The Importance of Being Slow -The Costs and Benefits of Phasing-In Regulatory Reforms

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This paper

- *Research question:* How do capital requirements and their implementation timing influence the dynamics of bank capitalization and lending activity?

- *Methodology:* General equilibrium model with financial frictions
  i) issuance of equity is costly
  ii) households cannot directly finance the real sector
- *Findings:*
  - Sudden increases in capital requirements can lead to significant short-term credit contractions and output loss.
  - Gradual increase of capital requirements allows banks to build capital through retained earnings, reduces risk aversion and increases lending during the transition
  - Policymakers should take into account how banks alter their policies in anticipation of regulatory changes.

Literature: How capital requirements affect lending and capital structure

Effects of New Capital Requirements on Bank Lending

- Eickmeier et al. (2018) find that banks initially reduce assets in response to tighter capital requirements, with equity increasing only gradually after a delay.
- Meta-analyses by Boissay et al. (2019) confirm short-term lending reductions.

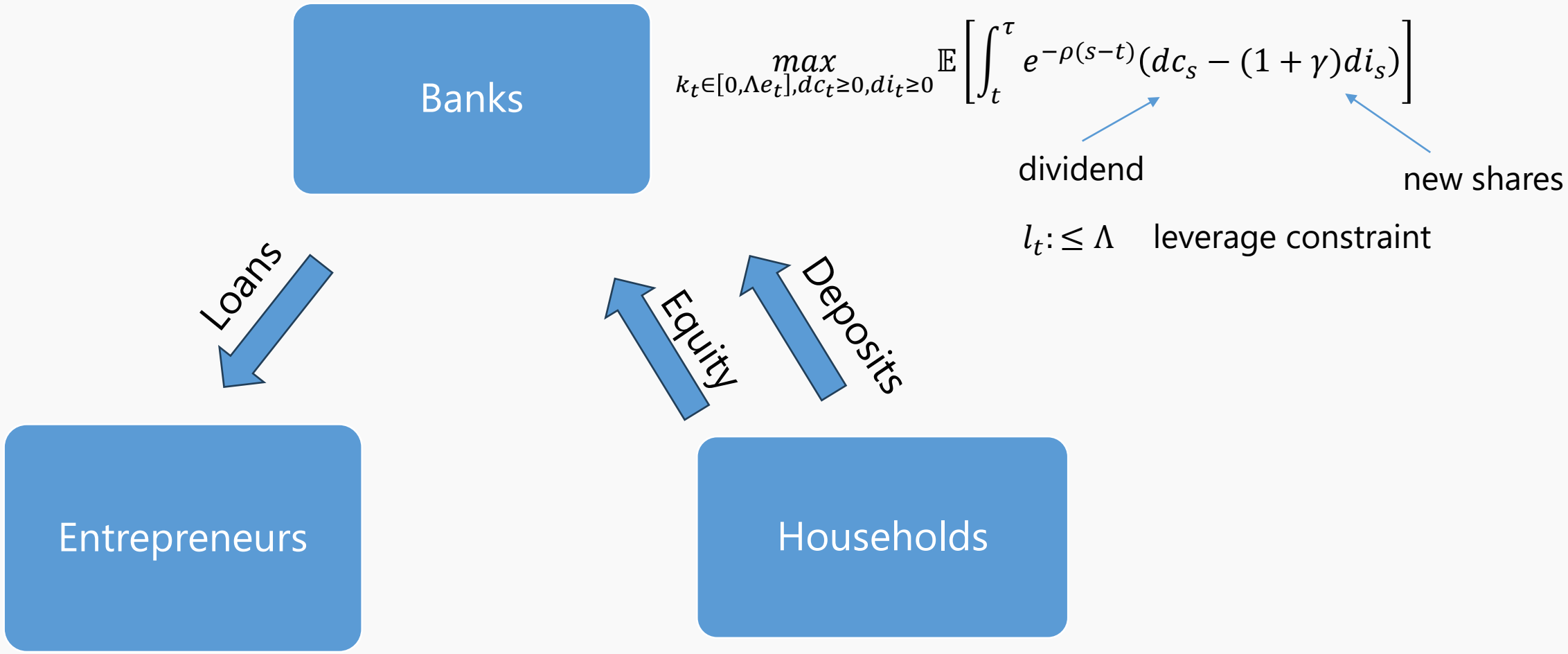
Bank Equity Issuance Behavior

- Dinger and Vallascas (2016) find that changes in capital regulation do not increase equity issuance likelihood for poorly capitalized banks.
- Khan and Vyas (2015), Acharya et al. (2009) mention that banks relied more on other instruments rather than common equity issuance to restore capital ratios after the financial crisis.

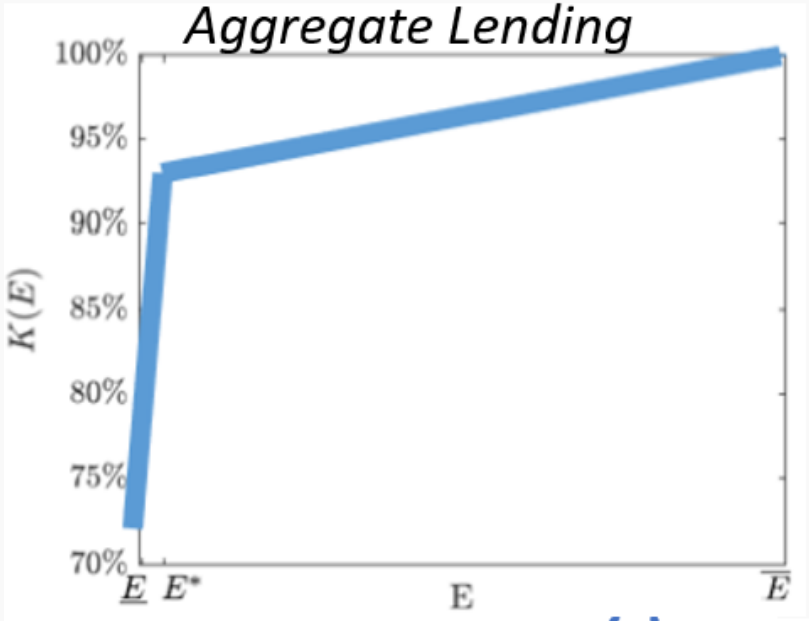
Dynamic Effects and Transition Periods

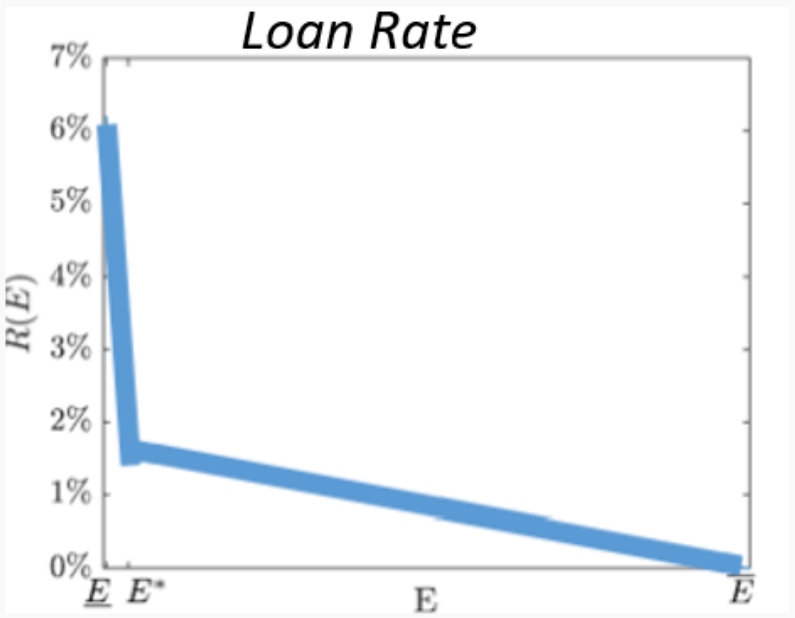
- Mendicino et al. (2020) model transition dynamics between steady states with different capital requirements.
- Guerrieri and Lorenzoni (2011) study transition dynamics in response to tightening borrowing constraints.

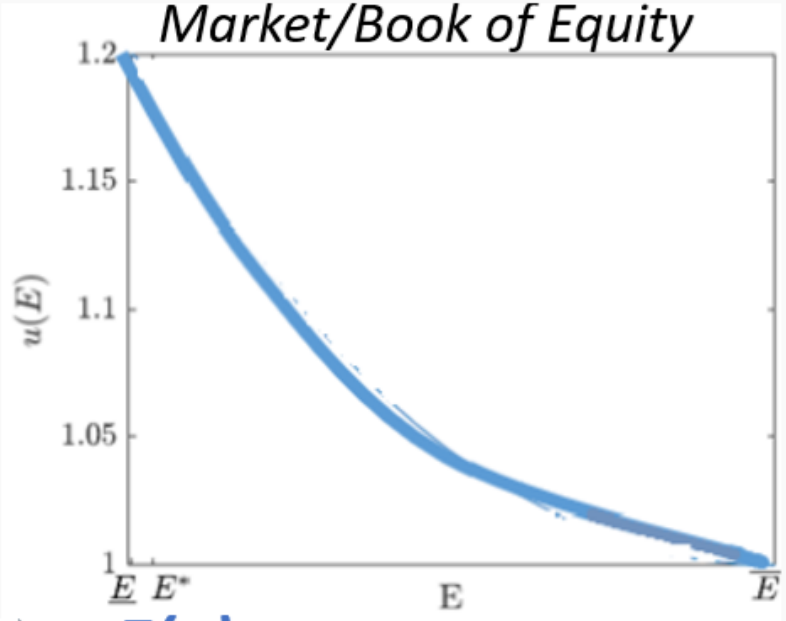
Model


Banks
$\max_{k_t \in [0,\Lambda e_t], dc_t \geq 0, di_t \geq 0} \mathbb{E}\left[\int_t^\tau e^{-\rho(s-t)}(dc_s - (1+\gamma)di_s)\right]$
dividend
new shares
$l_t : \leq \Lambda$ leverage constraint
Loans
Equity
Deposits
Entrepreneurs
Households

Theoretical Results: Equilibrium







E(-) → **E(+)**

Ag. Lending increases on aggregate equity

L Rate decreases on aggregate equity

Market to Book ratio of equity decreases on aggregate equity

$$Loan\ Rate\ (E) = -\frac{u'(E)}{u(E)} * \sigma^2\ K(E)$$

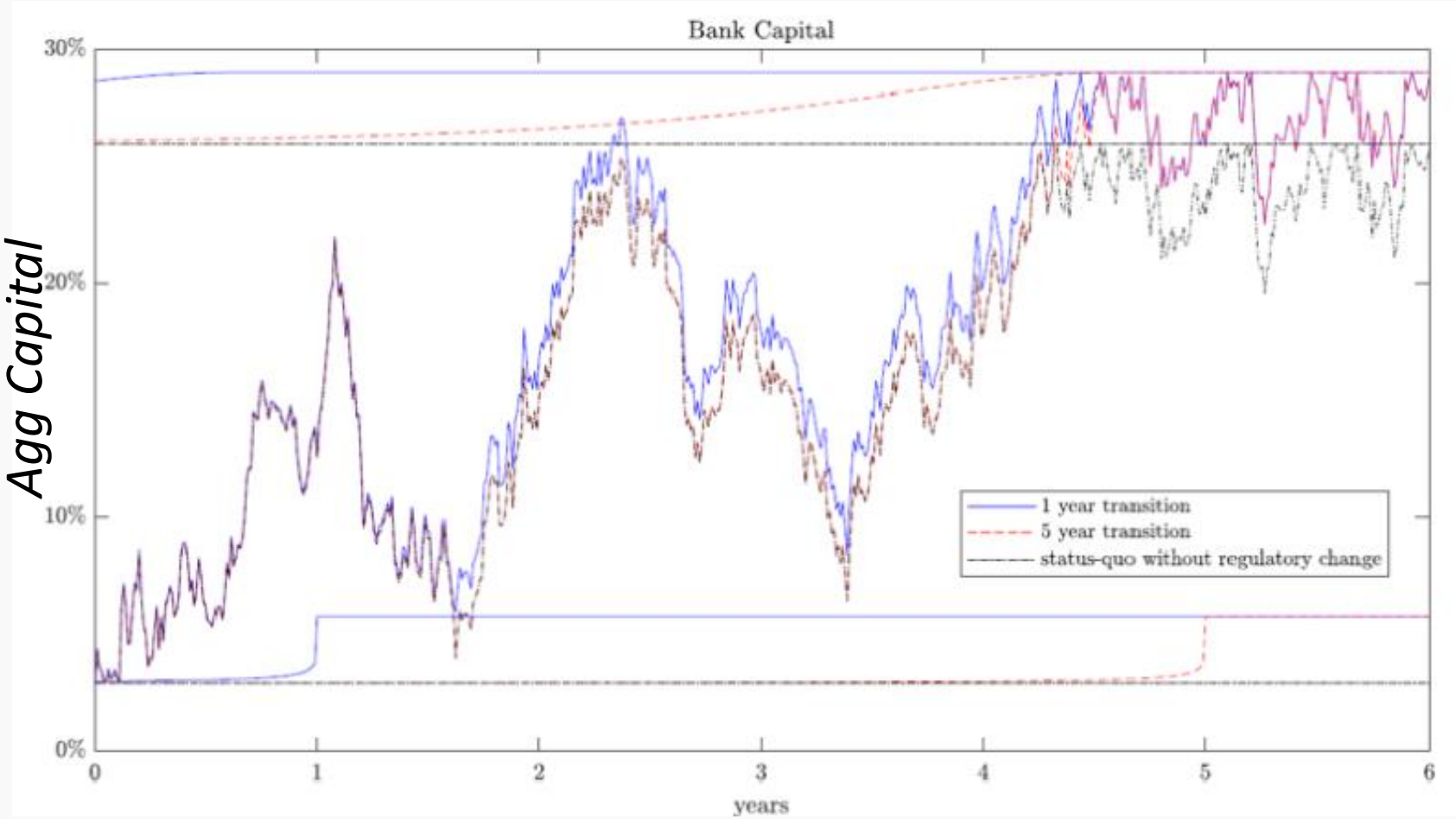
In equilibrium appears a risk-aversion coefficient multiplying rate risk

Theoretical Results: Dynamic Simulation

Pay Dividend

Retain Earnings to build up Capital

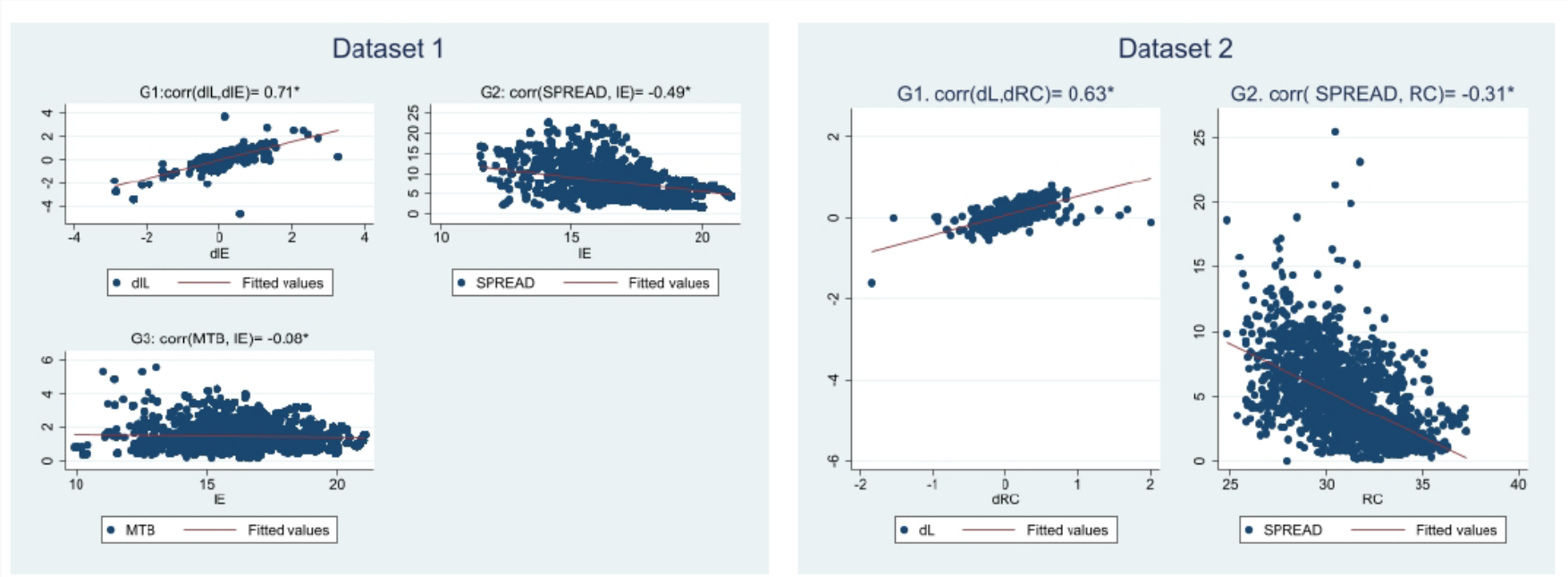
Issue Equity



Model fit to data

Data matches model's correlations:

- Aggregate bank lending is positively correlated with equity
- Loan spreads and market-to-book ratios are negatively correlated to equity



Summary

This paper addresses the critical issue of transition periods in regulatory changes and their timing.

This paper is of relevance not only to researchers but also policy makers

Main Findings:

- Demonstrates how gradual implementation of capital requirements can reduce credit crunches
- Explains counterintuitive finding that lending can increase following regulatory tightening announcements
- Discuss the impact and welfare effect of different transition periods

Main Comments

To further strengthen the validation of the model, I think here the authors could do a bit more by exploiting the heterogeneity in the international panel datasets they have:

i) Group and validate by different a) transition length and b) delta change in the regulatory constraints. Can the model capture this heterogeneity?

ii) Is the behaviour of loan spreads realistic across time and countries?

iii)Does the model´s reaction to the two available shocks (Asset Risk Z, Systemic Risk N) matches the data?

I think the paper has also further potential to contribute to the topic of early resolution of uncertainty (it somehow mentions a bit of it):

iv) How does the Agg. Capital level affects the relation $Risk\ Aversion > {}^{1}/_{EIS}$?

Literature II

Banks as liquidity providers but subject to bank runs:

Diamond and Dybvig (1983), Goldstein and Pauzner (2005), Gorton and Pennacchi (1990), Dang, Gorton, Holmstrom and Ordonez (2017)

Bank runs discipline the banks:

Calomiris and Kahn (1991), Diamond and Rajan (2001)
Banks and .nancial crisesAllen and Gale (1998)

Banks and financial crises:

Allen and Gale (2000), Gorton and Metrick (2012), Martin, Skeie and von Thadden (2014)

Banks as monitors and relationship banking:

Diamond (1984), Rajan (1992), Petersen and Rajan (1995)

Banks and central bank policy:

Freixas, Martin, and Skeie (2011), Martin, McAndrews, Palida and Skeie (2019)

Due to frictions that make bank equity costly (Dagher et al., 2016), banks can behave in a risk-averse way when managing risk (De Nicoló et al., 2023). Therefore, banks have a different degree

[11]Market risk capital requirements (similar to those for credit and operational risk) constitute 8% of market risk-weighted assets. If risk weights are determined internally by banks, their market risk-weighted assets can be represented as $12.5\times(3+\Delta\text{Capital})\times\text{Reported Risk}$, where ΔCapital is an additional capital requirement for underreporting of risk and Reported Risk is the self-disclosed bank risk exposure which computation changes along Basel I, II and III. The values of ΔCapital for a given frequency of underreporting of risk are given in Table 1.

of risk aversion in the model. Banks' risk aversion affects their reported risk levels which affect their capital requirements, penalties and the economic costs in case of failure. The model produces the range of optimal regulatory capital and penalties for a given level of banks' risk aversion rationalizing model-based regulation instead of proposing a "one-size-fits-all" solution.

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Mendicino et al. (2018), Elenev et al. (2021) and Begenau (2020)). A notion of scarce equity is also found in two recent papers which explicitly analyze short- and long-run effects of tightened capital requirements by considering the transition between steady states (Mendicino et al. (2020) and De Nicolo et al. (2021)). In these papers, equity supply is in constrained supply in the sense that the shadow value of bankers and other entrepreneurs exceeds the value of paying dividends, i.e. they always invest all of their wealth into shares. For the parameter values considered by the authors, this arises from segmented investment markets and equity investors' wealth constraints.

Such assumptions are popular shortcuts to restrict the supply of equity in accordance with observed patters while avoiding the need to microfound the underlying frictions.[28] In the following, the aim is to explore to what extent this assumption is likely to capture the actual behaviour of the short-term and long-term supply of equity.

[28]This is not to be understood as a critique of these modeling choices. The author acknowledges that modeling shortcuts are necessary for tractable models and justified in dependence of the considered research question.

Over time, inside equity would allow to build up capital irrespective of the stock price. This dynamic consideration was already pointed out by Myers and Majluf (1984), giving rise to the pecking order theory of corporate financing. In the application to regulated banking activity, this dynamic shift in adjustment tradeoffs would allow to expand the bank's assets

important to control for macro-financial circumstances. For instance, the study by Dinger and Vallascas (2016) also suggests that large banks are more reluctant to issue equity during a crisis, which is interpreted as a manifestation of bailout expectations. Their finding illustrates that the costs and benefits shaping the issuance decision are likely not constant

additional shares imply that her claims on the firms' profits are reduced, since profits are paid out on a pro-rata basis. On the other hand, the collected cash does not balance out this dilution of claims due to the underpricing.[10] This dilution of claims is to be contrasted from the dilution of control discussed in subsection 2.3.4. We now turn to the prevalence of the adverse selection channel in practice, with a special focus on the banking sector.

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Mechanism. Transaction costs arising from equity issuances are frequently evoked as a reason for banks' unwillingness to raise equity (e.g. Bolton and Freixas (2006), Dagher et al. (2020), Braouezec and Kiani (2021)). The mechanism through which this friction may lead to temporary, rather than permanent, effects of CR tightenings is straightforward: while issuance of outside equity is costly, building up equity by retaining earnings over time allows to avoid these costs.[7]

I define as direct issuance costs all the fees and costs that the bank needs to pay during the issuance process (Corporate Finance Institute (2023)). These include fees paid to the underwriting investment bank, to accountants and notaries to prepare legal forms and to authorities like the SEC. Fees are also paid to the underwriter for marketing activities that are aimed at selling the securities successfully and at the highest possible price.[8]

Phase-in times. What does the presence of issuance costs imply for banking regulation and policy more generally? The joint significance of these costs, irrespective of the frictions at source, provides a case for phase-in times of capital regulation. Such anticipatory periods allow banks to build up equity through retained earnings, therefore avoiding issuance fees, lemons costs, control dilution and reliance on equity demand by investors, as well as the agency costs arising from debt overhang. This intuition is confirmed in the model by De Nicoló et al. (2023), which includes a general form of equity issuance costs. Sudden tightenings of capital regulation may lead to severe cutbacks of credit. On the other hand, if tightenings are preceeded by anticipation periods, banks react by building up equity through retained earnings, preventing credit crunches.

Empirically, Eickmeier et al. (2018) provide seemingly contrasting evidence. They document that the regulatory tightenings recorded in their sample covering the 1980s and 1990s follow a process in which proposed rules are announced in advance of final rules. The latter then become effective within one to seven months, with the exception of Basel I, which became effective after 23 months. Despite the preliminary regulatory information conveyed by the initially proposed rules, their results suggest that banks react only few months before the final implementation of the tightenings. It is not discussed to what extent this may be due to banks anticipating less severe final rules relatively to proposed rules, and to

Mendicino et al. (2018), Eleney et al. (2021) and Begenau (2020)). A notion of scarce

2.6 Conclusion

Empirical evidence suggests significant transitory costs of tightening bank capital requirements. This finding can be rationalized by flow costs of equity which disincentivize equity issuance and instead incentivize a buildup of equity through retained earnings over time. I collect theoretical and empirical results on five frictions which may give rise to such flow costs of equity for banks: direct issuance costs, adverse selection, debt overhang, dilution reluctance and inelastic short run equity supply.

Getting a sense of the joint significance of these mechanisms for the banking sector matters:

[42] As pointed out by Acharya and Ryan (2016), there is currently no agreement among scholars and policymakers about optimal accounting schemes for banks.

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