

# Agenda

Advancing economics in business

## Capital budgeting at banks: the role of government guarantees

There has been much debate about the current banking crisis, but less attention has been paid to the capital budgeting practices at banks and the adverse manner in which mispriced government guarantees have played a role. Viral Acharya, Professor of Finance at London Business School and Stern School of Business, New York, and Julian Franks, Oxera Director and Professor of Finance at London Business School, give their perspective

### Conclusions

- The required return on equity (ROE) of banks is not, and was not pre-crisis, close to the 10% ROE used by many banks as a basis for their capital allocation decisions. We believe it was considerably higher. The measured equity betas of banks implied low or almost zero asset betas for their business risks. Such measures are simply not credible. Starting from any reasonable estimate of a bank's business risk, the cost of levered equity is unlikely to be below 20%.
- We believe that explicit deposit guarantees and implicit guarantees on other loans lowered the pre-crisis cost of borrowing of banks to virtually risk-free levels and lulled banks into believing that this low cost reflected the low business risk of their asset portfolio. Such a low cost of borrowing made the cost of debt look relatively flat over a wide range of leverage, the cost of equity look relatively high, dissuaded banks from equity financing, and resulted in excessive leverage.
- Bank deposit guarantees should be charged for by regulators on a 'marked-to-market' basis (that is, taking account of risks of the bank being guaranteed) to ensure fair pricing in bank lending decisions and to ensure that banks do not raise leverage beyond the optimum that is suitable for their business risk.
- We believe that, conversely, banks should estimate and employ in their capital budgeting practices a cost of capital 'without the guarantee'. The 'without guarantee' cost of capital is an important concept and measure because it helps answer the questions: what is the cost of bank capital relating to the underlying business risk and leverage, and what is the bank's true economic worth absent the guarantees? We consider that if a bank had value solely because of government guarantees, it would be insolvent if the guarantees were appropriately priced, and it would be essential for bank boards, top management and policy-makers to know if this is the case.

### Why current calculations of cost of capital by banks are problematic

'Capital' as is used in the banking industry generally refers to bank equity as well as some subordinated kinds of debt. 'Funding', in contrast, refers to a bank's retail deposits, commercial paper and inter-bank loans. This distinction between the two sources of bank financing derives primarily from the regulatory environment, namely capital requirements.

However, when considering a bank's true 'cost of capital', an economic rather than a regulatory concept, all forms of debt (including retail deposits, commercial paper, and interbank loans) as well as equity should be considered to be capital. While banks finance their

activities with debt most of the time, debt markets do dry up some of the time, especially when there is an accentuation of credit or liquidity risk (as witnessed in recent times and in past financial crises). When this happens, banks have to raise equity (or, if this is not possible, to seek taxpayer support).

At certain times of the economic cycle when the bank is relying on debt capital it may look as though the sole source of capital is based on debt. However, at other points of the economic cycle other sources of capital such as equity will play a greater role. At all times, the cost of capital for banks should reflect the costs of all forms of finance raised through different points of the economic cycle—that is, in both good and bad times.

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Even if bank managements recognise that a bank's cost of capital is a weighted average of debt and equity costs, there are two subtle pitfalls in how this recognition translates into implementation. First, banks commonly assume that their cost of equity capital is flat at a level of 10%, along a whole range of leverage in their capital structure. This assumption, we believe, is wrong. Second, measured or reported betas of banks in good times, which often form the basis of the banks' cost of equity calculations, underestimate the true cost of equity capital.

It is easy to see why a bank's cost of capital is not invariant to its leverage mix, even though this might seem to be the case in certain parts of the economic cycle. Consider a world where a bank's credit risk were fully priced into its liabilities—that is, a world in which there were no Central Bank guarantees (implicit or explicit) and no deadweight costs associated with leverage and default. In such a world, as bank leverage increased, the likelihood of default would rise, raising the cost of debt and the cost of equity; the increase in the cost of debt would, however, be offset by the larger weighting of debt in the capital structure. Since debt consists of the cheaper form of financing, this re-weighting ensures that in the absence of deadweight costs of leverage, the overall cost of capital is invariant to the leverage mix. This is the much-celebrated Modigliani and Miller result from the theory of corporate finance.

In practice, however, bankruptcies of banks and financial institutions, especially large ones, are costly affairs as bank assets are, and have increasingly become, opaque and their liquidation characterised by significant fire-sale discounts. These discounts reflect a deadweight cost of leverage for banks. In order to avoid these discounts, banks should and do access equity markets for funding before undertaking large-scale liquidations. Equity issuance is, however, also quite costly, especially given the opaqueness of bank balance sheets. These costs should be priced into the overall cost of bank capital, particularly when considering leverage decisions. In principle, this means that, as leverage rises, the cost of both debt and equity rise and so does the deadweight cost of leverage. The overall cost of bank capital should thus *increase* once leverage and default risk become sufficiently high. By better estimating the cost of capital banks will set more realistic capital structures.

However, what explains the deceptively flat cost of debt in good times, which some bankers believe translates into a flat cost of equity and thereby a lower overall cost of capital for a whole range of leverage? The flat cost of debt is not a reflection of the low business risk of the bank's assets, but is largely a reflection of the value of

the Central Bank guarantees over some or all parts of bank debt (an issue we return to in some detail below).

The low cost of debt in good times also creates the illusion that the bank's cost of equity is also low, albeit higher than the cost of debt. This low cost of equity is usually based on low equity betas, measured only using data in good times, and implies implausibly low levels of business risk. We believe that these low equity betas not only fail to capture realistic estimates of banks' business risk in good times, but also fail to account for the cost of equity in bad times. The latter costs are especially high because of the dilution costs since, as argued above, banks are generally forced to issue equity only in bad times when there is a certain 'stigma' attached to it: accessing equity funding sends an adverse signal to the market that the bank must be in economic or financial stress. Nor is this high dilution cost confined to new equity issues: it also extends to the economic value of 'retained equity', which in bad times carries significantly high opportunity costs.

Since the flat cost of debt encourages a high level of leverage in bank balance sheets, bank equity is turned into a virtual 'call' option on the underlying assets. Thus, it is clear that as leverage increases, the equity of the bank resembles more and more an 'out-of-the-money' option on the bank's assets. At these high levels of leverage, a small change in the bank's asset value will cause much more than a one-for-one change in its equity value. In particular, a small business loss can wipe out a significant part of the equity value (as witnessed recently), forcing costly asset sales and equity issuance. Put simply, with high leverage, equity is a highly levered bet on a bank's assets.

This view of equity is important because it implies that bank equity will have a low beta on its assets (and thus on the market) in good times when the equity option is essentially 'in-the-money', but a much higher *effective* beta in bad times when the option is out-of-the-money. In other words, an equity beta for banks of, say, 1.0 to 1.3 estimated in halcyon days significantly underestimates the true issuance cost of equity in a tempest.

## The effect of government guarantees on the cost of capital and leverage

It is perhaps surprising to observe that, pre-crisis, the cost of capital of banks appeared to be below that of regulated utilities, for example. This is because a bank's cost of debt (up to a point) may be considerably lower than that of a utility because bank debt is guaranteed in part by the Central Bank. This is an important issue, especially because many regulators have recently been

forced to raise the deposit insurance limits and also guarantee other forms of bank debt. This guarantee represents a significant subsidy to the banking industry financed by taxpayer funds, particularly to those banks which have large customer deposits.

There are four aspects of the Central Bank guarantees worth stressing. First, the guarantees are unconditional only up to a point in the leverage of a bank, beyond which the availability of the guarantee becomes a risk. Second, and as an implication of the first point, the bank's cost of debt remains more or less flat until this point of unconditional guarantee, after which the cost of debt rises sharply—much like switching from secured to unsecured funding. Third, the relatively flat cost of debt has the effect of inducing banks to undertake high levels of leverage; while the cost of debt remains low, this tendency increases deadweight costs of leverage as fire sales of assets and discounted capital-raising must be undertaken for even small shocks to the balance sheet. Finally, measuring the cost of debt without assuming the Central Bank guarantee can serve as a prudential tool in the governance of banks to curb the tendencies to take on excessive debt and risk. We elaborate on these themes next.

Banks which are integrated into the payments system have the ability both to accept retail deposits over the counter as well as to attract retail deposits to finance customer loans. Banks that are allowed to borrow in this way are limited in this ability by the restrictions placed on them by regulators in terms of regulatory leverage (ie, the need to maintain capital adequacy as defined in Basel I and Basel II). Although the formal position is that only an element of retail deposits is guaranteed by the Central Bank, in practice it is obvious that most customers have high expectations that all their deposits will be protected by the political authorities in one way or another, especially when bank failures are systemic rather than isolated in nature.

The widespread expectation that the political authorities will stand behind retail deposits in virtually all situations is the primary reason why the cost of retail deposits is low and why high levels of economic leverage have *apparently* no effect on the cost of these deposits.<sup>1</sup> If customers did not have any expectations that the political authorities would stand behind the deposits, they would exercise much greater scrutiny over the risks they face and would seek higher returns from more highly leveraged banks. In other words, the de facto political guarantee that retail depositors rely on is in effect a taxpayer subsidy to the banks. The events relating to Northern Rock are a very good illustration of the way in which customer expectations about the value of the political guarantees affect the cost of funds to the banks.

There are, however, in a bank's balance sheet other forms of borrowing such as unsecured debt and inter-bank loans, which are not explicitly guaranteed by the regulators. During isolated failures, these creditors often recover little. During systemic crises, regulators extend the guarantee to much of the bank's borrowings for at least some banks.

In other words, when banks take on excessive leverage in response to the seemingly flat cost of debt, a principal risk they take on is that the political authorities do not or cannot deliver on the explicit guarantee or on the implicit one. Banks may then be indirectly maximising the value of these guarantees rather than pursuing genuine economic value. It is our impression that the boards of banks have taken little account of this risk when setting leverage levels, focusing instead on the Basel I and II constraints which do not consider this principal risk. We suspect that, if this were properly understood, bank managements would have taken a different view on the leverage risk that they actually took on. Certainly many banks operate with levels of debt that would be simply unsustainable in the absence of the guarantee. Even though there are some regulatory limits on leverage in the form of Tier 1 and Tier 2 capital ratios, these can be gamed, as we have seen, through off-balance structures. The regulatory ratios appear to have provided excessive comfort to boards, which have not adequately considered the impact of the *economic* measures of leverage.

The implications of all this are profound in terms of corporate governance at banks. It means that, unlike other business where there is no explicit or implicit Central Bank guarantee for debt holders, bank debt holders, until recently, have played little role in monitoring and supervising the performance and decision-making at the bank, notwithstanding that they form a very large component of the bank's capital. It is also for these reasons that there has been inadequate attention paid by analysts to the proper pricing of the risk of banks' profits and balance sheets. Furthermore, it means that rating agency analyses of banks are essentially assessments of the quality of the Central Bank or the political guarantee—which is why so many banks with economic leverage in excess of 90% have (or had) AAA or AA ratings—a level which would be impossible to make sense of in any other industry. We believe that bank boards can restrain excessive leverage by requiring management to consider how their funding model is affected by the Central Bank guarantee, and hence, how it affects the desired level of leverage.

Calculating the cost of capital '*without guarantee*' has several distinct advantages for long-run shareholder value creation. First, it is indeed the true economic cost

of capital for banks in a world where regulatory guarantees were properly priced or marked to market by the regulators. Second, even if guarantees are only coarsely priced by regulators, the cost of capital without the guarantee would focus management attention on the pursuit of activities and assets that have genuine economic value rather than one arising purely from regulatory gaming. The former is likely to give banks long-run competitive advantage, whereas the latter is likely to produce only short-run profits, and possibly at the cost of taking on undesirable economic risks. Finally, a cost of capital without the guarantee would rise gradually as bank leverage increases rather than being flat over an entire range of leverage. Since the tipping point at which the cost of bank debt rises sharply and dramatically (or debt financing dries up) is hard to predict a priori with precision, the cost of capital without the guarantee would protect banks more effectively against a sudden funding crisis, avoid costly asset sales and unplanned capital issuance, and thereby improve capital budgeting over the cycle.

## Policy implications

We end with a summary of our policy recommendations for banks.

- Banks should measure their cost of capital ‘without the guarantee’ in order to determine the extent of the guarantee’s value and its impact on the capital structure of the bank and the amount and price of lending. This is an important metric when considering capital allocation decisions outside the guaranteed structures.
- Banks should set a cost of capital that reflects the cost of capital in good times and bad times, and obtain better estimates of their effective equity beta, and thus of their cost of issuing equity capital in bad times (when equity is typically issued).
- Banks should consider how their economic leverage and the business mix of lending and asset activities relate to their cost of capital. They should also analyse how the interest rate spreads they charge on loans and other assets relate to their cost of capital.

Similarly, our primary policy implication for regulators is that the provider of bank guarantees should properly mark to market the value of these guarantees, taking account of asset risk as well as leverage of the bank being guaranteed, and charge a premium accordingly, and on a regular basis.

**Viral V. Acharya and Julian Franks**

<sup>1</sup> The other reason for the cost of retail deposit accounts being so low is that they are integrated into the payments system and so offer a service to customers for which banks charge partly by lowering the yield offered on retail deposits.

If you have any questions regarding the issues raised in this article, please contact the editor, Derek Holt: tel +44 (0) 1865 253 000 or email [d\\_holt@oxera.com](mailto:d_holt@oxera.com)

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