Optimal Capital Regulation

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Objectives:
Explore the characteristics of capital regulation when markets require sufficient capital to allow access to funding and the trade-offs ex ante macroprudential regulation vs. ex post measures. The risk of a credit crunch is therefore taken into account.
Findings: 1)market-imposed capital requirements should be lower during financial crises. 2) There should be a buffer on top of market-imposed capital. 3) Ex post interventions should increase the banks' charter value

Martínez-Miera and Suárez (2012) Capital requirements reduce credit and output in "normal times," but also reduce banks' systemic risk taking and, hence, the losses caused by systemic shocks.
Jeanne Korinek(2013): entrepreneurs are rationed which creates amplification effects. There is a trade-off between ex ante prevention and ex post mopping up.
Caveat: capital regulation affects shadow banking (Guillaume Plantin,2015)
Malherbe(2015): banks fail to internalize the social cost of their failure: the more aggregate banking capital in the economy, the tighter the optimal requirement.

Basic intuition

No banks-static

$\beta = \frac{1}{1+r}$: discount rate for consumers

$$Max \beta F(k) - k$$

and the first best is given by $\frac{\partial F}{\partial k} = 1 + r$

Banks' moral hazard constraint:
Banks funding: $k = I$
Charter value+equity: $V(I)$. A higher dividend tomorrow allows for a higher loan today.
Profit from absconding: θI
Market constraint; $V(I) \geq \theta I$

$$Max \beta F(k) - k$$
$$V(k) \geq \theta k$$

and the first best is given by $\frac{\partial F}{\partial k} - (1 + r) + \lambda(V'(k) - \theta) = 0$ so that $\frac{\partial F}{\partial k} > 1 + r$,insufficient lending in comparison with the first best.
Markets are incomplete because the risk of a binding market constraint cannot be insured. This creates a non-pecuniary externality.

Two effects:

Pecuniary externality leads to the second best allocation.
Risk insurance: "the constrained-efficient allocation is identical to the competitive-equilibrium allocation in steady state of the deterministic economy".

Banks funding

Households and banks trade one-period non-contingent bonds with each other.
When the bank goes bankrupt, that occurs with probability $1 - \frac{\gamma}{\beta}$ the bank pays the non-contingent bond and his equity is wiped out. So either there is an implicit "deposit" insurance or the capital has sufficient loss absorbing capacity, which means there are no bank bankruptcies.

The debt contract

It would help to clarify the specificity of the loan contract
A loan l_t in the state of nature s_t will repay $R(s_{t+1})$.
So the repayment is random.
Yet firms' demand for a loan at time t in state s_t depend on $R(s_t)$ (Equation 3), while the repayment is $\mathbb{E}(R(s_{t+1})$, (Equation 4)
In equilibrium, $R(s_{t+1})$ depends upon the cost of bank funds, therefore increases with bank regulation if capital is costly.

Impatient banks

$\gamma < \beta$ so that bank capital is costly.
There is an accident with probability $1 - \frac{\gamma}{\beta}$.
The expected value of 1\$ in bank equity is worth $\frac{\gamma}{\beta}$ in the next period and therefore it's discounted value is γ. In this interpretation banks are not impatient, its just that the expected cash flow is γ.

Technical Concern

Is the problem

$$Max\beta F(k) - k$$
$$V(k) \geq \theta k$$

well-behaved? Does it have a unique solution?
What if $V(k)$ is a linear function of k?

Missing

Focus on credit crunch. Lorenzoni(2009) and Jeanne and Korinek(2013) argument on credit booms is not addressed.
Alternatives to increasing banks' rents: what about other policies to increase the charter value?