

PROFESSOR VIRAL ACHARYA AND PROFESSOR JULIAN FRANKS

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4th October 2008

Dear Glen

You have asked us for our views on a number of issues arising from the questions that you put to HSBC at its AGM in May in relation to the cost of capital and the way in which risk appears to be priced in decision-making at that bank. We have extensively discussed your thoughts on these subjects over the past few months both with you and with our academic colleagues. We have detailed below some of our thinking. We believe that the Boards of banks may wish to consider further these issues given that they have a direct bearing on the financial turmoil of the past year.

Our conclusions, which are set out in this letter, are as follows:

- (a) The use of ROE thresholds for allocating capital without considering **economic leverage** and business risks can lead to a misallocation of capital. For the same reason, it is unlikely that any bank will have a single 10% cost of equity regardless of its risk and leverage and it would be inappropriate to embody such a threshold in any compensation plan that seeks to align shareholder and management interests;
- (b) The use of the weighted average cost of capital model for allocating capital can be appropriately used in the banking sector provided that suitable adjustment is made for the variations in cost of bank's debt and equity capital over the cycle and the impact of the central bank guarantee that is implicit in much bank finance;
- (c) Perhaps the most important risk that bank's boards must manage is the risk that political authorities may not be able or willing to honour the explicit or implicit guarantees they offer debt investors in the company. This may require a more conservative financing strategy than would otherwise be the case; and

- (d) The regulatory framework which restricts bank leverage is not designed to protect shareholders but to enable regulators to manage financial stability. Banks' boards must therefore ensure that they take additional steps as necessary to protect the interests of shareholders.

We have organized our thoughts on five themes:

1. Funding and capital.
2. ROE-maximization as a bank objective.
3. The role of Central Bank guarantees.
4. Governance and compensation.
5. Some issues for analysis.

1. Funding and capital

You have asked us to consider the issue of 'funding' and 'capital', an issue arising from your question at the AGM, and HSBC's response. We explore how this distinction relates to a bank's cost of capital and why banks typically may have underestimated their cost of capital and over estimated the profitability of their lending.

As we understand it, "funding" and "capital" as used within the banking industry refer to different aspects of bank balance-sheets. "Funding" generally refers to a bank's retail deposits, commercial paper and inter-bank loans. "Capital" in contrast generally refers to bank equity as well as some kinds of debt. The distinction derives from the regulatory framework within which the banks operate.

However, when considering the bank's "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 are considered to be capital. While banks finance their activities with debt most of the time, debt markets will 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), as this is the only way to mitigate credit or liquidity risk problems and yet obtain the funding required to survive as a going concern.

Thus, 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 upon debt. However, in other points of the economic cycle other sources of capital such as equity will play a greater role. In turn, 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.

As a result, we believe the use of net interest margins - the spread over the cost of debt or "funding cost" – as a benchmark cost of capital for judging the profitability of lending decisions exposes banks to the risk of over estimating the profitability of lending.

Even if Bank managements recognize 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 to implementation. First, the cost of equity capital is not flat at the industry-perceived level of 10%, *along a whole range of leverage in the capital structure*, as is commonly assumed. Second, measured or reported betas of banks in good times, which often form the basis of the banks' cost of equity calculations, do not reflect the equity beta in bad times and as a result the cost of equity is often underestimated.

Equity betas measured only using data in good times imply implausibly low levels of business risk. Crucially, they also understate the (dilution) cost of equity in bad times, which is when banks are generally forced to issue equity. Nor is this high cost confined only to new equity issues; it also extends to the economic value of 'retained equity' which in bad times carries significantly high opportunity costs.

Let us elaborate on these two themes. 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 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 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 difficult affairs as bank assets have become increasingly opaque and their liquidation characterised by significant discounts in a fire sale of assets. Banks are also often put up for sale at throw-away prices when they get into trouble. These discounts reflect a deadweight cost of leverage. These costs should be priced into the overall cost of bank capital, particularly when leverage gets to be so high that the default risk is also high. In principle, this means that as leverage rises, the cost of both debt and equity should also rise.

Then what does explain the deceptively flat cost of debt, which some bankers believe translates into a flat cost of equity over 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 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. This flat cost of debt encourages a high level of leverage as is typically present in bank balance-sheets. This makes equity into a virtual "call" option on the underlying assets. Given this view, it is clear that as leverage increases, the equity of the bank resembles more and more an "out-of-the-money" option on bank's assets. At these high levels of

leverage, a small change in bank's asset value will cause much more than a one-for-one change in bank's equity value. In particular, a small business loss can wipe out a significant part of equity value (as witnessed recently). Put simply, with high leverage, equity is a highly levered bet on 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 beta in bad times when the option is out-of-money. A beta of (say) 1.0 to 1.3 for bank equity estimated in halcyon days significantly under-estimates the beta in a tempest, and by implication, the equity cost of capital. It is worth repeating that this high cost of equity applies to both the bank's existing equity and any new equity although the latter may be especially expensive in bad times.¹ As a result, banks and the market have tended to underestimate the cost of equity.

Why don't analysts spot this mispricing? The primary effect of the Central bank guarantee is to blunt the edge of private monitoring of bank balance-sheets, shift the onus on regulatory supervision, and inadvertently delay the release of information about bank problems to markets. This explains why bank debt looks "cheap" most of the time, masking the precipitous rise in its cost once problems arise (in fact, rising to the point where banks get rationed for *any* further debt financing). This lack of timely arrival of information may be another reason why banks' measured equity betas can be artificially low in good times.

To summarize, while a bank's cost of debt may be relatively flat up to a point, it tends to rise dramatically and very non-linearly with the level of leverage and credit risk. This rise is concomitant with a rapid rise in the cost of equity capital.

We believe that banks should take a longer-term perspective on their cost of capital that takes account of the change in leverage mix over the cycle and the associated change in business risk. This is unlikely to produce a flat hurdle rate or return on equity of 10% to be met by bank investments at all points of time. While rules of thumb are often a rational response to inordinately complex situations, a flat hurdle rate of 10% appears too simplistic for a sector that specializes in high leverage and the design and pricing of complex financial securities, and as is now apparent incurs very high costs of distress in bad times, a cost that falls substantially on shareholders.

2. ROE-maximization as a bank objective

A second question raised by you is in response to HSBC's use of ROE to determine capital allocation.

¹ It is worth mentioning that empirical evidence suggests that in good times, banks take on high leverage and more asset risk compared to bad times. This variation in the underlying asset risk along with the variation in leverage should only amplify the effects on cost of debt and equity capital that we have described.

The use of ROE raises a number of issues. First, whether maximizing return on equity (ROE) is the right business objective for banks. It is important to note that ROE is an accounting concept and its measurement in any given year or quarter (as ROE is commonly measured) informs us about that particular year's or quarter's performance. It is not a concept about the total stock of value of a business decision. Put another way, ROE does not tell us the true attractiveness of an investment or project unless it is measured over a long period or over the entire life of the investment or project. Short-run ROE can be high if a bank (or any firm for that matter) pursues a highly risky strategy that pays off in the short run but can in fact be value-destroying over the long run. Thus, the maximization of ROE in a short-term sense can clearly be a problematic capital-budgeting exercise.

Second, ROE maximization (or any such capital-budgeting objective) cannot be divorced from the associated cost of capital for a particular ROE. Purchasing an asset on a bank balance-sheet that has an ROE of 10% and an associated cost of equity capital of 8%, would be more attractive than an asset that has an ROE of 12% but an associated cost of equity capital of 15%. Such differences in the costs of equity may reflect differences in leverage or differences in the risk of the underlying business. The former exposes the bank to greater default risk, and the latter to greater business risk; both feed into a higher cost of equity.²

Third, the broad principle of ROE maximization as a bank objective, *without regard to the associated cost of capital*, would be fine under the assumption that bank funding cost is unchanged. That is, if the equity cost of capital was 10% no matter what, then one simply has to create a spread from an investment on top of this 10%. As argued above, we believe that the Central Bank guarantees of bank debt and miscalculation of the cost of equity capital based on "good-time" betas has led to the illusion that bank funding cost is unchanged regardless of leverage and business mix.

Hence, we do not believe that there is a golden fixed number such as 10% that represents the relevant cost of capital for the banking sector. Given the lack of such a number, we also do not believe that a pure ROE-maximization objective is in the long-run interests of any of the bank's shareholders. We propose in our concluding remarks some alternative bank objectives, which are founded on a sounder footing.

3. The role of Central Bank guarantees

In your note to HSBC at the AGM, you suggest that because the business risk of a bank is likely to be higher than the business risk of a utility, then it must follow that the WACC (namely the "weighted average cost of capital", a concept we have

² When we refer to leverage we do not mean *regulatory leverage*, e.g. tier 1 capital, which can remain constant even when the value of the bank's assets is changing but rather *economic leverage*; the latter reflects the underlying economic value of the banks' assets and their associated risks.

referred to so far as simply the “cost of capital”) of a bank should always be higher than that of a utility.

While we agree that the business risk of a utility is likely to be considerably lower than that of a bank, we believe that there is an important reason why the WACC of a bank may *appear* to be lower than that of a utility. 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 are raising the deposit insurance limits, and because it is not well understood by the markets. 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 guarantee worth stressing. First, that Central Bank guarantees are unconditional only up to a point in the leverage of a bank, beyond which whether they would be extended or not 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. And fourth, analysing the cost of debt (funding) without 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. The only limits on banks that are allowed to borrow in this way are the restrictions placed on them by regulators in terms of regulatory leverage (i.e. the need to maintain capital adequacy as defined in Basel I and Basel II). The formal position is that only an element of retail deposits is guaranteed by the Central Bank: in practice however 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 effect of the de facto Central Bank guarantee is to change the credit risk of the retail deposits from one which is dependent on the creditworthiness of the bank into one which is essentially based on the creditworthiness of the Central Bank and the government which supports it.

The widespread expectation that the political authorities will stand behind retail deposits in virtually all situations is one 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.³ If customers did not have any expectations that the political

³ The other reason is that retail deposit accounts 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.

authorities would stand behind the deposits, then 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, 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 (e.g., Northern Rock) but not for all (e.g., Bradford & Bingley).

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 are indirectly maximizing 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. If properly understood, we suspect 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 such as the SIVs. The *regulatory* ratios appear to have provided excessive comfort to boards who have not adequately considered the impact of *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 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 by analysts to the proper pricing of the risk of banks' profits and balance sheets. Further, 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.

It might seem that maximizing the value of Central Bank guarantees should also be in the interests of bank shareholders. Unfortunately, this is not always so. In the

competitive market conditions that exist in banking, the benefits of the lower cost of debt resulting from the guarantees do not appear to have accrued to shareholders but to borrowers and customers who benefited from lower lending costs and looser lending criteria. Banks, in fact, ended up lending to borrowers that are 'down the quality curve' thus increasing the overall business risk of their assets and creating an artificial demand for some assets which has resulted in unfortunate asset bubbles. As the bubble burst with the poor performance of some of these low-quality assets, even small asset value fluctuations were sufficient to wipe out bank equity values given the very high levels of economic leverage.

It is for these reasons that Central Bank guarantees are a double-edged sword. They reduce a bank's debt costs, but they encourage high and often excessive leverage which exposes shareholders to very high distress costs in the event of an insolvency or liquidity failure. Hence, reducing economic leverage in the banking industry may actually increase shareholder value. We believe an important lesson from this crisis is to analyse the value of the Central Bank guarantees and their impact on the cost of bank capital and the leverage of the bank. Simply meeting regulatory capital requirements is not a good proxy for such an analysis and indeed may focus attention of management on gaming regulation rather than on creating economic value.

4. Governance and compensation

Our observations about ROE and Central Bank guarantees have important implications for governance. We discuss the most salient of these below.

Remuneration schemes that reward management for increases in ROE and earnings per share (EPS) without taking into account economic leverage and the risks that it entails is unlikely to align management and shareholder interests and for reasons that we outlined above may cause them to diverge. ROE and EPS are short run measures that inadequately reflect true economic values. As such, they provide management with short-term horizons of decision-making. Also, ROE and EPS based objectives that do not adequately take account of the risks of the underlying leverage encourage excessive risk-taking. The end effect of this is especially perverse for financial institutions with high and varying levels of leverage. Since we believe that a single cost of equity regardless of leverage may lead to poor capital allocation decisions, we would caution against their use in compensation and remuneration plans as this may embody incentives that encourage management to destroy rather than create shareholder value.

The value of the political guarantee to many debt holders of a bank (and the taxpayer subsidy that this implies) is fundamental to the high leverage model of banking that has developed. For the very largest banks and cross border banks in particular uncertainty over whether and how political authorities will give effect to this guarantee may destroy value significantly. Boards should consider their policies on risk and leverage having regard to this. Critically, boards should involve their

shareholders in decisions relating to risk and leverage in the same way that they discuss these issues with regulators.

5. Some issues for analysis

We wish to end this letter on a constructive and concrete note, with suggestions that banks might wish to consider:

1. Measure the bank's 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 of lending.
2. Set a cost of capital that reflects the cost of capital in good times *and* bad times. Obtain better estimates of the cost of equity of the bank and the equity beta of the bank, again in good times and bad times.
3. Consider how the economic leverage of the bank and the business mix of lending and asset activities relate to the bank's cost of capital.
4. Set a target ROA - return on assets (debt + equity) - rather than ROE since ROA better reflects the economic profitability of the bank's assets. Also take account of a suitable cost of capital (see Points 1, 2 and 3) while setting the target ROA.
5. Analyse how interest rate spreads on loans and other assets relate to the target rate of return on assets and equity.

We would be happy to discuss our views further with you.

Yours sincerely,

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Julian Franks

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HSBC Holdings pc

Transcript of exchange between Eric Knight and Stephen Green and Douglas Flint about Bank cost of equity

Eric Knight: Thank you. My second question relates to the cost of capital. You say that the cost of equity at HSBC is 10%. This is a figure which has been, I think, stayed constant for some time.

Stephen Green: Entirely normal banking cost of capital I might add.

Eric Knight: And the costs of your interest bearing debt is about 4% which means therefore that the weighted average cost for your capital is round about 4.5% calculated on this basis. And my question is: If you look at, for example, the cost of capital which OfGen, which is the UK electricity and gas industry regulator set for what is a risk free business for the gas utility companies, this is with no commercial risk at all. You'll see that that is 6.2% as opposed to your 4.5% which might imply therefore that you are using too low a cost of capital. If that is the case, if that were to be the case, that would imply or might suggest that you are seriously misallocating capital and have been doing so now for years and have been mis-pricing your financial products by not essentially pricing in a sufficient return for the level of risk you are taking which would, and I am referring there, this might explain for example, the investment in Household.

Douglas you say that late last year that when asked a question by an analyst as to how much money exactly are you prepared to put into Household the response was, "Well we will carry on putting in money as long as it covers the cost of capital", I suppose, and I do not know if that was sort of an off the cuff comment or not, but this also has implications for example as to the decision to continue investing in mortgages in the UK, the decision to invest in Korea and so on. All of this is impacted by the cost of capital. My question, therefore, is: are you not systematically mis-pricing the risks that you take when you make lending and investment decisions?

Stephen Green: Well sir thank you for the question and I will pass it to Douglas in one second but just let me make one general comment. You have misunderstood the way in which banks cost their capital, you have conflated a number of what are effectively funding instruments with real capital but I will let Douglas speak to that and we certainly use what is an entirely normal industry cost of capital in making our investment decisions, which is of the order of 10%. Douglas...

Douglas Flint: I hope shareholders will believe that, given our industry, we have a significant amount of sophistication in the analysis of what our cost of capital is. We use an economic capital framework, capital is charged through individual businesses on the basis of business risk, country risk, operational risk, volatility of return and we simply look when we allocate capital at the equity support that we give.

I think to try and overlay a regulated utility model against the banking model is actually a very, very false comparison and I think the best evidence of the discipline that we have in our capital framework is that we have set out publicly for the first time this year, targets of making a 15 - 19% return on equity and that is what we are focused on and I believe that if we achieve that, that will be a very good result for shareholders. So it is the return on equity we focus on, it is the equity that we cost to our businesses and I think that the regulated capital model of the utility and its funding is not an appropriate way to look at the bank and therefore I cannot comment on your calculations.