

Discussion of “Banks’ Equity Capital Frictions, Capital Ratios, and Interest Rates: Evidence from Spanish Banks”

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The assessment of the benefits and costs of the more stringent regulations envisioned by Basel III has been the focus of several recent quantitative studies. The benefits are typically associated with the reduction in the probability of financial crises with their attendant adverse real effects. The costs are associated with the potential decline in the provision of credit and higher cost of funds for borrowers, with potential permanent declines in real activity.

A recent assessment of these benefits and costs is summarized in two studies promoted by the Financial Stability Board (FSB) and the Basel Committee on Banking Supervision (BCBS), which formed the Macroeconomic Assessment Group (MAG) including researchers from several central banks. BCBS (2010) studies the economic impact of stronger capital and liquidity requirements in the long run. FSB-BCBS MAG (2010) assesses the impact on real activity along the transition to the new regulatory capital and liquidity levels. Common to these studies is what we could term a *semi-structural approach*, based on a two-step procedure: in the first step, the impact of capital requirements on lending spreads and volumes is estimated based on a variety of reduced-form econometric models as well as versions of DSGE models; in the second step, the estimates obtained in the first step are used as inputs to the macroeconomic forecasting models used at central banks to predict the potential impact on real activity.

BCBS (2010) finds that an increase in capital and liquidity requirements reduces the probability of financial crises and the output losses associated with such crises. These benefits appear to

exceed the potential output costs for a wide range of higher capital and liquidity requirements. FSB-BCBS MAG (2010) concludes that the transition to more stringent capital and liquidity requirements is likely to have a modest impact on aggregate output, especially if higher requirements are phased in gradually in the span of four years.

The impact of different capital requirements on the provision of credit and its costs has also been the focus of a number of academic research papers. Kashyap, Stein, and Hanson (2010) (KSH henceforth) provide an excellent survey of this literature, and supply their own estimates of the impact of more stringent capital regulations on volume and price of bank credit in the long term as well as along the transition to the new steady state. All studies reviewed by KSH, including their own, use what we could term a *reduced-form approach*. Under this approach, several assumptions, or calibrations indirectly derived from implications of theories of capital structure, are used to either interpret or constrain estimates of reduced-form regressions that represent banks' decision rules concerning the choice of book equity and loan rates.

A large body of empirical work reviewed by KSH suggests that the short- to medium-run effects of increasing capital requirements can be quantitatively significant, justifying phasing them in gradually: this would allow banks to generate the additional capital primarily through retained earnings. By contrast, the long-run steady-state impact on loan rates is likely to be modest: KSH estimate it is in the range of 25 to 45 basis points for a 10-percentage-point increase in the capital requirement.

The paper by Martín-Oliver, Ruano, and Salas-Fumás in this volume (MRS henceforth) follows the same reduced-form approach of several papers reviewed by KSH. One important and useful feature of this paper is the use of bank-level data of the Spanish banking system that includes banks with different ownership structures, which play a significant role in that system.

MRS's analysis focuses on the estimation of two reduced-form panel regressions. The first equation (equation (8)) is a book equity equation modeled as an adjustment process towards a desired target level. The objective of this estimation is assessing to what extent the speed of adjustment of equity capital towards a capital target varies across banks with different ownership structures, such as commercial

banks and savings banks. They find that retained earnings as a tool to attain a capital target is much more important for savings than commercial banks. Thus, it is important to take into account bank heterogeneity, as the transition costs of implementing higher capital requirements may be larger on aggregate than what is found by considering commercial banks only. With the second equation (equation (9)), they assess the impact of equity capital on average lending rates. For commercial banks, they find that a percentage-point change in the target equity capital ratio may imply an increase of average lending rates of about 6.8 basis points. The implied change in the transition period is likely to be slightly larger due to the difference between the actual and target equity capital levels. By contrast, the estimated impact of changes in the equity capital ratio on lending rates for savings banks is negligible. Based on these estimates, in their conclusions MRS assess the impact of changes in lending interest rate on real activity based on simple estimates of the elasticity of GDP to lending rates: the impact of the estimated increase in the lending rates on real activity appears small.

Overall, the conclusions of the *semi-structural* and the *reduced-form* approaches tend to be similar: there are potentially high costs of adjustment to new regulatory capital in the short-to-medium run. As shown by MRS, these costs can be sensibly different and important in magnitude depending on bank heterogeneity. However, these costs can be reduced by a gradual implementation of these requirements. By contrast, in the steady state, higher capital ratios—either directly or through changes in lending rates—have a relatively small impact on real activity.

Abstracting from statistical issues, I find the *logic* of these results somewhat puzzling. If higher regulatory capital ratios are not so different from bank target ratios, aligning targets to the regulatory minimum would imply relatively small changes in loan rates and other bank policies, resulting in relatively small real effects in the steady state. Then, how can the cost of adjustment to the new regulatory minimum be so high, as shown by the literature reviewed by KSH? Conversely, if the costs of capital adjustment are significant, this means that the target capital ratio is well below the new regulatory minimum. Once such regulatory minimum is achieved, how can the new lending rates and other bank policies have small steady-state real effects if the adjustment has been substantial? One way to

explain this puzzle is to recognize that in using these methodologies, estimated policy rules based on historical data are used to infer the outcome of new regulations without an estimate of how the parameters of the decision rules may change: here the Lucas critique may kick in.

The results obtained using *structural dynamic models* may be different. One such model is the dynamic banking model of De Nicolò, Gamba, and Lucchetta (2012) (DNGL henceforth). The DNGL model studies a banking system composed of homogenous banks that dynamically transform short-term liabilities into longer-term illiquid assets whose returns are uncertain, consistent with banks' special role in liquidity transformation emphasized in the banking literature. Banks invest in risky loans and riskless bonds financed by (random) government-insured deposits and short-term debt. Financial distress occurs when banks are unable to honor part or all of their debt and tax obligations for given realizations of credit and liquidity shocks: in such a case, they can resolve distress in three costly forms: by liquidating assets at a cost, by issuing fully collateralized bonds, or by issuing equity.

DNGL evaluate the impact of an increase in capital ratios and the introduction of liquidity requirements on *steady-state* bank optimal policies and value metrics of bank efficiency and welfare, calibrating the model using statistics of U.S. bank data. Table 1 reports some results of their simulation, for standardized values of the representative bank's assets and liabilities. An increase in regulatory capital from the base case, set equal to 4 percent (column 2), to 12 percent (column 3), implies a contraction in lending of about 8 percent and a decline in bank efficiency (enterprise value) and welfare (social value) of about 6 percent. As shown in the last three columns of the table, the declines in steady-state lending, bank efficiency, and welfare arising from the imposition of liquidity requirements on top of more stringent capital requirements are much more dramatic. These results are quantitatively quite different from the steady-state results obtained through the semi-structural and reduced-form approaches, although they might be viewed as not totally inconsistent with the high cost of capital adjustment in the transition phase obtained by the empirical literature reviewed by KSH.

Work on assessing the quantitative impact of changes in regulations in the context of dynamic models of intermediation is still

Table 1. The Impact of Bank Regulation

	Unregulated	Capital		Capital and Liquidity		
	Base	Base	k = 12%	Base	k = 12%	k = 4%
					t = 20%	t = 50%
Loan (book)	4.78	6.37	5.90	2.68	2.67	2.65
Net Bond Holdings (book)	-3.48	-3.89	-3.05	0.16	0.22	0.26
Bank Capital (book)	-0.70	0.47	0.84	0.82	0.87	0.90
Equity (mkt)	4.49	4.87	4.90	3.69	3.72	3.74
Deposits (mkt)	1.89	1.91	1.91	1.91	1.91	1.91
Enterprise Value (mkt)	9.88	10.71	9.90	5.43	5.40	5.38
Government Value (mkt)	0.54	0.88	0.85	0.37	0.37	0.37
Social Value (mkt)	10.56	11.72	10.87	5.91	5.89	5.86
Default/Closure Rate (pct)	5.34	0.00	0.00	0.00	0.00	0.00

Source: De Nicolò, Gamba, and Lucchetta (2012).

in its infancy. Yet, the development of structural models to guide policymakers in their decisions on financial regulations appears to be a research priority especially important in the context of the envisioned significant changes in the regulatory landscape.

References

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