitalization during a crisis
- LAEVEN et al (2014) show that SRISK is essentially determined by: size, market-based activities, and complexity. They suggest policy measures to limit these features (e.g. capital surcharges on large banks).

HOW TO DEAL WITH SYSTEMIC INSTITUTIONS?

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These systemic risk metrics allow regulators to single out (designate) a subset of financial institutions that are deemed systemic and, as such, are subject to additional regulations.

Special regulatory treatment: capital add-ons, contingent capital financing, special resolution plans,...

Main idea is moving from bail-outs to bail-ins: the required Total Loss Absorbing Capacity is determined so as to allow resolution without a need for taxpayers money.

TAXING EXTERNALITIES

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Other approach: identify the activities (not the banks) that generate negative externalities on the financial system and to tax or discourage them for all banks, not only for SIFIs.

Analogy with CO2 emissions: carbon tax.

PEROTTI SUAREZ (2010) propose to tax banks' short term liabilities

JEANNE KORINEK (2010) propose to tax capital flows to emerging markets to mitigate excessive volatility in capital flows.

However these proposals seem a bit unpractical.

CURBING THE CREDIT CYCLE?

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Countercyclical capital ratios are often viewed as a way to force banks to “accumulate buffers during booms that can be drawn upon to absorb losses during downturns”. Not entirely convincing...

Alternative approach:

LORENZONI (2008), BIANCHI (2011), AIKMAN et al (2014), GERSBACH ROCHET (2012, 2017)

These papers show that financial frictions generate pecuniary externalities that lead to excessive borrowing in booms (which could be offset by macroprudential policy) and excessively deep recessions (which could be offset by macroeconomic stabilization).

LONG TERM IMPACT OF CAPITAL REQUIREMENTS

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Both empirical and policy research has examined short term impact of increasing capital requirements.

Very little is known about their long term impact.

For this purpose, dynamic banking models have been developed:

- First generation (e.g. VAN DEN HEUVEL 2008) : no accumulation of bank capital.
- Second generation (GERTLER KARADI 2011, GERTLER KIYOTAKI 2010): standard DSGE models where financial intermediaries are superimposed in a rather artificial way
- Third generation (BEGENAU 2016, NGUYEN 2016, CLERC et al 2014) banks are modeled in a more credible way but policy analysis still relies on old fashioned tools: linearization around a deterministic steady state and impulse response methodology.

LONG TERM IMPACT OF CAPITAL REQUIREMENTS (2)

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- Paradigm shift: continuous time macromodels with financial frictions (BRUNNERMEIER SANNIKOV 2014, 2015), HE KRISHNAMURTHY (2012, 2013)
Long term equilibrium defined in terms of an ergodic distribution rather than a deterministic steady state
- New methodology captures booms and busts, liquidity traps, non linearities,...
- DI TELLA (2014) uses such a microfounded model to study financial fragility due to excessive concentration of aggregate risk.

NETWORK MODELS AND CONTAGION

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- ROCHET TIROLE (1996) peer monitoring between banks may be a source of contagion
- ALLEN GALE (2000) compare the fragility of different interbank networks
- NIER et al (2008), GAI KAPADIA (2009) model interbank markets as abstract networks (banks = nodes, interbank exposures= arcs)
- EISENBERG NOE (2010) first formal model of bank failures in a network Has given raise to a large literature in computer science.

But most of these networks models of interbank markets are too mechanical and fail to capture liquidity problems and bank runs.

1. Public interventions to “restart” frozen interbank markets:
TIROLE (2012) PHILIPPON-SCHNABEL(2016)
2. Private solutions: bail ins, bad banks.
3. Total Loss Absorbing Capacity : buffer that allows the resolution of a SIFI without injection of public funds.

Crucial question is whether hybrid securities such as CoCo bonds should be part of TLAC.

COCO BONDS

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A large literature has emerged on the pros and cons of CoCo bonds, using numerical simulations based on dynamic corporate finance models.

Coco bonds allow banks to benefit from tax advantages of debt and reduce their probability of default.

Yet, there is no convincing conceptual argument showing the benefits of such hybrid securities vis a vis equity:

- Disciplining effect on top management???
- Investors preference for (quasi)debt??

IMPORTANT NEW IDEAS

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- The Leverage Ratchet Effect (ADMATI et al.) DEMARZO and HE (2016)
- Fire sales generate pecuniary externalities (STEIN, KORINEK, LORENZONI, FAHRI WERNING, BIANCHI)
- Other forms of pecuniary externalities are due to aggregate shocks GERSBACH ROCHET (2012,2017) FARHI WERNING (2016)
- Maturity mismatch can be exacerbated by anticipation of future bail outs (time inconsistency of Central Bank Policies) FARHI TIROLE (2012)

THE LEVERAGE RATCHET EFFECT

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- ADMATI et al (2016): since banks (and firms in general) cannot commit on their future funding strategies, individual leverage is positively autocorrelated. A firm that is highly indebted today will tend to remain highly indebted tomorrow, because the benefits of deleveraging would mostly accrue to debtholders.
- Commercial banks are structurally financed by debt (deposits).
- Thus they are “addicted to debt”.
- Even if one can eliminate other frictions, such as tax advantage of debt, deposit insurance mispricing or Too Big To Fail subsidies, minimum capital requirements are needed to correct this addiction.

FIRE SALES GENERATE PECUNIARY EXTERNALITIES

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- GREENWALD STIGLITZ(1986): welfare decreasing pecuniary externalities may occur when economic agents are subject to incentive constraints that depend on market prices.
- Individual banks do not internalize their negative impact on the financial system if they are forced to liquidate assets at a discount (fire sale premium) BIANCHI 2011, BIANCHI MENDOZA 2011, KORINEK 2011, LORENZONI 2008, MENDOZA 2010,...
- See DAVILA KORINEK (2016) for a unifying framework.

OTHER FORMS OF PECUNIARY EXTERNALITIES

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- Even when there are no fire sales, aggregate fluctuations can generate welfare decreasing pecuniary externalities when banks' borrowing capacity depends on bonds prices (GERSBACH ROCHET 2017)
- Moreover, these pecuniary externalities may interact with aggregate demand externalities due to nominal rigidities or a zero lower bound for nominal interest rates.
- FAHRI WERNING (2016) provide a unifying foundation for monetary policy and macro prudential policies.

CONCLUSION

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So far, macropru theory has provided new conceptual foundations for public intervention:

- externalities generated by banks' lending or use of short term financing,
- lack of commitment on future financing decisions generating "addiction to debt"
- macromodels with financial frictions showing how boom and bust cycles and systemic crises can be generated endogenously
- However these models are either very abstract metaphors or very complex and opaque

As of today they are not able to provide direct support for policy.

CONCLUSION (2)

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One needs to abandon the pretense to “fine tune the financial system” (old fashioned central planner fantasies)

AIKMAN et al (2014): “Taking uncertainty seriously: simplicity versus complexity in financial regulation”

- Simple heuristics often dominate complex models for computing banks' capital requirements.
- Simple indicators predict failure better than complex structural models.
- “Fast and frugal” decision trees provide better guides for supervisory intervention than full blown econometric models.

Moreover they are easier to communicate (accountability).

Therefore less emphasis should be put on complex comprehensive models, and more on qualitative models that illustrate important trade-offs.