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COSTLY BANK CAPITAL AND ITS IMPLICATIONS

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JUNE 20, 2016

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The Very Short Version

- Capital and liquidity are scarce and expensive resources for a bank and the allocation and pricing mechanisms for them have large effects on what banks do
- Literature on bank regulation predicts significant increases in bank funding costs, with at least partial pass-through to borrowers
- Banks are internal capital markets, not Soviet-style central planning organizations as we often implicitly assume
- Analyzing them as markets, rather than as a single entity, is helpful to understanding the effects of regulation on the price and volume of loans, market-making, and other services
- Regulatory requirements have become the binding constraints, indirectly determining business models and much of the specific behavior of banks

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Why is equity expensive for a bank?

- Equity investors expect returns much higher than debt-holders do
- But, the Modigliani-Miller Theorem shows that, *under idealized conditions*, this is exactly offset by lower unit costs for debt and equity if a bank has more equity
- However, the idealized conditions are violated in important ways
  - Tax preference for debt
  - Higher direct, and more importantly, indirect issuance costs for equity
  - Deposit insurance with premiums that only partially relate to risk
  - Failure of investors to reduce return requirements to the full extent theory assumes
- As a result, most analysts find that only 25-75% of the higher cost of equity funding is offset by M-M effects
- The existence of “shadow banks” exacerbates the effects of capital costs

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Empirical studies of historical data show costs do rise with more equity

- There is very limited empirical research based on the effects of historical capital increases, but it confirms that capital increases do raise funding costs for banks in the real world
- Cosimano and Hakura (2011)[3] find that a one percentage point increase in capital requirements is associated with a 12 basis point increase in loan rates for large banks, using annual data from 2001-2009 for commercial banks and BHC's
- ECB (2015)[2] find that the introduction of CRR/CRD IV contributed to an increase in lending rates of 9 basis points on average
- Using confidential supervisory data from the UK's FSA, de Ramon et al (2012) found that lending rates in the UK would rise by 67 basis points once banks have fully adjusted to the Basel capital and liquidity requirements. Uses a combination of historical data and an econometric model
- Finally, Francis and Osborne (2009)[4] utilize historical panel data on individual banks to estimate the *volume* impact of increased capital requirements. They found that due to a 1-point increase in capital requirements in 2002 the stock of lending was 1.2% lower than the baseline after 4 years

Notes: [1] de-Ramon, S., Iscenko, Z., Osborne, M., Straughan, M., and Andrews, P. (2012). 'Measuring the impact of prudential policy on the macroeconomy: A practical application to Basel III and other responses to the financial crisis', *Financial Services Authority Occasional Paper Series*, (42); Other approaches (e.g. accounting) are also used in the paper. The lending rate increase of 67 basis points is cumulative, and includes a package of reforms beyond just an increase in capital requirements (e.g. liquidity requirements).

[2] ECB (2015). The impact of the CRR and CRD IV on bank financing

[3] Cosimano, T. and Hakura, D. S. (2011). 'Bank Behavior in Response to Basel Iii: A Cross-Country Analysis', *IMF Working Papers*, 11(119)

[4] Francis, W. and Osborne, M. (2009a). 'Bank Regulation, Capital and Credit Supply: Measuring the Impact of Prudential Standards', *UK Financial Services Authority Occasional Paper*, (36)

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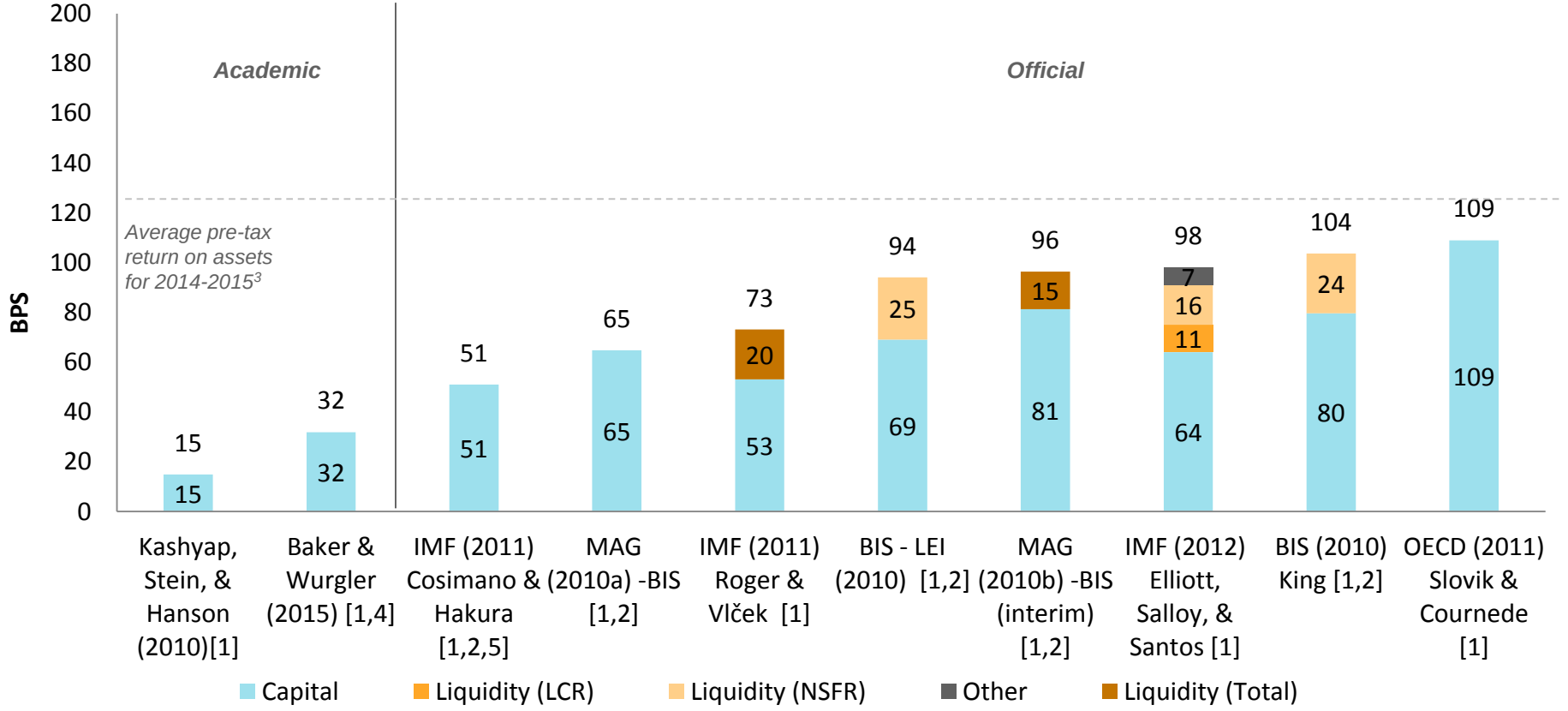
The literature predicts the Basel reforms will increase funding costs in the US

Gross impact of Basel reforms on funding costs in U.S.
(using a common set of assumptions to place on an equivalent basis, see Elliott et. al. (forthcoming). Exact figures subject to revision.)



Notes: [1] Average impact per 1 percentage point increase in capital is multiplied to account for total projected increase in ratios since 2010
[2] Includes US, Europe, Japan
[3] Average of 2014-2015 return as (total net income before taxes) / (total assets) for all banks; Source: SNL, Oliver Wyman analysis
[4] Estimate of impact on lending spreads (basis points) of increasing ratio of capital to assets by one percentage point is taken from BCBS (2016) "Literature review on integration of regulatory capital and liquidity instruments"
[5] Based on increase in the loan rate for the 100 largest banks

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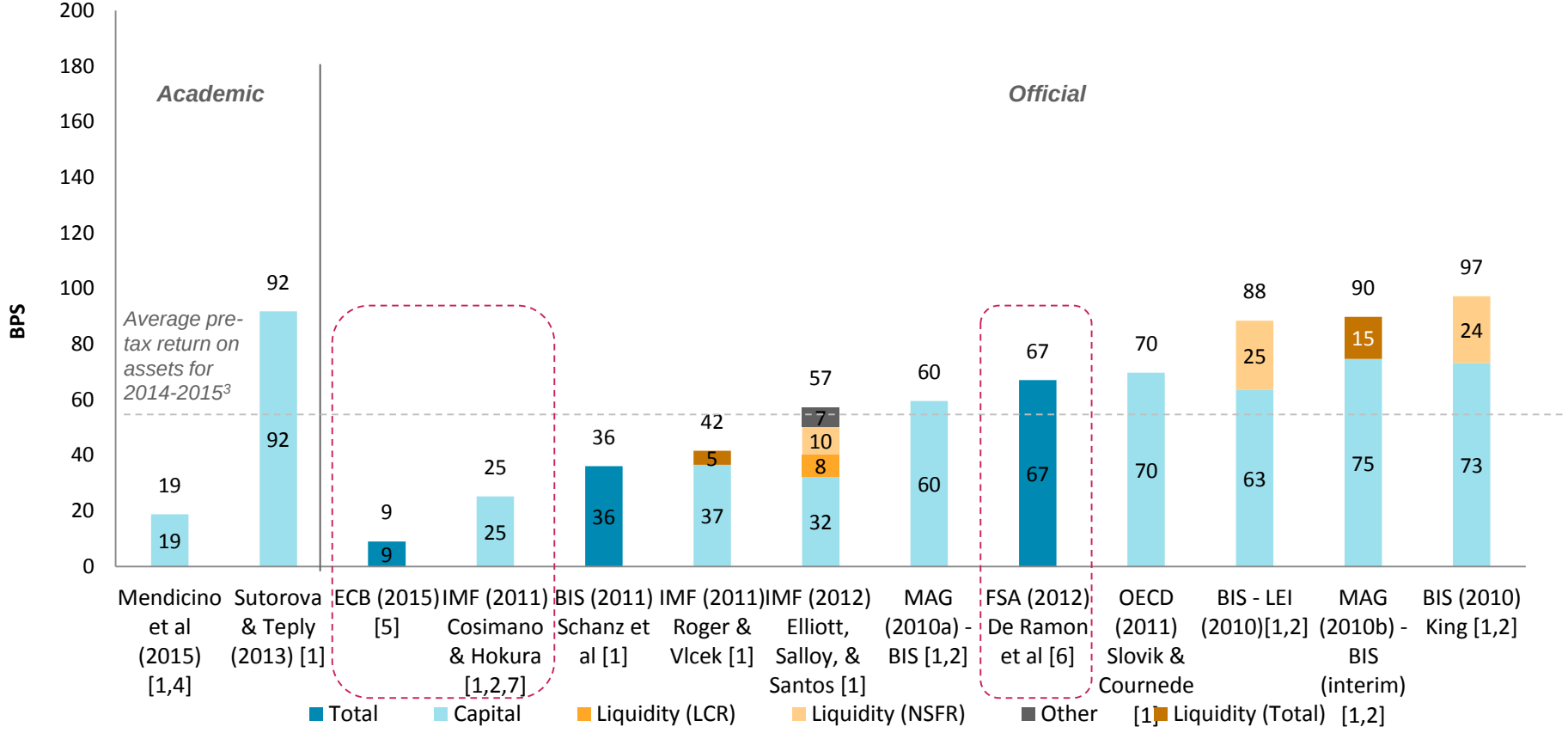
The literature also predicts the Basel reforms will increase funding costs in Europe

Gross impact of Basel reforms on funding costs in Europe
(using a common set of assumptions to place on an equivalent basis, see Elliott et. al. (forthcoming). Exact figures subject to revision.)



Notes: [1] Average impact per 1 percentage point increase in capital is multiplied to account for total projected increase in ratios since 2010
[2] Includes US, Europe, Japan
[3] Average of 2014-2015 return as (total net income before taxes) / (total assets); Source: SNL, Oliver Wyman analysis
[4] Estimate of impact on lending spreads (basis points) of increasing ratio of capital to assets by one percentage point is taken from BCBS (2016) "Literature review on integration of regulatory capital and liquidity instruments"
[5] Increase in loan rates per basis point of capital requirements is not available; full impact as per study results is shown
[6] UK only; while an increase in loan rates per basis point of capital requirements is shown in the study, the derivation of cumulative impact is not transparent. As such, cumulative impact shown by authors is displayed.
[7] Based on increase in the loan rate for the 100 largest banks

Studies discussed on slide 4

Translating this into bank behavior: Loan pricing formulas

- Most banks require loans to meet a threshold price that covers:
  - Expected loan losses
  - Administrative costs
  - Cost of capital
  - Cost of other funding
- Other services that use significant capital are priced analogously
- Usually the cost per unit of capital is held constant, so the real question is how much capital is required for the transaction
- Liquidity requirements are being folded into this process

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Capital usage

- Capital usage could be based on the single most binding constraint
  - Risk weights (advanced or standard)
  - Leverage ratio
  - Stress tests
- But, for many banks, a blended approach is necessary, effectively providing a buffer to avoid having to make sudden changes to the business being pursued
- Goldman Sachs has indicated publicly they use a weighting of five factors
  - Two versions of risk weights
  - Two versions of stress tests
  - Supplementary leverage ratio
- Other approaches are also possible
- These internal mechanisms are in a great state of flux still

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Regulation directly affects pricing

- Post-crisis, regulatory minimums significantly exceed other measures of capital requirements for virtually all banks
- This reflects a societal decision to force banks to internalize the economic externalities of financial instability, meaning that we should expect regulation to be more demanding than internal models or the desires of shareholders, other funders, and rating agency internal models
- Many regulators would like banks to do internal allocations of capital based on banks' own models, but this is not the most efficient way for them to allocate scarce, expensive resources whose usage is determined by regulation
- Thus, the specifics of regulation will ultimately flow through to customers via banks' internal pricing mechanisms

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How can we improve impact analysis?

- Traditional methods should be supplemented by a micro approach that takes into account, at least crudely, these pricing and allocation mechanisms
- In part, this requires some detailed modeling of the internal workings of banks. They are markets and economists have studied markets for decades
- In part, this requires management science, examining how firms work and the organizational behavior issues
- In part, this involves pragmatic fact gathering: surveys and interviews with senior and junior managers
- It is difficult to know the full implications without better tools and active analysis
- If nothing else, supervisors should be actively questioning banks about their pricing and allocation mechanisms and how they are affected by changes in regulation and the marketplace

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A few interesting implications from early analysis

- The existence of multiple capital and liquidity rules with different incentives provides an implicit incentive for universal banking, since “capacity” under different rules can be shared across the group
- Regulatory and market uncertainty has delayed bank revisions to their pricing and allocation mechanisms, helping limit temporarily the effects of regulations on end users
- The leverage ratio is already partially affecting decisions even at some banks for which it is not, technically speaking, the most binding constraint, due to the use of blended cost of capital calculations

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