BANK FOR INTERNATIONAL SETTLEMENTS

How to reach all Basel requirements at the same time?

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The views expressed in this discussion are my own and do not necessarily reflect those of the BIS

Objectives of the Paper

O1. Describe banks' balance sheet past adjustments to Basel III (RWCR, LR, LCR, NSFR), between 2011 to 2014

O2. Predict banks' balance sheet future adjustments to Basel III, from 2014 onward
  - Which balance sheet variables will adjust the most, and how?
  - This is important as the way banks adjust affect the real economy

O3. Analyse the interactions between Basel III regulations

Quantitative Impact Studies (QIS) Data

- Bank level data on shortfalls, run–off factors, required–stable–funding factors, etc
- Data on 156 banks for year 2011 and year 2014

Bank Balance Sheet and Regulatory Constraints

Ass.	Bank i	Lia.
	ℓ	d
	b	e
		m

- $LCRS_i \quad = 100\% - \frac{\theta_i^b b}{\theta_i^d d + \theta_i^m m - \theta_i^\ell \ell}$

- $RWCRS_i = 8\% - \frac{\omega_i^e e}{\omega_i^\ell \ell + \omega_i^b b}$

- $NSFRS_i = 100\% - \frac{\eta_i^e e + \eta_i^d d}{\eta_i^\ell \ell + \eta_i^b b}$

- $LRS_i \quad = 3\% - \frac{e}{\ell + b}$

Parameters θ_i^b, θ_i^d,... and shortfalls $LCRS_i$, $RWCRS_i$, $NSFRS_i$, LRS_i are from the QISs

O1: How did banks adjust to Basel III between 2011 to 2014?

- Higher capital and liquidity ratios
- Less marketable securities
- More corporate lending
- Higher deposit–to–asset ratios

- Distance to compliance in 2014: NSFR shortfall>LCR shortfall>RWCR shortfall

O2: How will banks adjust?

- Model 1: Mechanistic adjustment model
- Model 2: Optimal adjustment model

Model 1: Mechanistic Balance Sheet Adjustment

- Given the QIS bank–specific run–off, ASF, and RSF factors (θ_i^b, θ_i^d,...)
- Set the shortfall targets $LCRS_i^\star = NSFRS_i^\star = RWCRS_i^\star = LRS_i^\star = 0$
- Use the accounting identity $\Delta e + \Delta d + \Delta m = \Delta \ell + \Delta b$
- Back out the variations in bank i's balance sheet variables Δe, Δm, $\Delta \ell$, Δb
  - Δd is assumed to grow at the same pace as between 2011 and 2014
  - Solve 4 equations for 4 unknowns, bank by bank

Model 2: Optimal Balance Sheet Adjustment

- Given the QIS bank–specific run–off, ASF, and RSF factors (θ_i^b, θ_i^d,...)
- Set the shortfall targets $LCRS_i^\star = NSFRS_i^\star = RWCRS_i^\star = LRS_i^\star = 0$
- Use the accounting identity $\Delta e + \Delta d + \Delta m = \Delta \ell + \Delta b$
- Back out the variations in bank i's balance sheet variables Δe, Δm, $\Delta \ell$, Δb, Δd
  - Banks adjust their balance sheet so as to maximize a profit function $\pi(e, d, m, \ell, b)$
  - Solve 5 equations for 5 unknowns, bank by bank

- Change in credit is lower than the change in deposits

O3: How do Basel III regulations interact?

- Complying with NSFR helps banks comply with RWCR and LCR

Comment 1: Answer to the paper's question?

- The exercise could deliver more results
    - Too much discussion on the predictive power of the "in–sample" simulations based on 2010 data
    - Too little discussion on the results of the simulations based on 2014 data, i.e. on the answer to the paper's question
- The very interesting results on regulatory interactions (regressions) could be exploited better. E.g., does over–compliance with regulation A helps comply with regulation B?

Comment 2: Predictive power of the model

- The analysis compares the simulations based on 2010 data for 2014 with the actual 2014 realizations
- The predictions of the model for 2014 are consistent with the shortfalls being zero in 2014 (target)
- To evaluate the predictive power of the model, the comparison should be restricted to the banks, whose observed shortfalls are indeed zero in 2014

Comment 3: Dealing with corner solutions in the simulations

- A corner solution for bank i is a sign that bank i cannot comply with regulation
- The fraction of banks that cannot comply is a relevant statistics, and may not be disregarded

Comment 4: Assumption that the "factors" are constant

- Factors (or parameters) change over time (Table 5), and can be part of the bank's adjustment strategy (e.g. within marketable securities, the bank may invest in the securities with the lowest risk weights)
- Predictions assume those factors (θ_i^b, θ_i^d,...) are constant
- Adjustments only go through balance sheet variables (BSI size), not through factors (BSI quality). Hence the large number of corner solutions
- Is it possible to also predict variations in factors to allow for another margin of adjustment (through BSI quality)?

Comment 5: Why re–set the initial shortfalls to zero when they are negative?

- The paper establishes that Basel III regulations interact
- If a bank over–complies with a given regulation, it may use the leeway to comply with another
- Two alternatives
  - Could leave the initial shortfall at its level
  - Could set the shortfall target equal to the initial shortfall

$$\Delta Z + \Delta C = Bk + \Delta K + \Delta D + \Delta M$$

Comment 7: What is the rationale for the bank's objective function?

$$\max 0.015\Delta Z + 0.035\Delta C - 0.125\Delta K - 0.026\Delta D - 0.024\Delta M$$

Comment 8: Aggregate effects

- Do the balance sheet adjustments at the individual bank level entail large adjustments at the aggregate level?
- Or do individual adjustments offset each other?
- Is there a risk of fire sales along the transition path?
- Aggregate up the variation in each balance sheet variable across all banks

Conclusion

- Simple and interesting analysis
- QIS data are very informative

- The paper is hard to read (drafting, notations, tables)

- Spell out the assumptions upfront
- More focus on the results