Article:
Excessive leverage and bankers’ incentives: refocusing the debate
Abstract
High leverage levels can lead to virtually limitless expansion of bank asset size, which maximizes, in the short to medium term, banks’ return on equity. In the absence of regulatory controls on leverage, all it takes to assume excessive risks, even for benign bankers, is to imitate competitor business strategies and herd. This form of herding is not solely motivated by compensation considerations, but also by career (job retention/promotion) concerns. Namely, while bankers’ compensation has been a major factor behind bank short-termism and excessive risk-taking, the availability of high leverage entails serious agency costs even in the absence of compensation incentives. As a result, regulatory reforms that focus on regulation of private compensation contracts ought to be supplemented by well-calibrated leverage ratios. Otherwise, they are bound to produce, in the long-term, suboptimal results, notwithstanding the conspicuous political gains of such a strategy.
1. Introduction

Leverage is normally understood as employment of borrowed funds in a way that allows a financial institution to increase potential gains or losses on a position or investment beyond what would be possible through a direct investment of its own funds. Leverage is an inevitable feature of banks’ role in providing credit intermediation and maturity transformation. With the advent of securitization and the explosion of shadow banking as a means of short-term financing, bank leverage in the mid-2000s reached levels previously unseen.

Under modern finance theory, a debt-financed corporation is as robust as an equity-financed one [Modigliani and Miller (1958)]. In addition, debt has traditionally been viewed as an effective corporate governance tool [Jensen and Meckling (1976)]. However, as we shall discuss in detail, these traditional maxims rarely – if ever – apply to banks, at least in the absence of strong regulatory constraints. High leverage levels can lead to rapid expansion of the size of bank assets, maximizing, in the short to medium term, banks’ return on equity (RoE). At the same time, (short-term) debt-fuelled bank capital structures increase bankruptcy risk, since they are an important cause of bank failures.

A great deal of scholarly and regulatory work since the global financial crisis (GFC) has focused on bankers’ pay and the perverse incentives embedded in it. These works have lent a sound empirical and theoretical grounding to public “gut feeling” and outrage with bankers’ irresponsible behavior. As a result, the tenor of contemporary post-GFC regulatory reform reflects the view that bank corporate governance deficits and perverse incentives embedded in compensation packages were significant causes of bank failures, since market discipline clearly failed in the pre-GFC era.

However, the role of leverage and its influence over bank governance and bankers’ behavior has remained largely unexplored. Yet unchecked availability of leverage creates perverse incentives in connection with bankers’ rent-seeking which, in turn, creates strong agency costs. On this basis, an in-depth examination of the counter-factual in relation to the GFC, which is largely missing from the “bankers’ greed” narrative, reveals a more nuanced picture. Bankers pursued risky strategies because they could, while the motive could be either job retention/promotion, or enhanced compensation, or both.
But would bankers have been so free to adopt and pursue risky business strategies if their ability to excessively leverage bank balance sheets was restricted by regulation? Clearly, there is a symbiotic relationship between leverage and short-term performance based compensation packages. Yet leverage building is not only motivated by compensation incentives, but also by job retention and promotion concerns, which in the financial industry are highly prevalent [Lakonishok et al. (1994); Chevalier and Ellison (1999); Hong and Kubik (2003); Brown et al. (2013)].

There is strong evidence for example, that the highly leveraged buyout of ABN AMRO by RBS in 2007, which reduced RBS's reported tier-1 capital ratio to 4%, was mostly driven by the career concerns of its most senior executive rather than pay targets [FSA (2011)]. The career concerns rationale is the only possible way to reconcile the narrative of “greed” [Bebchuk et al. (2010)] which is, arguably, based on sound empirical research, with the equally methodologically flawless line of research that shows CEOs in most of the banks that failed in 2008 were major shareholders and their compensation incentives were perfectly aligned with the banks' long-term objectives [Fahlenbrach and Stulz (2011)]. Namely, career concerns and other behavioral explanations of bankers' behavior complement the greed narrative. Thus, it provides a more complete picture of what motivated bankers' conduct, given shareholder short-termism and industry peer pressure, which pushed bankers at all levels – but especially senior management – to adopt herding strategies.

It is therefore debatable whether the regulation of bankers' pay can eliminate in itself risks to bank and financial system stability emanating from bank employee behavior; it might not even substantially curb such behavior. But in its normative implications, such public intervention with private contracting is far from being all-encompassing, since the availability of high leverage impacts bankers' investment behavior and the size and complexity of the institution's balance sheet regardless of the structure of bankers' compensation.

In the absence of unrestricted leverage, building bank size is a time-consuming and costly exercise that requires strong focus on relationships with existing and prospective clients. On the other hand, employment of leverage as the principal ingredient of bank capital structure, rather than share capital increases, is the cheapest and fastest way to build size – both in a relationship banking but, even more so, in a transactional banking environment.
Increased bank size and complexity present an ideal environment for hiding excessive risks and posting “inflated” short-term profits, which also increase the size of performance-based executive compensation packages. Given that excessive leverage can lead to institutional failure, financial instability and allocative inefficiencies, it is clear that leverage-induced executive decisions have governance implications and entail high agency costs, as management adopts business strategies that are harmful to the long-term financial sustainability and profitability of the bank.

This situation is in turn prejudicial to the interests of bank creditors and shareholders with a long-term view and undermines social welfare. In this paper, we define bank management’s capital structure-based decisions to choose suboptimal business strategies as “leverage agency costs.” Axiomatically, since bankers’ motives to build leverage are much wider than mere greed, controls on bankers’ compensation are probably insufficient to contain bankers’ risk-seeking. Arguably, leverage controls are an effective remedy whether in addition to or even in lieu of strict regulation of private contracts.

Our analysis is based on existing empirical research and does not present new empirical findings. We are, however, of the opinion that by highlighting the implications of the relationship between bank leverage, on the one hand, and bankers’ rent- and risk-seeking behavior, on the other, we contribute to a more nuanced understanding of how excessive leverage impacts on bank governance, including bankers’ risk-seeking, and of the conditions that make it possible. We postulate that, as leverage leads to virtually limitless expansion of bank asset size, which, of course, maximized — in the short to medium term — shareholder returns, even benign bankers have no other option but to imitate competitor business strategies and herd in order to retain their jobs or further their career prospects. Such behavioral motives entail serious agency costs, since in their striking selfishness they induce risk-taking, which is detrimental to the long-term stability of the institution and of the financial system. At the same time, they are also much less reprehensible from a moral point of view than if these strategies were motivated by mere greed.
In Section 2, we discuss the leverage cycle and its relationship with bank strategy. In Section 3, we summarize existing research on the interplay between bankers' incentives and bank leverage. In Section 4, we analyze briefly the trend of increasing leverage at large global banks prior to the GFC. In Section 5, we survey reforms (both enacted and proposed) to bank leverage ratios which, we argue, will restrain the capacity of bankers to increase bank debt, both due to career concerns and the quest for increases in their compensation. Section 6 concludes.

2. The leverage cycle and bank strategy

In many ways, the cyclicality of debt and impact of leverage on the economy as a whole and on the behavior of individual economic actors as well as on financial stability was best described by the late Hyman Minsky [Minsky (1992)]. His work is further developed today by a number of respected scholars exploring the financial stability ramifications of the leverage cycle [Bhattacharya et al. (2011)]. One of the most worrying characteristics of the leverage cycle is that while the risks it creates are often Gaussian it can also give rise to “fat tails.” Moreover, as leverage is cyclical, so is the rise and fall of asset prices. While the credit cycle should not be confused with the so-called “leverage cycle,” the main feature of the leverage cycle is also rising asset prices in tandem with rising leverage, followed by falling asset prices and deleveraging [Fostel and Geanakoplos (2013)].

The most important risk associated with leverage is the speed of deleveraging in a downturn as it may often prove difficult to prevent a “leverage cycle crash,” which critically will lead to increased margin calls (a so-called ‘margin calls spiral’) and probably to an evaporation of liquidity and a credit crunch [Brunnermeier and Pedersen (2009)]. Therefore, one of the most harmful effects of excessive leverage and sustained rapid credit growth - for both individual financial institutions and the financial system as a whole - is that it induces financial instability.

Intuitively, one would expect that in a fair-value environment a rise in asset prices would boost bank equity or net worth as a percentage of total assets. Stronger balance sheets would result in a lower leverage multiple. Conversely, in a downturn, asset prices and the net worth of the institution would fall and the leverage multiple would be likely to increase.
Contrary to intuition, however, empirical evidence has shown that bank leverage rises during boom times and falls during downturns. Leverage tends to be procyclical because the expansion and contraction of bank balance sheets amplify rather than contain the credit cycle. Fostel and Geanakoplos (2013) explain that the reason for this phenomenon is that banks actively manage their leverage during the cycle using collateralized borrowing and lending. When monetary policy is “loose” relative to macroeconomic fundamentals, banks expand their balance sheets and, as a consequence, the supply of liquidity increases. In contrast, when monetary policy is “tight,” banks contract their balance sheets, reducing the overall supply of liquidity [Adrian and Shin (2010)].

In other words, during periods of economic prosperity and low loan defaults, banks’ capacity to create credit, coupled with inflated collateral values, increases banks' profits, which if retained as capital removes constraints on further credit growth [Turner (2010)]. In addition, some financial assets become very popular among a certain class of buyers in relation to the rest of the public. Buyers in this case are willing to pay higher prices, or tolerate increased risk. This is often due to optimistic expectations concerning the future price trajectory of a given set of assets. Unsurprisingly, such procyclicality contributes to higher risk-taking by banks. Moreover, investors – including banks – will borrow more to fund asset purchases, thus driving those prices up. The capacity to leverage balance sheets acts in tandem with this optimism to facilitate greater speculation on asset prices than unleveraged investors [Minsky (1992)].

On this basis, there are four plausible drivers of the adoption of excessive leverage. Firstly, managers will engage in rent-seeking [Shleifer and Vishny (1992)]. In the absence of bail-in safeguards, the strong possibility of a bailout means that monitoring by debt-holders is weakened and increased bank leverage does not generate a commensurate increase in the cost of debt financing. The possibility of a creditor bailout creates a situation in which the adjusted costs of monitoring by debt-holders may exceed its benefits and market discipline breaks down, leading to increased use of uninsured debt to fund bank assets [Diamond and Rajan (2001)]. The perverse result of this is that banks’ ability to increase leverage is enhanced when they take excessive risk [Acharya et al. (2010)].
Secondly, bank management may use asset substitution to shift risks, a process made much easier through leverage. The possibility of regulatory arbitrage may mean that banks select asset portfolios with higher risk in order to maximize return on capital [Koehn and Santomero (1980)]. Risk-weighting of assets in bank portfolios ought to mitigate these effects somewhat (assuming those risk weights are accurate), but it is clear that banks push many risks off-balance sheet and actively manage risk-weights [Goodhart (2011)].

Furthermore, because leveraged institutions are also likely to be more opaque, evaluating the riskiness of their operations may be difficult. Banks’ ability to borrow heavily to alter financial risks permits them to engage in asset substitution more readily than nonfinancial firms and hide problems in their asset books [Merton (1977)]. In the presence of significant managerial incentives to adopt a leveraged capital structure, the ease with which risks are shifted increases incentives for banks to grow their balance sheets [Morgan (2002)].

Thirdly, the relative riskiness of bank asset portfolios is driven largely by the preferences of the category of each agent class (deposit guarantor, shareholder, or manager) that dominates a banks’ decision-making [Jeitschko and Jeung (2005)]. Based on this classification, banks that are dominated by shareholder decision-making favor the highest level of risk, followed by manager-dominated banks, and lastly, by banks dominated by deposit guarantors. To the extent, therefore, that capital requirements may influence bank behavior, governance arrangements in those institutions will inevitably be affected. It follows that shareholder-dominated banks will, in the absence of leverage constraints, pile up leverage, since shareholders face a clear conflict of interests when choosing a bank’s capital structure and they normally prefer to finance balance sheet expansion through debt.

Admati et al. (2013) have vividly explained the reasons for shareholders’ persistent preference for high leverage. While premature debt redemption in good times favors creditors as the bank will become safer and less likely to fail in bad times, thereby lowering creditor risks, bondholders will inevitably ask to hand in their bonds to be redeemed for a price higher than the prevailing market price. Thus, early redemption will eat into bank profits, leaving shareholders worse off without any clear compensating benefit to the share price, which might even decline as lower leverage clearly points to lower levels of future profitability.
This makes the up-front cost of early tax redemption undesirable to shareholders. Shareholder preference for high leverage thereby leads to the so-called “leverage ratchet” effect in which worthy projects are ignored by an over-leveraged bank in favor of lower quality loans.

Finally, financial innovation and the ability to “optimize” capital structure through leverage have been the key factors behind the growth of bank business over the last 20 years. In the case of transactional banking, leverage can be the catalyst for rapid building of bank asset size [Blundell-Wignall and Atkinson (2012)]. But, as leverage reduces the impact of trading positions on cash flows, it enables banks to reduce the amount paid at the outset of a financial contract, particularly when derivatives are used. Financial innovation has enabled financial institutions to trade in notional amounts, and to leverage their trading positions, on the basis of thin margins or borrowed collateral. This fuelled the expansion of trading book and (to a lesser extent) lending book assets, on the basis of a thin capital base.

These developments increased risk-taking not only because there was no obvious limit to the kind and size of financial bets a bank could take, but also because trading positions are easy to bury in a big bank’s balance sheet; a possible explanation for financial industry’s lobbying toward conglomeration in the 1990s [Avgouleas (2012, 2015)]. It follows that in the absence of controls on leverage, all it required to expand bank asset size, even for benign senior managers, was to imitate competitor business strategies and herd.

3. Bank leverage and bankers’ incentives
Remuneration packages are viewed as risk-reducing solutions to corporate agency problems: by tying the rewards of executives to shareholder interests, compensation plans purport to reduce risk to firm equity. In principle, the less stock managers own in a firm, the greater their incentive to appropriate private benefits, since any profits made by the company are distributed to shareholders. Thus, stock-based compensation is held as a solution to such agency problems, as it may be designed in an appropriate fashion to align the interests of equity owners in the firm with those of company management [Morck et al. (1998)]. In the past two decades, the award of stock options was the most popular method to align shareholder and managerial interests, and to act as a counterweight to their innate risk-aversion [Jensen and Murphy (1990)].
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On the other hand, stock option awards may exacerbate agency costs, given management’s tendency to use mechanisms available to them to capture short-term gains at the expense of long-term performance [Cullen (2014)]. This risk is ever stronger in corporations where shareholders are inadequate monitors and boards are weak and unwilling to rein in executives wishing to influence the structure of their compensation packages and, arguably, in which managers enjoy greater capacity to use leverage to magnify returns. As demonstrated in Figure 1, equity-based compensation and stock-based bonuses were used heavily at financial institutions prior to the GFC.

Figure 1: Senior (named) executive compensation proportions at U.S. financial firms

Source: Balachandran et al. (2010)
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Despite the theoretical logic underpinning the use of stock-based compensation, its popularity at banks in the pre-GFC period was grounded in a major fallacy; when it comes to banks, agency theory, which suggests that firm ownership structure determines shareholders' capacity to influence risk-taking, does not hold much traction. First, agency theory is limited when it comes to explaining the interaction between parties with financial interests in banks, because it assumes that firms operate in competitive and frictionless markets, where all actors are strong-form rational maximizers [Ciancanelli and Reyes Gonzalez (2000)]. Thus, it is assumed that they are immune to departures from optimization induced by cognitive biases, bounded rationality, and other sociopsychological pressures leading to herding [Avgouleas (2009)].

Secondly, bank managers are constrained in their actions because strong external forces, independent of the market – the regulator, the deposit guarantee scheme and others – exert control over financing decisions, and thereby bank governance. Finally, in the absence of a bail-in regime that shifts the risk of bank failure to creditors, these important corporate monitors feel shielded from business risk by the implicit guarantee of rescue in the event of insolvency, and thus remain unconcerned about management’s risky behavior, if they were, in any case, in a position to understand the complex risks banks may load up on and off their balance sheets [Adams and Mehran (2003)].

In the aftermath of the GFC, it became obvious that banking sector compensation systems did not align managerial incentives with firm sustainability and long-term profitability. It is arguable that banks’ capacity to assume very high levels of borrowing to fund assets led to excessive short-termism. Bankers have strong incentives to increase leverage in the absence of strong sanctions for failure: if an executive cashes in their shares prior to a drop in value, for them there is no downside risk attached to excessive leverage. Managers rewarded in stock options, in particular, have incentives to expand the bank’s balance sheet through increased leverage, and benefit generally from changes in the volatility of their options [Berger et al. (1997)]. On this basis, bank size and compensation levels can become positively related. By assuming greater levels of debt relative to equity and by the use of stock options in remuneration systems, top executives may increase their compensation levels; as Bebchuk and Spampann (2010) have put it: “[e]quity-based awards, coupled with the capital structure of banks, tie executives' compensation to a highly levered bet on the value of banks' assets.”
Another set of empirical studies have demonstrated that financial institutions with high “residual compensation” – that is, relative compensation levels after adjustment for firm size – were most likely to fail [Cheng et al. (2010)]. Perhaps more significantly, the higher the stock-option wealth within financial firms, the higher the bankruptcy risk of that firm [Armstrong and Vashishtha (2012)]. Where CEOs of banks receive a greater proportion of their remuneration in salary and bonuses rather than stock options, they are less likely to take high risks [Palia and Porter (2004)]. Because baseline assets are a significant driver of firms’ share price and executives often control significant stock options, any increase in baseline asset prices benefits an option-holder, even where these price movements are short term. Therefore, any increase in bank’s leverage that feeds into a bubble that inflates asset prices also feeds into the size of stock-based compensation for bank executives. Namely, leverage is a great accelerator of the value of bankers’ compensation packages based on options, and such compensation packages give bankers a very strong incentive to increase leverage.

Persistent focus in the banking sector on RoE, rather than on future risks, supplies strong evidence for this trend [Haldane (2011)]. It is clear that many firm executives acknowledge that there is a trade-off between long-term shareholder value and the pressure to realize short-term performance targets, even where meeting these benchmarks results in excessive risk [Graham et al. (2005)]. On the other hand, RoE is a poor indicator of overall long-term performance. Strong focus on RoE implicitly encourages a reduction in the amount of equity employed, which incentivizes banks to adopt leverage, increasing bankruptcy risk. Of course, as has been well documented, the rewards on offer for top executives at large banks were massive [Bebchuk et al (2010)].¹ Leverage, therefore, has a certain allure for executives as expansion of the asset base indirectly increases the value of their option compensation, and any bonuses linked to share price performance, since the more highly levered the institutions, the greater the speed of asset expansion.

Assuming that growth is constant and increased leveraging becomes a general trend, per-share earnings in the banking sector will rise, and be reflected in bank value.

¹ For example, the top executives (defined as the top two to five executives) at Bear Stearns cashed out U.S.$1.1 billion in stock between 2000 and 2007, and those at Lehman cashed out U.S.$850 million during the same period.
Since the rate of profitability accrues mainly through increasing net earnings per unit of assets, assumption of leverage [Minsky (1986)] is the best way for banks to increase profitability rates. Thus, unrestricted leverage has tremendous governance implications for banks as it embeds short-termism into bank business models.

As compensation systems themselves are procyclical, particularly during asset price booms, bank executives are incentivized to link compensation to asset price levels. For example, in the period leading to the GFC, financial institutions operated within an environment where risk incentives significantly induced managers to implement a more aggressive financial policy, manifested by progressively high levels of leverage and leading to higher downside risk [Van Bekkum (2013)].

However, risk-seeking behavior on the part of senior executives with major shareholding is paradoxical. Debt-fuelled balance sheets do not just boost earnings, they also amplify equity risk and contribute to the build-up of asset risk within investment portfolios, which increase both bankruptcy risk and systemic threats [Armstrong and Vashishtha (2013)]. Asset write-downs during the GFC were more strongly related to asset volatility in highly leveraged financial institutions: there was “a positive and significant interaction between [firm risk] and leverage” [Chesney et al. (2011)]. Accordingly, excessive leverage increases the prospect of bankruptcy that will wipe out shareholders (invariably including top executives), and destroy senior management’s reputation and future employment prospects. One explanation in relation to the GFC is that while markets were stable and returns from these products were healthy, asset portfolio riskiness was of little concern to top executives [DeYoung et al. (2013)].

But such short-termism is at odds with another line of empirical research, most notably that compiled by Fahlenbrach and Stulz (2011), which has shown that the incentive arrangements at large financial institutions were not responsible for bank failures or the creation of excess risk within the financial system. Senior management at financial institutions held significant equity positions and suffered substantial paper losses once stock prices began to fall sharply. Indeed, banks whose CEO interests were most aligned with the interests of shareholders performed worst. Large shareholdings ought to have incentivized senior bankers to act in the long-term interests of their firms and prevent the building of a high-risk asset base.
Of course, these assets became toxic once markets became totally illiquid and market prices collapsed, but it is highly improbable that CEOs and other senior executives with significant equity positions would knowingly take risks that could destroy firm equity, as this would not only result in obliteration of much of their wealth but also cause severe reputational damage. Yet CEOs of firms with relatively high equity stakes in their firms assumed the same level of risk as CEOs of firms with commensurately lower equity stakes. There were also no significant reductions in equity positions among bank CEOs post-2006, which meant that they bore heavy losses in the market crash of 2008; in fact, net CEO shareholdings increased. This would appear to suggest that even as the risk profile of bank investments appeared to change for the worse, bank CEOs did little to hedge their exposure to reduce any potential wealth losses. Such behavior is clearly inexplicable and certainly inconsistent with compensation-induced short-termism.

It is thus likely that greed and perverse compensation incentives are only half the story. Two other less sinister (behavioral) factors could have been at play with different degrees of influence: job retention/promotion motivations influenced by shareholder short-termism, on the one hand, and bounded rationality on the other. Bankers at institutions that failed did not think that they were assuming massive risks [Acharya and Richardson (2009)]. It is, therefore, at least arguable that senior executives “managed their banks in a manner they authentically believed would benefit their shareholders” [Grundfest (2009)], succumbing, at the same time, to peer pressure and their cognitive limitations.

They neither understood the risks that complex securities posed to their firms, nor the extent to which correlations in certain asset markets had been established across banking institutions. As noted by the FSA (2009): “[I]n benign markets with no recent history of negative events, managers will potentially take high risks, as they essentially underestimate low-probability, high-risk events...” Moreover, given bank management’s ability to optimize capital structure, in many cases lack of controls on leverage was the decisive (rational yet perverse) incentive, rather than naked greed. This view is, in fact, less contrarian than it sounds, especially in light of the limited investment horizons of many large institutional shareholders, who hold shares on average for little more than a few months [Haldane (2010)].
It is clear from the discussion above that CEOs who risked everything were not just motivated by greed. They were also boundedly rational having genuine ignorance of some of the risks [Avgouleas and Cullen (2014)]. Moreover, they clearly succumbed to shareholder pressure to take risks across the board, irrespective of their individual equity wealth, especially as pay packages that implicitly encourage the use of leverage often have efficiency-decreasing effects: increased risk and leverage reduce the pay-performance sensitivity within financial institutions [John et al. (2010)]. The losses these executives suffered imply that the excessive risks present in the system were as much part of the developing trend to increase leverage to imitate competitors' results and the product of errors of judgment, as of misaligned incentives [Mehran et al. (2011)]. Indicatively, the FSA (2009) notes: “Mimicking the actions of other players in the market can be a rational strategy in two ways. Employees can ‘hide in the herd’ in order to conceal their performance or they can ‘ride the herd’ to prove the quality of their decisions.” Namely, perverse compensation incentives were not the only explanation of managerial short-termism. For example, one of the key findings of the FSA in its investigation into the failure of RBS was based on a management philosophy, which, among other things, emphasized the importance of “an overt focus on capital ‘efficiency’, i.e., on high leverage” [FSA (2011)]. This, of course, in the short to medium term invariably leads to increased shareholder returns. Already very wealthy, bankers had to increase leverage since short-termist shareholders would surely reward those in the bank who increased their returns with job retention and/or promotion opportunities. In effect, they operated under the assumption that missing quarterly earnings targets would be a risk to continued employment [Mergenthaler et al. (2011)].

This explanation does not exonerate senior bankers from blame. It simply provides a more pluralistic explanation of bankers’ behavior. It is also true that the “too-big-to-fail” factor played a role in such senior executive behavior, since the bigger the bank size and interconnectedness, the more certain the possibility of some form of a public bailout. But it was not the decisive factor. Senior management could not have failed to understand that in the event of a spectacular failure, they would lose their jobs, status and reputation.
Too-big-to-fail properties would not shield bank management from the consequences of failure. What they did was to exploit a cheaper funding base for years as creditors charged bigger banks interest rates lower than their risky business would warrant. This subsidy enticed all banks of a certain size to enter the race for RoE [Jacewitz and Pogach (2013)].

As we noted earlier, peer pressure leading to herding is a long-standing problem in the financial sector and its role in creating the conditions that led to the GFC has arguably not been fully appreciated [Lo (2009)]. At the same time, absent undesirable bank re-nationalization or granting increased voting rights to long-term shareholders, bank shareholders will remain short-termist. As a result, leverage controls, apart from their macroprudential impact, are also an effective means of controlling banker and shareholder short-termism, thereby containing leverage agency costs.

4. Bank leverage in the pre-GFC era
To adduce empirical credibility to the aforementioned discussion of leverage agency costs, it is vital to review leverage growth trends in the lead-up to the GFC. In this period, leverage levels increased markedly among large commercial banks and investment banks alike. The drive toward building ever-higher levels of leverage remained mostly unchecked under prevailing capital regulations. Basel II, especially, essentially allowed commercial banks to largely set their own leverage levels [Turner (2010)].

Estimates show that the asset levels at the 10 largest publicly listed global banks doubled between 2002 and 2007. In contrast, risk-weighted asset levels grew much more moderately, resulting in much increased overall leverage in the banking sector [IMF (2008)]. Superficially, the data suggests that banks were investing in “safer” assets, and were, therefore, permitted to expand the asset base without commensurately large increases in capital. His trend shows clear signs of herding in banks’ approach to capital structure, as demonstrated in Figure 2.
While asset levels increased markedly in the years leading up to the GFC, reported leverage levels at large commercial banks were remarkably constant. This would normally suggest that while banks expanded asset levels aggressively they maintained capital levels and preserved stable leverage ratios [Kalemli-Ozcan et al. (2012)]. However, official data does not provide the full picture. Leverage increases were caused by poorly calibrated internal financial models [Simkovic (2009)], the poor performance of credit rating agencies [Johnston (2011)], and fraud [Valukas (2010)].

**Figure 2: Balance sheet profiles for the 10 largest publicly listed banks 2002-07**

Source: IMF (2008)
Moreover, there is strong evidence that reported leverage levels at both commercial and investment banks were manipulated, or were inaccurate, due to exploitation of prevalent rules on bank capital by bank management. For example, banks switched away from loans into structured financial products, which benefitted from higher capital relief. The increased role of complex securitized credit and marketable securities provided additional avenues to augment bank capital structures [Stein (2010)]. Under the Basel Accords, the lower risk weights that securitized products attracted meant that banks did not have to hold the same levels of capital against those assets, as it would be the case if the underlying products were not securitized. Basel II, in particular, made few significant changes to regulatory capital requirements in relation to conduits, leading to a reduction in overall capital requirements.

Much risk-weighted optimization (RWO) was achieved through employment of securitization models, as it was assumed that by diversifying and spreading risk throughout the financial system through securitization, the financial system would be more stable and more resilient to shocks [Blair (2013)]. These conduits raised funds by selling short-term asset-backed commercial paper, with the assets concerned usually comprising mortgage pools and secured loans. Because these conduits funded themselves with short-term debt, any loss of confidence or liquidity pressures due to a reduction in buyers of commercial paper would quickly destroy their viability, indirectly exposing the sponsor bank to funding liquidity risk.

The dual advent of risk-weighted capital requirements and financial innovation for funding has hereto enabled banks to engage in RWO for the best part of the past two decades. Indeed, research confirms that RWO has not abated since the GFC [Blundell-Wignall and Atkinson (2012)]. This has resulted in several large European banks operating with relatively low levels of common equity, despite being “well-capitalized” in terms of tier-1 risk-based capital (Figure 3).
The data presented in Figure 3 demonstrates the inadequacies of RWO capital adequacy requirements, which, prior to the GFC, were easily circumvented through accounting mechanisms. Proposals have, therefore, been made to augment financial reporting requirements to include a strict leverage ratio to be reported by global banks to reduce the heavy reliance placed on imperfect risk-weighted ratios in capital adequacy regulation. In the next section, we provide a brief analysis of the utilities and disutilities attached to introduction of leverage ratios, as well as a concise overview of global proposals to introduce leverage ratios as either a reporting tool or a backstop capital adequacy requirement.

**Figure 3: Selected European bank leverage ratios (total assets/tier-1 capital)**

Source: Blundell-Atkinson and Atkinson (2012)
5. Regulating bank leverage

As we noted in the introduction, banks’ ability to leverage is fundamental to financial system development and economic growth. Accordingly, the introduction of binding leverage ratios in the banking sector has to balance several conflicting concerns, especially in relation to the potential adverse impact that leverage restrictions might have on the macroeconomic outlook. Besides, risks inherent in modern banking could arguably be contained by other forms of capital requirements, liquidity standards and the lender of last resort facility.

A first important argument against strict leverage ratios is that they may encourage banks to increase the riskiness of their asset portfolio, not decrease it, a classic Goodhart’s Law outcome. In the view of many, this concern was precisely the rationale for seeking risk sensitivity in the Basel framework in the first place [Haldane and Madouros (2012)]. In many ways, reluctance to regulate leverage stems from a fear that it will affect economic growth without making banks safer, since banks will evade the “crippling” profit consequence of a strict leverage ratio by focusing on high-return projects, which are riskier in most cases. Namely, a strict leverage ratio is bound to create perverse incentives [World Bank Group (2009)]. In addition, the lack of risk weighting in the calculation of the leverage ratio would penalize prudent banks holding substantial portfolios of highly liquid, high-quality assets.

Another argument used against restrictions on bank leverage is that such restrictions are bound to have an adverse impact on credit flows, and thus economic growth. This argument is supported by some recent studies [IIF (2011); DeAngelo and Stulz (2013)].

In contrast, however, the majority of contemporary studies show that leverage controls are an overall welfare enhancing mechanism. Conceptual studies show that to be the case when lending markets are competitive [Christiano and Ikeda (2013)]. Moreover, other recent empirical studies show that even in less than perfectly competitive markets, a binding leverage ratio has a beneficial impact on institutional and systemic stability without affecting growth [Junge and Kugler (2012); Miles et al. (2013); Eliot (2009)].
At the same time, there are strong arguments in favor of the introduction of strict leverage ratios. Firstly, research on the relationship between bankers' equity-based compensation and the state of the relevant economy at any particular point in time suggests that bank managers’ choice of asset risk and leverage ratio corresponds to prevailing economic conditions. In times of economic expansion, executives target the maximum possible level of asset risk to maximize RoE, regardless of optimality concerns. The opposite is the case in a downturn when bank executives target low risk and safer investment. This embeds procyclicality in the financial system [Raviv and Sisli-Ciamarra (2013)]. If bankers are incentivized by either compensation or career-based rewards to increase leverage, restricting leverage will assist in reducing short-termism in financial markets, particularly because, as we have noted, excessive leverage generates significant governance/agency costs, and due to the aforementioned “leverage ratchet” effect.

Secondly, an unweighted leverage ratio is simple to apply and monitor, and eliminates regulatory arbitrage; namely, banks’ ability to engage in RWO, thereby restoring confidence in bank capital data. The previously discussed ability of banks to manipulate risk-weights - and thus their capital requirements - in conjunction with credit rating agencies' well-documented inability to accurately rate the riskiness of very complex structured financial products, will always give rise to uncertainty about bank's capital levels. Research by the BCBS (2013) confirms considerable variation across banks in the reporting of risk-based measurement of assets. While some degree of variation may be due to differences in the composition of trading assets, there are also significant difficulties in comparing banks from separate regulatory jurisdictions. For instance, there is a considerable degree of variation in, inter alia, the market-risk measurement methodologies employed by global banks, banks’ modeling choices, and accounting requirements and practices [Ingves (2013)].

In fact, investors have reported losses of confidence in the risk-weighting system and in the capacity of banks to calculate their levels of RWAs, even among specific asset classes [Beltratti and Paladino (2013)]. Recently reported wide discrepancies in British banks' capital ratios when non-weighted assets are measured against own funds provide enough evidence to make any confident investor or prudent bank regulator lose sleep [Masters (2013)]. This uncertainty severely undermines rather than reinforces market discipline.
Thirdly, there is a growing body of empirical evidence that suggests that RWAs are not a significant indicator of the possibility of bank default. As mentioned earlier, in the simplest form of rule-gaming, banks turned high-risk credits into highly rated structured securities, thereby mostly eliminating capital requirements, although they extended credit lines to requisite securitization vehicles, which attracted no capital charges. Yet, provision of liquidity facilities to these vehicles exposed them to appreciable risks. Moreover, they held structured credit instruments on their own balance sheet, exposing themselves to embedded leverage and increasing their asset-liability mismatch and their funding liquidity risk. Prior to the GFC, Basel tier-1 capital levels were not a statistically significant predictor of default risk. When analyzed on the basis of unweighted leverage ratios, however, a significant statistical link was present [Blundell-Wignall and Roulet (2013)]. Accordingly, a simple leverage ratio is a much better predictor of default risk than RWA measures, which are invariably subjected to RWO. In the same mode, Haldane and Madouros (2012) have compiled a persuasive set of data showing that leverage has been a better predictor of bank survival than capital.

Finally, as mentioned earlier, contrary to intuition, empirical evidence has shown that bank leverage rises during boom times and falls during downturns, producing bubbles and crashes. The leverage ratio is versatile enough to be used both as a macro- or micro-prudential policy tool and as a countercyclical instrument. More specifically, by targeting individual financial institutions, a leverage ratio as a front-stop can restrict leverage building up at the systemic level [Fostel and Geanakoplos (2013)]. Even if there are other credit intermediation channels in the economy, (for example, shadow banking channels), and financial institution leverage is not the only important factor in building up the credit cycle, the fact that individual institutions are not excessively leveraged would mean that the speed of deleveraging in the economy will become much slower in a downturn.
For the aforementioned reasons, there exists considerable support for the introduction of stricter leverage ratios to supplement existing RWA capital disclosure or as a front-stop measure. The Basel III Accord requires that banks have a minimum of 6% tier-1 capital (comprising 4.5% common equity and retained earnings). In an attempt to counter the effects of inadequate disclosure of banks’ capital positions, the BCBS also requires, as a backstop, that banks operate with a minimum leverage ratio of 3%. Any bank with an unweighted leverage ratio of less than 3% will be deemed to be undercapitalized. Banks have been given until 2018 to fully comply with the implementation of the leverage ratio [BCBS (2010)].

Partly due to the extended timescale for Basel III implementation and partly due to the fact that the Basel III leverage ratio of 3% of non-weighted assets is arguably too low, certain jurisdictions have drawn up their own plans for imposing a leverage ratio and, indeed, have opted to go further than the 3% ratio. The U.S., for example, despite requiring its banks to report on a simplified leverage ratio prior to the GFC, has opted to strengthen its required ratio, mainly given the failure of the previous U.S. leverage ratio to produce any warning signs. The leverage ratio itself for all banking organizations is set at 4%, although certain large banking organizations are subject to a lower leverage ratio if they utilize the advanced IRB approach to RWAs, requiring them to have a minimum total leverage exposure of 3%. Moreover, a further supplementary rule has been introduced to cover the largest and most interconnected bank holding companies (BHCs), categorized as those with more than U.S.$700 billion in consolidated total assets, or U.S.$10 trillion in assets under custody (covered BHCs).

These banks would be required to maintain a tier-1 capital leverage buffer of at least 2% above the minimum supplementary leverage ratio requirement of 3% (for banks that use the advanced IRB approach), for a total of 5%. Failure to maintain own funds in excess of 5% would subject covered BHCs to restrictions on discretionary bonus payments and capital distributions. This rule would currently apply to the eight largest and most interconnected U.S. banks, although it will not be implemented in its entirety until at least January 2018.
Among other jurisdictions with significantly large banking sectors, strong progress has also been made in the U.K. The Independent Commission on Banking (2011) recommended that U.K. banks should maintain capital of 10% of RWAs, and that global systemically important banks (G-SIBs) headquartered in the U.K. ought to maintain at least 17% RWAs. Moreover, it concluded that large ring-fenced banks ought to be subject to a supplementary leverage ratio of approximately 4%. In a similar vein, the U.K. Parliamentary Commission on Banking Standards (2013) recommended “the leverage ratio [in the UK] to be set substantially higher than the 3% minimum required under Basel III.” Accordingly, the U.K.’s Financial Policy Committee (of the Bank of England) has recently announced a binding minimum leverage ratio of 3%, a supplementary leverage ratio of 1.05% for systemically significant financial institutions, and a countercyclical leverage ratio buffer, activation of which may result in a maximum total leverage ratio of 4.95% for large banks [Bank of England (2014)].

In the E.U., the European Commission’s proposal for a Directive and Regulation (collectively known as CRD IV) was ratified by the E.U. Parliament in April 2013, and implementation across Member States began in early 2014. However, while CRD IV requires that institutions calculate and report on their leverage ratios, CRD IV does not propose a minimum leverage ratio. The European Commission has charged the European Banking Authority with monitoring the implementation of Basel III, and reporting on whether the 3% minimum leverage ratio is appropriate for European financial institutions. If agreement is reached on the precise definition and calculation of the leverage ratio, a standardized ratio shall be implemented across the E.U. by January 2018. Institutions must, however, report their simplified leverage ratios to regulators from 1 January 2015.

Notwithstanding the aforementioned reforms, we remain quite far from a globally agreed leverage ratio that is well calibrated, instead of Basel III's 3%, which is widely seen as a very weak constraint on banks' risk-seeking. Moreover, there is a strong industry and regulatory preference in favor of using leverage ratios as a backstop measure [European Banking Federation (2013)]. Such a ratio provides better results in terms of measuring bank riskiness [Wolf (2014)] and in terms of macroeconomic stabilization, institutional soundness and improving bank governance when it is used as a frontline measure.
6. Conclusion

In spite of the externalities caused by increased bank bankruptcy risks, including the possibility of a costly public bail out, and by the financial instability and economic recession risks associated with excessive leverage, bank executives cannot be incentivized to adopt on their own moderate levels of leveraging. Whenever leverage remains unrestrained, shareholder and peer pressure to maximize returns makes short-termist behavior the only way to save senior bankers’ careers, generating massive governance/agency costs, even if misaligned compensation incentives play little or no part. As Admati et al. (2013) have shown, bank shareholders exhibit constant preference for debt finance over equity and have no incentives to ask bank executives to reduce leverage.

On the other hand, even benign bankers are intent on furthering their careers or, at the very least, on keeping their jobs. This situation is exacerbated when competitors also pile up leverage to maximize RoE. In this scenario, even benign managers will follow the short-termist path and herd, notwithstanding an alignment of their compensation to the bank’s long-term performance. Namely, the natural consequence of excessive leverage is ever more risk-taking and rent-seeking. Moreover, excessive leverage, in combination with the general opacity of bank balance sheets and asset substitution, creates intense information asymmetries between bank management and their monitors, which merely adds to the ineffectiveness of market discipline in the banking sector [Avgouleas and Cullen (2014)].
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# Editorial

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Shahin Shojai  
EY, U.A.E.

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