Excessive Leverage and Bankers' Pay

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EXCESSIVE LEVERAGE AND BANKERS’ PAY:
GOVERNANCE AND FINANCIAL STABILITY COSTS
OF A SYMBIOTIC RELATIONSHIP

EMILIOS AVGOULEAS & JAY CULLEN

Debt has traditionally been viewed as an effective corporate governance tool. However, 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. 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. This form of herding can be motivated by compensation considerations or by career concerns. However, while bankers’ compensation has been a major factor behind bank short-termism, excessive leverage creates serious governance-agency costs even in the absence of compensation incentives. As a result, contemporary reforms that have focused more on regulation of private compensation contracts and did not prioritize well-calibrated leverage ratios are bound to produce, in the long-term, sub-optimal results, notwithstanding some conspicuous political gains. In contrast, a reasonably protective leverage ratio can prove an effective measure in containing rent seeking and smoothing up the leverage cycle to improve bank governance, prevent deep recessions, and safeguard financial stability.

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I. 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.¹ 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 reached in mid-2000s levels unseen until then.

Under modern finance theory, a debt-financed corporation is as robust as an equity-financed one.² In addition, debt has traditionally been viewed as an effective corporate governance tool.³ However, these old 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. At the same time, (short-term) debt fuelled bank capital structures increase bank bankruptcy risk since they are an important cause of bank failures. Leverage – even more than fraud – has been at the heart of all major financial follies since the collapse of the South Seas Company in 1720.⁴ In many ways the cyclicality of debt and impact of leverage on the economy as a whole and on the behaviour of individual economic actors as well as on financial stability was

¹ See THE W’LD BANK GR’P FIN. SECTOR & PRIVATE SECTOR DEV’L’MENT VICE-PRESIDENCY, THE LEVERAGE RATIO: A NEW BINDING LIMIT ON BANKS, 2 (NOTE 11), (2009) available at http://www.worldbank.org/financialcrisis/pdf/leverage-ratio-web.pdf [hereinafter W’LD BANK GR’P, THE LEVERAGE RATIO]. The European Banking Federation uses the following description of leverage and of its potential uses “whenever a bank’s assets exceed its equity base, that bank is considered ‘leveraged’. The more assets a bank borrows with the view to enhancing its returns, the higher is that bank’s leverage. By leveraging, a bank bets that the interest paid on the borrowed capital will be smaller than the return generated, thus improving the bank’s performance. If leverage is employed successfully, the difference between the cost of capital, and the return on capital employed, will be attributable to the principal as an economic profit. Commercial banks make a profit on the interest earned on its borrowed funds through lending spreads, and on commissions charged for services. However, to amplify its income and capacity to lend, it can also choose to leverage, i.e. borrow more money on its own account (e.g. from governments or other financial institutions) and then lend it to other parties at a higher interest rate.” See EUROPEAN BANKING FEDERATION, BANK LEVERAGE AND ITS ECONOMIC IMPLICATIONS (2010). A legally binding definition of leverage and excessive leverage in the EU’s Capital Requirements Directive is cited infra note 86.


⁴ For a comprehensive discussion of the South Sea Bubble and the form of financial engineering it involved see EMILIOS AVGOULEAS, THE MECHANICS AND REGULATION OF MARKET ABUSE, CH. 3 (2005).
best described by the late Hyman Minsky.\(^5\) His work is further developed today by a number of respected scholars exploring the financial stability ramifications of the leverage cycle.\(^6\) An area, however, where the role of leverage has largely been unexplored is its influence over bank governance and bankers’ behaviour; namely whether unchecked availability of leverage creates perverse incentives in connection with bankers’ rent-seeking which, in turn, creates strong agency costs.

A great deal of scholarly and regulatory work has focused on bankers’ pay and the perverse incentives embedded in it.\(^7\) These works have lent a sound empirical and theoretical grounding\(^8\) to public ‘gut feeling’ and outrage with bankers’ irresponsible behaviour.\(^9\) As a result, bank corporate governance failures prior to the GFC and perverse incentives embedded in compensation packages captured the tenor of contemporary regulatory reform,\(^10\) since market discipline clearly failed in the pre-GFC era.\(^11\)

However, an in-depth examination of the counter-factual, 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

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\(^8\) For example, see FIN. CRISIS INQUIRY COMM., FINAL REPORT OF THE NATIONAL COMMISSION ON THE CAUSES OF THE FINANCIAL CRISIS IN THE UNITED STATES XIX (2011) [hereinafter FCIC REPORT] (observing that “[c]ompensation systems – designed in an environment of cheap money, intense competition, and light regulation – too often rewarded the quick deal, the short-term gain – without proper consideration of long-term consequences. Often, those systems encouraged the big bet – where the payoff on the upside could be huge and the downside limited.”) See also John C. Coffee Jr, Systemic Risk after Dodd-Frank: Contingent Capital and the Need for Strategies Beyond Oversight 111 COL. L. REV. 796, 798 (2011) (notes omitted) (observing that “[T]he 2008 financial crisis was in substantial part the consequence of flawed executive compensation formulas that gave senior financial managers at major financial institutions perverse incentives to pursue short-term profits by accepting risk and high leverage”).


\(^10\) In the EU, the de Larosiere Report into the financial supervision of European banks conceded that corporate governance was “one of the most important failures of the recent crisis.” See THE DE LAROSIERE GROUP, THE HIGH LEVEL GROUP ON FINANCIAL SUPERVISION IN THE EU (2009) 29 [hereinafter DE LAROSIERE GROUP].

risky business strategies if their ability to excessively leverage bank balance sheets was restricted by regulation? 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. On the other hand, 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.

Clearly, there is a symbiotic relationship between leverage and short-term performance based compensation packages. Yet leverage building is not just motivated by compensation incentives but also by job retention and promotion concerns, which in the financial industry are quite prevalent. There is strong evidence for example, that the highly-leveraged buyout of ABN AMRO by RBS in 2007, which reduced RBS’s reported Tier One capital ratio to 4 percent, was mostly driven by the career concerns of its most senior executive rather than pay targets. Moreover, the career concerns rationale is the only possible way to reconcile the narrative of ‘greed’, which is, arguably, based on sound empirical research with the equally methodologically flawless line of research that shows that 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. Namely, career concerns and other behavioural explanations of bankers’ behaviour complement the greed narrative and provide 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.

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13 See Judith Chevalier & Glenn Ellison, Career Concerns of Mutual Fund Managers, 114 Q. J. ECON. 389 (1999) (examining the labour market for mutual fund managers and managers’ responses to the implicit incentives created by their career concerns). See also John R. Nofsinger & Richard W. Sias, Herding and Feedback Trading by Institutional and Individual Investors, 54 J. FIN. 2263 (1999) (suggesting that ‘herding’ (a group of investors trading in the same direction over a period of time) and ‘feedback trading’ (correlations between herding and lag returns) have the potential to explain a number of financial phenomena).


15 The Review Team which examined RBS’s takeover of ABN AMRO noted: “Many … were critical of the acquisition of ABN AMRO which they remembered considering was an expensive, ‘unpopular’ and ‘ridiculous vanity purchase’ … Some … suggested that RBS was looking for a ‘transformative’, ‘trophy’ deal and that the RBS CEO was under pressure from the other consortium partners and shareholders to complete the acquisition, ‘a deal that [the CEO] Sir Fred Goodwin had to close to keep his job’.” [Emphases in original]. See id. at 166, The Review Team concluded that: “The RBS Board’s decision to make a bid of this scale on the basis of inadequate due diligence entailed a degree of risk-taking that can reasonably be criticised as a gamble.” See id. at 186.

16 See Lucian A. Bebchuk, Alma Cohen & Holger Spamann, The Wages of Failure: Executive Compensation at Bear Stearns and Lehman 2000-2008, (Harv. L. Sch. Discussion Paper No. 657, 2010) (this study examined the pay, bonuses and stock option awards of the CEOs and top executives at Bear Stearns and Lehman Brothers prior to the GFC to determine the levels of compensation awarded to the executive teams at these investment banks prior to the collapse in the market values of each).

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 behaviour; it might not even substantially curb such behaviour. But in its normative implications such public intervention with private contracting is far from being all-encompassing, since availability of high leverage impacts on bankers’ investment behaviour and the size and complexity of the institution’s balance sheet regardless of the structure of bankers’ compensation.

Given that excessive leverage can lead to institution failure, financial instability and allocative inefficiencies (analytically explained in Part III) 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”. Leverage governance issues and agency costs are understood here to be of a similar nature with those identified by Admati et al. as between shareholders and creditors.18

Since bankers’ motives to build leverage are much wider than mere greed, controls on bankers’ compensation are probably insufficient to contain bankers’ risk-seeking. Clearly, leverage controls are a much more effective remedy whether in addition or even in lieu of strict regulation of private contracts.19 It is, therefore, arguable that contemporary analysis and attendant reforms place, in the simplest terms, “the cart before the horse”. While they focused on reform of executive compensation they did not make serious progress on the larger issue of leverage regulation.

This article explores the agency and other welfare costs of excessive bank leverage.20 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 behaviour, on the other, we contribute to a more nuanced understanding of how excessive leverage impact on bank governance including bankers’ risk-seeking and of the conditions that make it possible. We postulate 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 behavioural 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


19 It is of course nearly impossible to measure the impact of each employee’s behavior on bank and financial system stability in order to determine who stays, who is promoted, and who goes on the basis of such contribution.

20 In a previous paper we explained that, because banking is a very complex and protected business, shareholders are very weak monitors of management. In addition, they are themselves rather short-termist. See Emilios Avgouleas & Jay Cullen, Market Discipline and Corporate Governance in the EU Banking Sector: Intellectual Fallacies, Cognitive Boundaries, and Groupthink, 41 J. L. & SOCIETY 28-50 (2014).
same time, they are also much less reprehensible from the moral point of view than mere greed.

This paper is in six parts. The first part is the present introduction. Part II provides an analysis of the executive compensation debate and a critical account of executive compensation reforms. Part III provides a comprehensive discussion of the nature and role of leverage in banking. It also explores the linkages between leverage, bank size, and bank failure and the impact of leverage on financial stability and allocative efficiency. Part IV provides an analysis of empirical data on bank leverage prior to the GFC. Part V provides an overview of arguments in favour of and against strict regulation of leverage and attendant empirical studies. It also explains current reform initiatives to control bank leverage. Part VI concludes.

II. COMPENSATION STRUCTURES AND BANK RISK-TAKING

A. Overview

One of the key functions of corporate governance is to link individual and collective executive incentives to corporate performance (which in Anglo-American markets in particular, is often equated with ‘shareholder value’), through private bargaining between the corporation and executives. Remuneration packages are viewed as risk-reducing solutions to the agency problem: by tying the rewards of executives to shareholder interests, compensation plans purport to reduce risk to firm equity. Owners wish to maximise the return on their equity by structuring executive pay to reward profits yet they also wish to avoid paying management more than is required. As a result, executive compensation packages normally provide a framework to determine the appropriate level of executive remuneration. Yet, while executive compensation can constitute an effective solution to the agency problem, it can also turn into an agency risk.

In principle, the less stock a manager owns in a firm, the greater the incentive for her 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. In the past two decades 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. On the other hand, stock option

21 Most companies employ executive remuneration arrangements, which include an explicit link between share price performance and the compensation that an executive receives. See BRUCE R. ELLIG, THE COMPLETE GUIDE TO EXECUTIVE COMPENSATION (2d ed. 2007), for a comprehensive discussion of these issues.


25 See Michael C. Jensen & Kevin J. Murphy, Performance Pay and Top-Management Incentives, 98 J. POLIT. ECON. 225 (1990) (finding that managers are conscious that their most precious commodity – their human
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. 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.²⁶

The popularity of stock-based executive compensation packages in the pre-GFC period laid 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.²⁷ First, agency theory is limited when it comes to explaining the interaction between parties with financial interests in banks,²⁸ because it assumes that firms operate in competitive and frictionless markets,²⁹ where all actors are strong-form rational maximizers. Thus, it is assumed that they are immune to departures from optimization induced by cognitive biases, bounded rationality, and other socio-psychological pressures leading to herding.³⁰ 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 regime that shifts the risk of bank failure to shareholders and creditors, both investor classes feel shielded from business risk by the implicit guarantee of rescue in the event of insolvency, and thus proved to be weak monitors of management’s risky behaviour,³¹ if they were, in any case, in a position to understand the complex risks banks are loading up on and off their balance sheets.³²

B. The Toxic Impact of Managerial Short-termism in Banks

As mentioned earlier the pre-eminent explanation of bankers’ risk-seeking behaviour in the pre-GFC period has centred on the fact that bank executives profited from the adoption of short-term risk, since excessive risk assumption was heftily rewarded.³³ Banking sector capital – is tied up with the firm they are managing. This concern may lead to risk-aversion in the selection of projects.

²⁹ See id. at 6.
³⁰ See Avgouleas, supra note 11.
³² See Parliamentary Commission on Banking Standards, Changing Banking for Good, First Report of Session 2013–14, HC, HL, Volume II (2013), citing evidence by LSE professor Julia Black & David Kershaw and John Kay (at 154-155), who suggest that it was reasonable for banks and in observance of their directors’ duties to bet the bank for short-term gain, and express very strong reservations about the effectiveness of shareholder monitoring in the banking sector. See also, Avgouleas & Cullen, supra note 20.
compensation systems meant that the incentives for management and executives in banks were not aligned with long-term interests of firm-wide sustainability and profitability, especially due to excessive use of stock-based compensation. 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. Moreover, the use of stock options in banks arguably encourages executives to focus on short-term performance. Bank management has strong incentives to increase leverage in the absence of strong sanctions for failure: if an executive cashes in her shares prior to a drop in value, for her there is no downside risk attached to excessive leverage.

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 Professors Bebchuk and Spamann 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. High residual compensation levels indicate high risk-taking, which may be attributed to the express or implied bailout guarantee derived from the

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34 See DE LAROSIERE GROUP, supra note 10, at 31; FCIC REPORT supra note 8, Chapter 10; see also HOUSE OF COMMONS TREAS. COMM., BANKING CRISIS: REFORMING CORPORATE GOVERNANCE AND PAY IN THE CITY, NINTH REPORT OF SESSION 2008-09 HC 519 (2009).
35 See RBS FAILURE REPT., supra note 14, at 225 (commenting on the incentive structures prevalent at RBS, for example, the FSA commented that the board: “[s]et incentives for the RBS CEO which made it rational for him to focus on increasing revenue, profit, assets and leverage, rather than on capital, liquidity and asset quality. The CEO’s annual remuneration was heavily influenced by operating profit, EPS growth and return on equity, as distinct from return on assets. There was less regard to non-financial performance measures. This type of incentive package was, however, not dissimilar to those at other large banks.” [Emphasis added]. It was also noted that RBS had one of the lowest equity / asset ratios of any major European bank.)
36 Indicatively, Hyman Minsky notes: “[a]s holders of stock options, bank management is interested in the share price, on the exchanges, of their bank’s shares. The price of any stock is related to the earnings per share, the capitalization rate on earnings of the bank’s perceived risk class, and the expected rate of growth of such earnings. If bank management can accelerate the growth of rate of earnings by increasing leverage without a decrease in the perceived security of the bank’s earnings, then the price of shares will rise...” HYMAN P. MINSKY, STABILIZING AN UNSTABLE ECONOMY 262 (2d ed. 2008).
39 As noted: “Financial firms, their investors and their employees have an incentive to take on greater risk via leverage because the incidence of returns and losses, from their perspective, is not symmetric. Firms get high fees, employees take home huge bonuses and shareholders get dividends in good years, when portfolio values rise, but they rarely have to give back any previously paid dividends when portfolio values decline. The downside risk falls on others...” See Margaret M. Blair, Financial Innovation, Leverage, Bubbles and the Distribution of Income, 30 REV. BUS. FIN. L. 225, 290 (2010-2011).
41 Firms with high residual compensation included Lehman Brothers, Bear Stearns, Citigroup, Countrywide, and AIG.
state.\textsuperscript{43} The higher the stock-option wealth within financial firms the higher the bankruptcy risk of that firm.\textsuperscript{44} 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.\textsuperscript{45} 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.\textsuperscript{46} 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 on return on equity\textsuperscript{47} (“RoE”) in the banking sector, rather than on future risks,\textsuperscript{48} supplies strong evidence of this trend. It is clear that many firm executives acknowledged that there was a trade-off between long-term shareholder value and the pressure to realize short-term performance targets,\textsuperscript{49} even where meeting these benchmarks resulted in excessive risk.\textsuperscript{50} 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\textsuperscript{51} which incentivises banks to adopt leverage, increasing bankruptcy risk.

The rewards for top executives prior to 2008 were massive.\textsuperscript{52} Top executives at distressed investment banks often unloaded shares and options prior to the precipitous falls in the price


\textsuperscript{43}See Darius Palia & Robert Porter, The impact of capital requirements and managerial requirements on bank charter value, 23 REV. QUANT. FIN. ACC. 191 (2004).

\textsuperscript{44}Bebchuk & Spaman, supra note 40. See also Marc Chesney, Jacob Stromberg & Alexander F. Wagner, Risk-taking Incentives, Governance, and Losses in the Financial Crisis, (Univ. of Zurich Swiss Fin. Inst. Working Paper No. 10-18, 2011).

\textsuperscript{45}FCIC REPORT, supra note 8. The US Options Clearing Corporation (OCC) for example, commented on Citigroup’s corporate culture in 2005 that: “Earnings and profitability growth have taken precedence over risk management and internal control.” See COMPTROLLER OF THE CURRENCY, MEMORANDUM, EXAMINATION OF CITIGROUP RISK MANAGEMENT (CRM), (Jan. 13, 2005) 3. Also FIN. SERV. AUTH., REFORMING REMUNERATION PRACTICES IN FINANCIAL SERVICES: FEEDBACK ON CP09/10 AND FINAL RULES PS 09/15 3.13 (2009) [hereinafter FSA, REFORMING REMUNERATION PRACTICES].

\textsuperscript{46}See id. FSA REFORMING REMUNERATION PRACTICES, at 2.8.

\textsuperscript{47}For example, at Bear Stearns, one of the major casualties of the GFC, the board determined top executives’ compensation with reference only to RoE. At the fiscal year end of 2007, Bear Stearns had net equity of $11.1 billion supporting $395 billion in assets, giving it a leverage ratio of 35.5 to 1. Despite this, its stock price in January 2007 was $172 per share and in February 2008, a month before it collapsed it was still at $93 per share. By March 2008, the stock price had dropped to $2 per share. See Roddy Boyd, The last days of Bear Stearns, FORTUNE, Mar. 31, 2008 available at www.money.cnn.com/2008/03/28/magazines/fortune/boyd_bear.fortune/.


\textsuperscript{50}See Bebchuk et. al., supra note 16, at 10-11.
of their forms’ stock.\textsuperscript{53} Such behaviour indicates that they benefitted considerably\textsuperscript{54} from the high leverage-high risk strategies employed by their institutions between 2000 and 2008.\textsuperscript{55}

C. Reform of Bankers’ Pay

It is essential at this point to provide a concise review of requisite reforms in the most important international financial centres. Most reforms have followed the Financial Stability Board’s Principles and Standards for Sound Compensation Practices\textsuperscript{56} (“FSB Principles and Standards”).\textsuperscript{57} These proposals demonstrate a firm grounding in agency theory, perceiving the running of a banking business in a similar way as that of any other corporation. Thus, they try to incentivise executives to act in the interests of firm owners and entrust the board to monitor management, showing unshakeable trust in traditional governance mechanisms.\textsuperscript{58}

The three suggested mechanisms for remuneration adjustment are: (i) deferral of vesting of variable compensation awards; (ii) clawback of pre-awarded compensation; and/or (iii) an increased role for shareholders in the pay award process. A critical analysis of each of these mechanisms is provided below.

Deferral of compensation

Deferral of certain forms of compensation is regarded as the key method in making compensation payments sensitive to the time horizon of risk.\textsuperscript{59} Deferral provides greater links

\textsuperscript{53} For example, the top executives (defined as the top two to five executives) at Bear Stearns cashed out $1.1 billion in stock between 2000 and 2007 and those at Lehman cashed out $850 million during the same period. See Bebchuk et. al., supra note 16, at16.

\textsuperscript{54} Even after accounting for the precipitous fall in share prices in 2008, the net gain to the CEO sample was $649 million. It is also noteworthy that the ‘losses’ that top executives at these firms incurred were unrealized – or paper – losses. The realized gains were immense. Over the 14 firms in the sample, officers and directors received almost $127 billion in bonuses and stock awards alone between them. See id. at 19-21.

\textsuperscript{55} In a sample of 14 large US financial institutions between 2000 and 2008, the CEOs of these banks, as a group, bought shares in their respective banks 73 times, yet sold their shares 2,048 times. The value of the shares bought was $36 million, yet the shares sold totalled $3.46 billion. See Sanjai Bhagat & Brian J. Bolton, Investment Bankers’ Culture of Ownership?, 15, (2010), available at http://ssrn.com/abstract=1664520.


\textsuperscript{58} The terms of reference for UK’s Walker Review left no doubt as to the primary reforms necessary in reducing the likelihood of future financial failures: “To examine corporate governance in the UK banking industry and make recommendations, including in the following areas: the effectiveness of risk management at board level, including the incentives in remuneration policy to manage risk effectively . . .” See DAVID WALKER, A REVIEW OF CORPORATE GOVERNANCE IN UK BANKS AND OTHER FINANCIAL INSTITUTIONS: FINAL RECOMMENDATIONS, 5 (2009) available at http://webarchive.nationalarchives.gov.uk/+/http://www.hm-treasury.gov.uk/d/walker_review_261109.pdf.

\textsuperscript{59} “Compensation payout schedules must be sensitive to the time horizon of risks. Profits and losses of different activities of a financial firm are realized over different periods of time. Variable compensation payments should be deferred accordingly. Payments should not be finalized over short periods where risks are realized over long periods. Management should question payouts for income that cannot be realized or whose likelihood of realization remains uncertain at the time of payout.” See FSB, PRINCIPLES, supra note 56, Principle 6. See also FIN. STABILITY BD., PRINCIPLES FOR SOUND COMPENSATION PRACTICES: IMPLEMENTATION
between pay and performance for two primary reasons: (i) it provides long-term incentives to discourage executives from engaging in techniques such as earnings manipulation or accept undue levels of risk for short-term price rises;\textsuperscript{60} and (ii) it allows greater time for the effects of the business cycle or potential overvaluation of assets (a bubble) to dissipate, thus providing greater alignment of price levels with underlying value. Deferral is therefore used extensively in global banks headquartered in both the US\textsuperscript{61} and the EC.\textsuperscript{62} Empirical evidence supports the use of restricted or deferred compensation awards: managers with greater restricted equity are less likely to engage in earnings management or financial misreporting\textsuperscript{63} or embark upon value-destroying corporate acquisitions financed by stock.\textsuperscript{64} Thus, there is support for the view that deferring variable stock-related and bonus compensation reduces the incentives to boost or manipulate prices, especially via leverage.

There are however significant practical problems with deferral of compensation. While financial institutions generally use deferral mechanisms (76 percent), on average, only 20 percent of bonus compensation is deferred.\textsuperscript{65} Several jurisdictions recommend that

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\texttt{[hereinafter FSB, COMPENSATION IMPLEMENTATION STANDARDS].}
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\texttt{60 See Roberta Romano & Sanjai Bhagat, Reforming Executive Compensation: Focusing and Committing to the Long-term, 26 YALE J. REG. 359, 363 (2009).}
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\texttt{61 Whilst lawmakers in the US have not chosen to expressly legislate to require deferral of compensation in banks, the adoption of the FSB Principles by large US banks means that, in practice, deferral of variable remuneration is standard practice. Moreover, the Dodd-Frank Wall Street Reform and Consumer Protection Act \S 956 prohibits certain forms of executive compensation in financial firms to contain excessive compensation to executives or officers which “could lead to material financial loss” at systemically significant financial institutions. It also authorizes the Federal Reserve and/or the SEC to adopt rules in relation to executive remuneration in covered financial institutions. See the Dodd-Frank Wall Street Reform and Consumer Protection Act, Pub. L. No. 111/203 (July 21, 2010) Pub. L. No. 124 Stat. 1376 [hereinafter DODD-FRANK]. To implement these requirements on incentive-based pay, in 2011 the Federal agencies approved a proposal on the composition of executive pay at banks. The Proposed Rule establishes additional requirements for covered financial institutions with total consolidated assets of $50 billion or more. With respect to these institutions, the Proposed Rule requires that at least 50\% of the incentive-based compensation for the institution’s executive officers be deferred for at least three years. Amounts deferred must be adjusted for actual losses of the covered financial institution or other measures or aspects of performance that are realized or that become better known during the deferral period. See Enhanced disclosure and reporting of compensation arrangements and prohibiting incentive-based payment arrangements that encourage inappropriate risk taken by covered financial companies, 76 Fed. Reg. 21,770 (proposed Apr. 14, 2011) (to be codified at 12 C.F.R pts. 42, 236, 248, 372, 563h, 741, 751, 1232). The FDIC has announced that one of its objectives for 2014 is to issue a joint Final Rule with other federal agencies to implement the Proposed Rule. See ‘FDIC Initiatives under the Dodd-Frank Wall Street Reform and Consumer Protection Act’ available at http://www.fdic.gov/regulations/reform/initiatives.html.}
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\texttt{62 In the EC, the Commission recommends that: “Where a significant bonus is awarded, the major part of the bonus should be deferred with a minimum deferment period.” Further, “The assessment of the performance-based components of remuneration should be based on longer-term performance and take into account the outstanding risks associated with the performance... for example of three to five years...” See EURO. COMM., THE REMUNERATION RECOMMENDATION, \S 4.1; \$ 5.2 - 5.3 [hereinafter EC, REMUNERATION RECOMMENDATION]. Amendments to the Capital Requirements Directive (“CRD IV”) required financial institutions to ensure that their remuneration policies and practices are consistent with their organizational structure and promote sound and effective risk management. See EU CAPITAL REQUIREMENTS DIRECTIVE, supra note 57, at 345.}
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\texttt{63 See Natasha Burns & Simi Kedia, The Impact of Performance-Based Compensation on Misreporting, 79 J. FIN. ECON. 35 (2006).}
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\texttt{64 See Gregor Andrade, Mark Mitchell & Erik Stafford, New Evidence and Perspectives on Mergers 15 J. ECON. PERSP. 103 (2001).}
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\texttt{65 See INTERN’TL INST. OF FIN., COMPENSATION IN FINANCIAL SERVICES: INDUSTRY PROGRESS AND THE AGENDA FOR CHANGE, 3.2.1.1 (2009).}
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elements of compensation should be deferred for at least three years, although this benchmark is arbitrary and it does not fully reflect long-term performance. Deferral periods will assist in mitigating the effects of increased risk within an institution, but it is clear that, in some cases, very significant risks may not manifest themselves for protracted periods.

There are also legitimate concerns over its use at the expense of other ex post measures of performance. For example, in the case of deferred stock awards, where a significant portion of management’s wealth is tied to a firm through restricted stock, this increases management’s risk exposure to the stock price of the company. This may make managers risk-averse in order to preserve the value of their awards, potentially diminishing shareholder wealth, and reducing economic efficiency. Managers may also still use their power to time their stock sales to extract maximum rents from the company, either through trading on inside information or through manipulating the stock price through leverage or accounting mechanisms. Finally, as explained in the next section, the most significant limitation of deferral payments is that they cannot at any point restrain behaviour that is not motivated by compensation but rather by career concerns.

**Clawback**

In theory, the concept of clawback is relatively simple: employers should be empowered to retrieve compensation awarded to employees in certain provisions. 

Clawback is the primary tool employed by the Dodd-Frank Act to control bankers’ pay. As such it is the main method available to US banks for ex-post adjustment of variable remuneration. It is also recommended in certain situations by the EC. Clawback penalizes executives for producing erroneous financial reports (innocently or not). However, clawback is a blunt instrument and it is only recommended in situations involving manipulation or restatements. Accordingly, it is not a tool that can be used to deter excessive risk-seeking by

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67 The UK Parliament has recently recommended that bankers’ bonuses be deferred for a period of ten years. See VOL. I, REPT. OF THE PARLIAMENTARY COMMITTEE ON BANKING STANDARDS, CHANGING BANKING FOR GOOD, HL 27-I; HC 175-I, (2013) [hereinafter BANKING STANDARDS REPORT]. For a similar proposal, see JAY CULLEN, EXECUTIVE COMPENSATION IN IMPERFECT FINANCIAL MARKETS, 150, 152 (forthcoming, 2014).


71 The FSB states: “Subdued or negative financial performance of the firm should generally lead to a considerable contraction of the firm’s total variable compensation, taking into account both current compensation and reductions in payouts of amounts previously earned, including through malus or clawback arrangements.” See [FSB, COMPENSATION IMPLEMENTATION STANDARDS, supra note 59, at 5](http://ec.europa.eu/internal_market/company/docs/directorsremun/financialsector_290409_en.pdf).


73 Under amendments to the CRD, Member States are permitted to require financial institutions to introduce malus/clawback provisions into compensation contracts. See EU CAPITAL REQUIREMENTS DIRECTIVE, supra note 57, at 389.
bankers. Where earnings or stock prices are inflated due to increased leverage, for example, clawback of compensation would not generally be permitted, unless the decision to leverage was based upon some form of inaccurate financial reporting data.

Clawback will thus remain ineffectual as long as legislators allow companies to apply it only in narrowly prescribed contexts.74 There are moves for the power to be permitted to be exercised in instances where ‘downside targets’ are breached,75 although these moves remain at the discussion stage.76 There also are significant practical constraints imposed on retrieving remuneration that has already been awarded (often years previously) as an ex-post adjustment.77

Increased Shareholder Power

A final line of reform is so-called ‘say-on-pay’ provisions. These adhere greatly to corporate governance theory, which suggests that only shareholders have the necessary incentive and detachment from the board to regulate executive pay effectively.78 Reliance on shareholder exercise of disciplinary power is fraught with difficulties and is unlikely to succeed in improving bank stability.79 Perhaps the biggest problem with ‘say-on-pay’ is that shareholders – particularly institutional investors – have poor incentives to rein in excessive risk-taking by executives. As noted by Coffee:

There is a dominant, prevailing scenario shared by Congress, the public, and academics: reckless managers driven by compensation assumed excessive leverage. Shareholders are assumed to be cautious, prudent, and long-term oriented, while managers have shifted to risk-taking through incentives. The first is true, the second is a fairy tale. But [it shapes] a good deal of … legislation.

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76 To build up a clawback fund, half of all bonuses would be put in an escrow account and paid out evenly over five years. The company could withdraw the funds if directors underperformed.

77 As noted by the UK Financial Services Authority in the context of clawback: “We recognise there are limits to the ways in which clawback can be operated as an effective performance adjustment technique.” See Fin. Serv. Auth., Revising the Remuneration Code, CP10/19, Note 32 (2010).


79 See Kym Sheehan, Say on pay and the outrage constraint, in Research Handbook on Executive Compensation (Jennifer Hill & Randall Thomas eds., 2012).

80 See John C. Coffee, Adolf A. Berle Professor of Law, Columbia Law School, Prepared Remarks at the Columbia Research Symposium, op. cit. supra note 51, at 10.
Powerful shareholders will often desire managers who assume risk as opposed to conservative executives. Namely, “shareholders prefer excessive risk taking. So they may have an interest in pay arrangements that encourage risk-taking too much.” Thus, even firm owners cannot be trusted to prevent excessive risk-taking. Other specific criticisms of ‘say-on-pay’ focus on the costs of implementing a non-binding vote on boards of directors which will reduce shareholder returns and have no legal basis, rendering it ineffectual; moreover, jurisdictions which advocate a ‘say-on-pay’ advisory vote have not witnessed significant effects on compensation levels.

III. THE ROLE OF EXCESSIVE LEVERAGE IN BUILDING BANK RISK AND INFLATING BANKERS’ PAY

A. Overview

In this Part we shall discuss the effects of leverage on financial institutions’ governance and ensuing approach to risk. Accordingly, we trace the effects of leverage on bank manager behaviour, which we define here as leverage agency costs. In general, there are three types of leverage: (a) ‘balance sheet’, (b) economic leverage, and (c) embedded. Respectively, these are based on balance sheet concepts, market-dependent future cash flows, and market risk.

Balance sheet leverage is the most recognized form as it is the most visible. It measures the ratio at which the value of a firm’s assets exceeds its equity base. Banks typically engage in leverage by borrowing to acquire more assets, with the aim of increasing their return on equity. Economic leverage means that a bank is exposed to a change in the value of a position by an amount that exceeds what the bank paid for it. A typical example is a loan guarantee, which is a contingent commitment that may materialize in the future but does not presently appear in the balance sheet. Finally, embedded leverage refers to holding a position that is itself leveraged. A simple example is a minority investment held by a bank in an equity fund that is itself funded by loans. While critical for the stability of the financial institutions and of the financial system, embedded leverage is extremely difficult to measure.

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81 See Cheng et. al., supra note 42.
82 See Lucian A. Bebchuk, Prepared Remarks at the Columbia Research Symposium, op. cit. supra note 51, at 11.
85 See W’LD BANK GRP, THE LEVERAGE RATIO, supra note 1, at 1.
86 “[C]redit products have high levels of embedded leverage, resulting in an overall exposure to loss that is a multiple of a direct investment in the underlying portfolio. Two-layer securitizations or resecuritizations, such as in the case of a collateralized debt obligation that invests in asset-backed securities, can boost embedded leverage to even higher levels.” See id., at 2.
There is no single measure which can capture all three dimensions of leverage simultaneously. As a result, the EU Capital Requirements Regulation has provided a binding definition of what constitutes leverage, which firmly extends to balance sheet and economic leverage. It catches embedded leverage only by implication and to the extent that measuring an institution’s embedded leverage is possible.\footnote{See Ana Fostel & John Geanakoplos, Reviewing the Leverage Cycle, (Cowles Found’n, Yale Univ., Disc’n Paper No. 1918, 2013), available at http://cowles.econ.yale.edu/P/cd/d19a/d1918.pdf. Geanakoplos and his co-author have explained the cross-sectional implications of multiple leverage cycles, which invariably lead to contagion, flight to collateral, and swings in the issuance volume of the highest quality debt.\footnote{See Benoit B. Mandelbrot, Variation of Certain Speculative Prices, 36 J. BUS. 394 (1963).} See Fostel & Geanakoplos, Leverage Cycle, supra note 88, at 31.}

\section*{B. The Leverage Cycle}

The dynamic feedback properties of leverage, volatility, and asset prices form the so-called leverage cycle. The leverage cycle has been examined closely in recent years especially in the post-2008 period.\footnote{For earlier modeling work on the credit cycle, see Nobihuro Kiyotaki & John Moore, Credit Cycles, 105 J. POLIT. ECON. 211 (1997).} One of the most worrying characteristics of the leverage cycle is that while the risks it creates do seem Gaussian they can also give rise to ‘fat tails’.\footnote{A Leverate Cycle is a feedback between asset prices and leverage, whereas a Credit Cycle is a feedback between asset prices and borrowing. . . Of course a leverage cycle always produces a credit cycle. But the opposite is not true. [In] [c]lassical macroeconomic models of financial frictions . . . leverage is countercyclical despite the fact that borrowing goes down after bad news. The reason for the discrepancy is that to generate leverage cycles, uncertainty is needed, and a particular type of uncertainty: one in which bad news is associated with an increase in future volatility. The literature on credit cycles has traditionally not been concerned with volatility . . . [Yet] leverage is the most important quantitative driver of the change in asset prices over the cycle. If LTV were held to a constant, the cycle would be considerably dampened.” See Fostel & Geanakoplos, supra note 88, at 35.} This means that planning a protection scheme against such rises may not always be seen as a priority, since the risk of such rises will probably be seen as negligible. Moreover, as leverage is cyclical, so is the rise and fall of asset prices.\footnote{“Leverage cycle crashes always occur because of a coincidence of three factors. The bad news itself lowers the prices. But it also drastically reduces the wealth of the leveraged buyers, who were leveraged the} Nonetheless, it is far from clear what triggers deleveraging. Namely, whether a fall in asset prices occurs first, followed by a fall in levels of new debt, or vice-versa. While the credit cycle\footnote{“Leverage cycle crashes always occur because of a coincidence of three factors. The bad news itself lowers the prices. But it also drastically reduces the wealth of the leveraged buyers, who were leveraged the} should not be confused with the so-called ‘leverage cycle’,\footnote{“Leverage cycle crashes always occur because of a coincidence of three factors. The bad news itself lowers the prices. But it also drastically reduces the wealth of the leveraged buyers, who were leveraged the} the main feature of the leverage cycle is also rising asset prices in tandem with rising leverage, followed by falling asset prices and deleveraging. 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’,\footnote{“Leverage cycle crashes always occur because of a coincidence of three factors. The bad news itself lowers the prices. But it also drastically reduces the wealth of the leveraged buyers, who were leveraged the} 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.\footnote{See Markus K. Brummermeier & Lasse H. Pedersen, Market Liquidity and Funding Liquidity, 22 Rev. Fin. Stud. 2201 (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.\footnote{See W’ld Bank Gr’p, The Leverage Ratio, supra note 1.} 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 amplifies rather than contains the credit cycle. Fostel and Geanakoplos 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.\footnote{See Hyun Song Shin & Tobias Adrian, Liquidity and Leverage, Paper presented at the Financial Cycles, Liquidity, & Securitization Conference Hosted by the International Monetary Fund, Washington, DC, (Apr. 18, 2008), available at http://www.imf.org/external/np/seminars/eng/2008/fincycl/pdf/adsh.pdf.}

In other words, during periods of economic prosperity and low loan defaults, banks’ capacity to create credit, coupled with inflated collateral values, increases banks’ capital reserves and removes constraints on further credit growth.\footnote{See Adair Turner, Something old and something new: Novel and familiar drivers of the latest crisis, Speech Given at the European Association of Banking and Financial History, (May 21, 2010), available at http://www.fsa.gov.uk/pages/Library/Communication/Speeches/2010/0521_at.shtml.} In addition, some financial assets become very popular amongst a certain class of buyers in relation to the rest of the public.\footnote{See John Geanakoplos, The Leverage Cycle, in Vol. 24, NBER Macroeconomics Annual 2009 (D. Acemoglu, K. Rogoff, and M. Woodford, eds. 2010).} Buyers in this case are willing to pay higher prices, or tolerate increased risk.\footnote{See Ugo Albertazzi & Leonardo Gambacorta, Bank profitability and the business cycle, (2009) 5 J. Fin. Stab’ty. 393 (2009).} This is often due to optimistic expectations concerning the future price trajectory of a given set of assets. Unsurprisingly, such pro-cyclicality contributes to higher risk-taking by banks.\footnote{See Luc Laeven & Ross Levine, Bank governance, regulation and risk taking, 93 J. Fin. Econ. 259 (2009); Carl R. Chen, Thomas L. Steiner & Ann Marie Whyte, Does Stock-Option-Based Compensation Induce Risk-Taking? An Analysis of the Banking Industry, 30 J. Bank. Fin. 915 (2006).} Moreover, investors – including banks – will borrow more to fund asset purchases, thus driving those prices up.\footnote{See Basel Comm. Bank’g Sup’vision, Basel III: A Global Regulatory Framework for More Resilient Banks and Banking Systems, 61 (2011) [hereinafter Basel III].} As we have noted, market participants tend to behave in a pro-cyclical fashion

most precisely because they are the most optimistic buyers. Thus the purchasing power of the most willing buyers is reduced. And most importantly, if the bad news also creates more uncertainty, then credit markets tighten and leverage will be reduced, just when the optimists would like to borrow more, making it much harder for the optimists and any potential new buyers to find funding.” See id., at 28.

and the capacity to leverage balance sheets permits them to engage in greater speculation on asset prices than unleveraged investors.

C. Drivers of Excessive Leverage in the Banking Sector

Bank capital structure is a function of the relative costs of capital financing. Invariably, the costs of raising equity capital exceed those in relation to raising debt finance, as equity capital is perceived to beriskier than debt. In addition, debt-finance enjoys a more favourable tax treatment as interest payments are deducted from tax liabilities whereas dividends are taxed as income. In the absence of a bail-in risk, especially when depositors and senior debt-holders are exempted from bail-in, bank creditors are exposed to a much lower level of risk than the aggregate risk level of the entire pool of bank assets, and thereby receive much lower returns. In contrast, bank equity holders are exposed in much greater risks and therefore receive higher returns on investment. Increased equity requirements will therefore, in general, increase the costs of capital. Proponents of high leverage therefore contend that by reducing the costs of capital (by allowing banks to expand using debt rather than equity), leverage increases economic and allocative efficiency. The more credit is available to banks to extend, the more worthwhile projects are financed, and thus levels of capital investment in the economy increase.

A fundamental factor relating to optimal leverage levels refers to the macroeconomic conditions prevalent at particular points in the business cycle. If the costs of raising bank capital are artificially low, due to prevailing national and global conditions of excessive liquidity, or extensively insured deposits, or tax subsidies, this may result in severe distortions in bank behaviour, and lead to increased risk-taking. For example, when adjusted for the (unincorporated) value of the deposit protection option, an increase in bank capital is positively associated with a reduction in asset risk, notwithstanding that in these

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102 The non-conformity in risk between bank debt and bank equity is, of course, compounded by the fact that debt instruments are afforded generous tax treatment. See Richard B. Stone, Debt-Equity Distinctions in the Tax Treatment of the Corporation and its Shareholders, 42 TUL. L. REV. 251 (1967).

103 Furthermore, if a bank is forced to raise funds externally, its shareholders will prefer the raising of debt to equity, as any increase in equity funding will dilute their shareholdings. This largely refutes the ‘capital structure irrelevance principle’ first proposed by Modigliani and Miller in their seminal paper. See Modigliani & Miller, supra note 2.

104 Bail-in is a debt conversion mechanism to avoid costly public bailouts, spreading the cost of a bank rescue beyond existing shareholders, who are wiped out, to bank creditors who see the value of their stakes diminish by being converted into low value shares of a bank in distress. See in general Jianping Zhu et al., From bailout to bail-in: mandatory debt restructuring of systemic financial institutions (IMF Staff Discussion Note, April 2012), available at http://www.imf.org/external/pubs/ft/sdn/2012/sdn1203.pdf

105 For a rejoinder to this argument, see Anat R. Admati, Peter M. DeMarzo, Martin F. Hellwig, & Paul Pfleiderer, Fallacies, Irrelevant Facts, and Myths in the Discussion of Capital Regulation: Why Bank Equity is Not Expensive, (Rock Center for Corp. Gov. at Stanford Univ. Working Paper No. 86, 2010).


circumstances portfolio diversification declines.\textsuperscript{109} However, in the presence of underwritten deposits and \textit{ex post} bailouts of bank creditors, bank management will normally opt for a suboptimal mix of debt and equity.\textsuperscript{110}

There are three plausible drivers of such a decision. Firstly, managers will engage in rent-seeking.\textsuperscript{111} 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 so-called ‘too-big-to-fail’ subsidy. 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.\textsuperscript{112} The perverse result of this is that banks’ ability to increase leverage is enhanced when they take excessive risk.\textsuperscript{113} We discuss the causes of such executive behaviour more extensively in section D below.

Secondly, bank management may use asset substitution to shift risks, a process made much easier through leverage.\textsuperscript{114} The possibility of regulatory arbitrage may mean that banks select asset portfolios with higher risk in order to maximise return on capital.\textsuperscript{115} Risk-weighting of assets in bank portfolios ought to mitigate these effects somewhat, assuming those risk weights are accurate\textsuperscript{116} but it is clear that banks push many risks off-balance sheet and actively manage risk-weights.\textsuperscript{117} 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 non-financial firms,\textsuperscript{118} and hide problems in their asset books.\textsuperscript{119} In the presence of significant managerial incentives to adopt a leveraged capital structure, the ease

\textsuperscript{114} See Acharya et. al., supra note 110.
with which risks are shifted increases incentives for banks to grow their balance sheets. As mentioned earlier, for banks the easiest way to do so is by building their trading book and the number of transactions they are involved, which also leads to increased opacity and interconnectedness.

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 bank decision-making. Based on this classification, banks which are dominated by shareholder decision-making favour 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 behaviour, 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: shareholders have a clear conflict of interests when choosing a bank’s capital structure and they normally prefer to finance balance sheet expansion through debt. Admati and Hellwig et al have vividly explained the reasons for shareholders’ persistent preference for high leverage. While premature debt redemption in good times favours 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 upfront cost of early tax redemption undesirable to shareholders. Shareholder preference for high leverage leads to the so-called “ratchet” effect whereby worthy projects are ignored by an over-leveraged bank in favour 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 twenty years. While building size in the traditional relationship banking business is a long-drawn exercise, in the case of transactional banking, leverage can be the catalyst for rapid building

123 See Admati et. al., supra note 18.
124 The ratchet effect we identify is related to the concept of debt overhang in Myers (1977). Myers showed that when debt is in place, shareholders may avoid taking valuable projects that they would have undertaken in the absence of debt. This underinvestment can occur when the shareholders bear the full costs of any project the firm undertakes, but the benefits are shared with existing creditors. Our analysis shows that a similar conflict of interest arises in shareholder attitudes towards reducing leverage. However, as mentioned above, unlike the underinvestment problem which is resolved when the benefits of investing are large enough, the leverage ratchet problem persists no matter how large are the benefits of reducing leverage.” See id. at 4.
of bank asset size.\textsuperscript{125} 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.\textsuperscript{126} 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 towards conglomeration in the 1990s.\textsuperscript{127} 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.

D. \textit{Agency Costs: Leverage, Bankers’ Pay, and Bank Risk}

Corporate debt can be used to eliminate agency and other monitoring costs and instil market discipline.\textsuperscript{128} Management may also strive to take on debt if the company’s prospects are high in order to please shareholders who would not wish to see their equity stake diluted.\textsuperscript{129} However given the protected status of creditors, in the absence of strong bail-in provisions, only the second of the above statements holds true in the context of bank leverage. As explained earlier, the nature of compensation systems at banks, particularly those that were based on short-term performance targets, provided incentives for bankers to assume additional risk via leveraging the capital base. 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. At the same time the more highly-levered institutions the greater the speed of asset expansion.\textsuperscript{130} Assuming that growth

\textsuperscript{125} Boot, supra note 12.
\textsuperscript{127} This part of the paper’s analysis draws on Emilios Avgouleas, Libor’s Legacy: Too-big-to-fail, Too-big-to-regulate, and now Too- unethical-to-control, but is there an Alternative to the Mega-bank Model?, Paper presented at the Conference, ‘My Word is My Bond: Regulating for Integrity in the City’, (Jan. 15, 2013) Allen & Overy LLP, London, (unpublished manuscript, copy on file with author(s)).
\textsuperscript{128} See Jensen and Meckling, Theory of the Firm, supra note 3 (for a first formulation); see also Michael C. Jensen, Agency Cost of Free Cash Flow, Corporate Finance, and Takeovers, 76 AM. ECON. REV. 323 (1986) (for a restatement of agency theory).
\textsuperscript{130} Minsky provides the following example: “If a bank shows $25 billion in assets and $1.25 billion of capital, surplus, and undivided profits, the assets/owners’ investment ratio is 20. Further, if the bank makes $187.5 million in profits after taxes and allowances for loan losses, the ratio of profits to assets will be 0.75 percent and the yield is 15 percent on owners’ equity. Assuming this bank paid one-third of earnings in dividends, retained earnings will be 10 percent of the owners’ investment, and its equity will increase at 10 percent per year. Supposing that another bank, which is just as profitable in managing assets, has an assets to owners’ investment ratio of twelve. Such a bank, with about $25 million in assets and $2.085 million in stockholders’ equity, will earn $187,500 (0.75 percent) on assets or 9 percent on owners’ equity. If its dividend is 5 percent, retained earnings will be 4 percent of owners’ equity. Thus, the first bank, the more highly levered
is constant and increased leveraging becomes a general trend, per-share earnings in the banking sector will rise, and be reflected in bank value, since the rate of profitability accrues mainly through increasing net earnings per unit of assets, which is best achieved through assumption of leverage.\textsuperscript{131}

Thus unrestricted leverage has tremendous governance implications for banks as it introduces short-termism into bank business models. As compensation systems themselves are procyclical, particularly during asset price booms, bank executives are incentivised to link compensation to asset price levels.\textsuperscript{132} 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.”\textsuperscript{133}

However, risk-seeking behaviour 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\textsuperscript{134} within investment portfolios, which increase both bankruptcy risk and systemic threats.\textsuperscript{135} 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.”\textsuperscript{136} Accordingly, excessive leverage increases the prospect of bankruptcy that will wipe out shareholders and destroy senior management’s reputation and future employment prospects.

One explanation is that, whilst markets were stable and returns from these products were healthy, asset portfolio riskiness was of little concern to top executives.\textsuperscript{137} But such short-termism is at odds with another line of empirical research (most notably that compiled by Fahlenbrach and Stulz\textsuperscript{138}), 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.

\textsuperscript{131} See Minsky, supra note 36, at 263.
\textsuperscript{132} In the context of rating bank debt, Moody’s, the bond rating service, notes: “Capital levels provide a readily accessible indication as to where management wishes to place the bank on the risk/return continuum ... Banks with high capital levels tend to have good asset quality and conservative strategies, while those with low capital levels often are aggressive and risk prone.” See Moody’s Special Comment: Moody’s Approach to the Credit Analysis of Banks and Banking Holding Companies, 5 (1993).
\textsuperscript{133} See Peter Boone & Simon Johnson, Will the politics of global moral hazard sink us again?, in LSE, The Future of Finance: And the Theory that Underpins it (Adair Turner, Andrew Haldane, Paul Woolley, Sushil Wadhwa, Charles Goodhart, Andrew Smithers, Andrew Large, John Kay, Martin Wolf, Peter Boone, Simon Johnson & Richard Layard eds., 2010) [hereinafter Turner et. al., Future of Finance].
\textsuperscript{135} See Chesney et. al., supra note 46, at 28; see also Clifford W. Smith & Rene M. Stulz, The Determinants of Firms’ Hedging Policies, 20 J. FIN. QUANT. AN. 391 (1985); Robert A. Haugen & Lemma W. Senbet, Resolving the Agency Problems of External Capital through Options, 36 J. FIN. 629 (1981).
\textsuperscript{137} See Chesney et al., supra note 46, at 26.
\textsuperscript{138} See Robert DeYoung, Emma Y. Peng, & Meng Yan, Executive Compensation and Business Policy Choices at U.S. Commercial Banks, 48 J. FIN. QUANT. AN. 165 (2013).
\textsuperscript{139} See Fahlenbrach & Stulz, supra note 17.
sharply. The CEOs of Bear Stearns and Lehman Brothers incurred paper losses of $902 million and $931 million, respectively. See Bebchuk et. al., supra note 16, at 9.

139 The median value of stock and options in the average bank CEOs portfolio was more than ten times the value of the CEOs salary in 2006 and CEOs on average owned 1.6% of the outstanding stock of their bank. See Fahlenbrach & Stulz, supra note 17, at 12.

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143 According to the sample of Fahlenbrach and Stulz, on average, CEOs lost $31.49 million between 2006 and 31 December 2008. They argue: “Had CEOs seen the crisis coming, they could have avoided most of the losses by selling their shares. They clearly did not do so.” See Fahlenbrach & Stulz, supra note 17, at 24.


145 As noted by the UK’s FSA:

[In 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. 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, amongst other things, emphasised the importance of “an overt focus on capital ‘efficiency’, i.e. on high leverage.” This, of course, in the short-to-medium term, invariably leads to increased shareholder returns.

CEOs complied with shareholder pressure to take risks across the board, irrespective of their individual equity wealth, especially as pay packages, which implicitly encourage the use of leverage often have efficiency-decreasing effects: increased risk and leverage reduce the pay-performance sensitivity within financial institutions. 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. Namely, perverse compensation incentives were not the only explanation of managerial short-termism. Rich 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.

This explanation does not exonerate senior bankers from blame. It just provides a more pluralistic explanation of bankers’ behaviour. It is also true that the ‘too-big-to-fail’ factor played a role in such senior executive behaviour, 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 cannot have failed to understand that 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 cannot 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 made all banks of a certain size to enter the race for RoE.

147 See RBS FAILURE REPT. supra note 12, at 233.
148 ‘[V]irtually all of the increase in RoE of major banks [since 2000] appears to have been the result of higher leverage. Banks’ return on assets – a more precise measure of their productivity – was flat or even falling over this period ... [Higher returns in this period are] likely to have been an act of risk illusion.’ See Andrew G. Haldane, Simon Brennan & Vasilios Madouros, The Contribution of the Financial Sector: Miracle or Mirage?, in Turner et. al., FUTURE OF FINANCE, supra note 132, at 99.
150 For an alternative view that focuses on the impact of the scientific revolution that financial innovation was, of relentlessly liberalized global markets with unrestricted flows of funds, and of new technology (the combined effect of which has given rise to a financial revolution) see EMILIOS AVGOLEAS, GOVERNANCE OF GLOBAL FINANCIAL MARKETS: THE LAW, THE ECONOMICS, THE POLITICS, CH. 3 (2012). This work sees the Global Financial Crisis as the product in equal measure, of the ill understood and significantly mis-managed financial revolution, the interaction of the different elements of the financial revolution with pre-existing socio-psychological phenomena ranging from bounded rationality to the supposedly rational market actors’ propensity to lose confidence and panic, as well as of insider rent-seeking.
Peer pressure leading to herding is of course a long-standing problem in the financial sector and its role in creating the conditions that led to the GFC has not been fully appreciated, requiring further analysis. 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 are the only effective means of controlling banker and shareholder short-termism, thereby eliminating leverage agency costs.

E. Excessive Leverage, Financial Instability and Allocative Inefficiencies

Excessive leverage is prone to generate asset price cycles, contributing to macroeconomic booms and busts, so called asset bubbles and crashes. Banks facilitate greater leverage amongst non-financial companies, yet they are also highly leveraged themselves, increasing the probability of risks arising from debt contracts. Leverage thus exacerbates the danger of contagion in the financial sector and facilitates the transmission of risks from the financial system to the real economy. Driven as they are by flawed assumptions concerning fundamental value or by competitive pressures, bubbles have the potential to cause serious economic damage once they burst. It is clear that leverage increases in boom years when banks finance riskier loans, and recedes during periods of economic contraction. Thus, in boom times, as asset markets typically become inflated, investors’ appetite for risk and speculation is amplified. Growth at higher rates, however, may be “incompatible with the potential for overall, real economic expansion.”

Federal Deposit Insurance Corporation, find that TBTF subsidy is between 15-40 basis points, which is economically significant. On the other hand, to the costs of the TBTF subsidy has to be added the costs of externalities it creates as TBTF institutions respond to the subsidy by increasing their risk through either engaging in riskier activities or increasing their leverage. While these actions may be privately optimal, the response to the TBTF subsidy is not socially optimal, as it can pose huge risks to the financial system. See also James B. Thomson, How Big is the Too-Big-to-Fail Subsidy?, FOREFRONT, Jul. 11, 2012, available at http://www.clevelandfed.org/forefront/2012/summer/ff_2012_summer_03.cfm. See Chevalier & Glenn Ellison, supra note 13; see also Nofsinger & Richard W. Sias, supra note 13. From the handful of works focusing on this issue see also Andrew Lo, Regulatory Reform in the Wake of the Financial Crisis of 2007-2008, 1 J. FIN. ECON. POL. 4, 19-21, (2009); see also Avgouleas, supra note 11 and George A. Akrelof & Robert J. Shiller, Animal Spirits: How Human Psychology Drives the Economy, and Why It Matters for Global Capitalism (2009), CH. 1 & CH. 7. See John Geanakoplos, Solving the Present Crisis and Managing the Leverage Cycle, Fed. Reserve Bank of N.Y. Econ. Pol. Rev. 101 (2010).

‘Bubbles’ are an ubiquitous phenomenon in modern capitalist development. The bubble taxonomy has been described as: “The process is characterised by competitive herd behaviour which … produce[s] widespread and gross asset mispricing which [is] eventually and dramatically corrected.” See John Kay, Should we have “narrow banking”? in Turner et. al., Future of Finance, supra note 132, at 230. For a detailed description and explanation of the many bubbles to afflicted asset markets throughout history, see Charles P. Kindleberger & Robert Z. Aliber, Manias, Panics and Crashes: A History of Financial Crises (6 ed., 2012 Palgrave MacMillan 2005).


See Manthos D. Delis, Kien Tran & Efthymios Tsionas, Quantifying and explaining parameter heterogeneity in the capital regulation-bank risk nexus, 8 J. FIN. STAB’TY 57 (2011). See MINSKY, supra note 36, at 263.
The negative effects of leverage are felt more keenly in times of general financial distress. Investors are aware that the capital reserves of highly-levered institutions will be wiped out in the event of negligible asset price falls. Thus, in a downturn, a bank with a highly-levered balance sheet will suffer loss of confidence much earlier and faster than less-leveraged institutions. This leaves the financial system vulnerable to episodes of market panic, where asset price deflation and firesales can quickly lead to mass insolvencies.

Moreover, even where insolvency is not an immediate threat, the potential requirement for highly-levered banks to sell assets to bolster capital in the event of distress may inadvertently lead to problems in other financial institutions, if the decision to sell assets leads to downward pressure on asset prices, which is virtually inevitable in the event of systemic disruption when the entire banking sector is forced to deleverage. For example, collateralized debt contracts with margin calls (ubiquitous in bank investment), if leveraged, increase fat tail distributions and clustered volatility. These distributions, when coupled with the effect of any re-pricing of collateral, exacerbate downward price spirals. Recent increases in financial sector leverage have merely attenuated these risks. The damage inflicted by deleveraging phases on both the financial system and the real economy is often significant, and where borrowing levels have risen to unsustainable levels, it may lead to GDP reduction, negating the initial growth gains made due to high leverage.

In addition to a substantial increase of bank bankruptcy risk and an adverse impact on financial stability, another critical drawback of excessive leverage is ‘debt overhang’, which reduces the allocative efficiency of bank lending. Where bank capital falls, for example, due to asset re-pricing necessitated by an economic downturn, it will prove extremely difficult for a bank to escape debt overhang and worthwhile investments will be sacrificed in favour of asset sales and deleveraging. If replenishment of a bank’s capital base is required in these circumstances, the bank will be unable, or unwilling, to extend credit to worthwhile borrowers. This prevents firms from borrowing money to finance investment, even where that investment is guaranteed to produce a return. Thus, banks with large debt to equity ratios will therefore pass up valuable investment opportunities, even where those opportunities constitute a positive net value to the firm. This, by implication, reduces the overall volume of funding available to finance projects and creates inefficiencies in the allocation of funds.

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163 If a bank loses $1 million and equity capital stands at 3 percent of its balance sheet, then the bank attempting to deleverage must liquidate more than $33 million worth of assets just to maintain that 3 percent ratio.


165 See Adrian & Shin, supra note 158.


168 See BASEL COMM. BANK’G SUP’VISION, supra note 101, at 69.
Accordingly, highly-levered banks eventually make less efficient investment decisions resulting in both underinvestment and misallocation of resources. Unmerited over-investment during boom times is followed by a serious halt on new investment during a downturn triggering liquidity asphyxia and, of course, a sharp correction/downfall on asset prices. Both developments tend to have chain effects on economic activity and employment rates, as well on savings ratios.

IV. BANK LEVERAGE IN THE PRE-2008 ERA

A. Overview

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 amongst large commercial banks and investment banks alike. The drive towards building ever-higher levels of leverage remained mostly unchecked under prevailing capital regulations. Basel II, especially, allowed commercial banks to largely set their own leverage levels. On occasion, building up leverage was even encouraged by regulators.

As we have noted, banking institutions had strong incentives to grow their asset book through leverage since the larger the institution becomes and the more interconnected, the more likely it is that its failure would require a public bailout, in order to avoid a systemic crisis. Moreover, the expansion of bank asset books and the increasing complexity of the financial system allowed banks to hide risks and reduce reported leverage levels. In recent years, the increase in leverage on the asset side was accompanied by increased leverage in the bank’s trading book. Larger trading books at banks – relative to their loan books – allowed

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172 See DE LAROSIÈRE GROUP, supra note 10, at 6 (observing that leverage levels at European banks in 2008 included: ING, 49.1; Deutsche Bank 53.1; and Barclays, 61.1). See also NOURIJIEL ROUBINI & STEPHEN MIHM, CRISIS ECONOMICS: A CRASH COURSE IN THE FUTURE OF FINANCE 127 (2010) (observing that debt within the US financial sector alone increased from 22 percent of GDP in 1987 to 117 percent of GDP in 2008).


174 See Turner, supra note 167, at 31, note 22.

175 In 2004, for example, the SEC permitted large commercial banks with investment banking divisions to increase their leverage ratios from approximately 12:1 to 30:1. See Alternative Net Capital Requirements for Broker-Dealers That Are Part of Consolidated Supervised Entities 69 Fed. Reg. 34,428 (Final Rule, Jun. 21, 2004) (17 C.F.R. Pts. 200 & 240).

banks to expand their asset base without a corresponding increase in their capital base.\textsuperscript{177} Since the late 1990s, loan assets were re-packaged and sold on as securities, which attracted lower risk weightings.\textsuperscript{178} This increased profits for many banks in the run-up to the GFC, but also resulted in additional leverage, which proved difficult to unwind in the subsequent market panic.\textsuperscript{179} As we note in our concluding remarks, strict common equity capital ratios may have prevented these factors from causing such catastrophic damage to bank balance sheets following the onset of the GFC.

B. Bank Asset Expansion in the period leading up to 2008

Data on asset size reveals that large banks in developed countries and investment banks increased their balance sheets considerably prior to the GFC. This expansion was partly due to prevailing conditions of excessive liquidity, low inflation, and macro-economic stability. Furthermore, intense competition among mega-banks forced bank management into extending leveraged activities, through financial innovation\textsuperscript{180} and the use of off-balance sheet trades,\textsuperscript{181} leading to continuous expansion of available credit, whilst also allowing banks to circumvent capital requirements.

Estimates show that the asset levels at the ten 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.\textsuperscript{182} Superficially, the data suggests that banks were investing in ‘safer’ assets (and were therefore permitted to expand the asset base without a commensurately large increase in capital). This trend shows clear signs of herding in banks’ approach to capital structure, demonstrated in Chart 1, below.

\textsuperscript{177}See Haldane et. al., supra note 148, at 100-101.
\textsuperscript{178}“Among the major global banks, the share of loans to customers in total assets fell from around 35% in 2000 to 29% by 2007 … Over the same period, trading book asset shares almost doubled from 20% to almost 40%. These large trading books were associated with high leverage amongst the world’s largest banks.” See id. at 100.
\textsuperscript{181}As noted in the Turner Review: “At the individual bank level, the classification of these as off-balance sheet proved inaccurate as a reflection of the true economic risk, with liquidity provision commitments and reputational concerns requiring many banks to take the assets back on balance sheet as the crisis grew, driving a significant one-off increase in measured leverage. But even if this had not been the case, the contribution of SIVs and conduits to total system leverage … would still have increased total system vulnerability.” See FIN. SERV. AUTH., THE TURNER REVIEW: A REGULATORY RESPONSE TO THE GLOBAL BANKING CRISIS, 20, (2009) [hereinafter TURNER REVIEW] available at http://www.fsa.gov.uk/pubs/other/turner_review.pdf.
\textsuperscript{182}See IMF, Containing Systemic Risks, supra note 180, at 31.
These trends are supported by data on asset expansion at banks in both the US and in Europe. In the US, asset levels at commercial banks, savings institutions, and credit unions more than doubled between 2000 and 2008 from 6 trillion dollars to over 12 trillion dollars. Whilst reported leverage did not increase significantly for large US commercial banks, securitization of debt and the use of off-balance-sheet vehicles masked true leverage levels. In Europe, the trend for asset expansion was even more pronounced: aggregate assets in the European banking sector ballooned from approximately 11.5 trillion dollars in 2000 to over 20 trillion dollars in 2008. The next chart traces the massive increases in asset levels at selected US and EU commercial banks, between 2003 and 2008.

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183 See id.
184 Discussed infra SECTION C.
185 See IMF, Containing Systemic Risks, supra note 180, at 288.
186 Some of the expansion in asset levels at these banks, of course, may be explained by mergers with other, competitor banks. However, of the sample above, only RBS merged with a bank which might be considered ‘large’ (ABN AMRO) during this period (and, in any case, RBS provided only 38.3 percent of the takeover funds. See RBS FAILURE REP’T, supra note 12, at 162). Only the US banks JP Morgan and Citigroup are included in this chart as many of the largest US commercial banks were acquired or collapsed during the GFC (JP Morgan acquired the investment bank Bear Stearns and a large part of the commercial bank Washington Mutual in 2008, which swelled its assets significantly. However, absent these takeovers, JP Morgan still more than doubled its asset levels in four years, from $771 million in 2003, to $1562 million in 2007).
C. Capital regulations: A Licence to leverage

Whilst 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, whilst banks expanded asset levels aggressively, they maintained capital levels and preserved stable leverage ratios. However, official data does not provide the full picture. Leverage increases were caused by poorly-calibrated internal financial models, the abysmal performance of credit rating agencies, and fraud. Moreover, there is strong evidence that banks systematically attempted to conceal their true leverage ratio by using accounting techniques to remove

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187 The authors of this article have calculated these figures from 10-K reports and annual reports. The UK bank total asset levels were reported in GBP Sterling. The figures have been converted to US Dollars using the prevailing average exchange rate for each financial year (2003: 0.667; 2004: 0.667; 2005: 0.6947; 2006: 0.667; 2007: 0.61; 2008: 0.546). For bank assets denominated in Euros (BNP Paribas and Deutsche Bank), the Euro amount has been converted using the following exchange rates (2003: 0.8; 2004: 0.739; 2005: 0.8392; 2006: 0.7558; 2007: 0.6806; 2008: 0.7008).


190 See John P. Hunt, Credit Rating Agencies and the ‘Worldwide Credit Crisis’: The Limits of Reputation, the Insufficiency of Reform, and a Proposal for Improvement, (2009) 1 COL. BUS. L. REV 1; see also Andrew Johnston, Corporate Governance is the Problem Not the Solution: A Critical Appraisal of the European Regulation on Credit Rating Agencies, 11 J. CORP. L. STUD., 395 (2011).

191 For example, it was documented by the lead counsel in the Lehman Brothers bankruptcy case that Lehman systematically attempted to conceal its true leverage ratio by using accounting techniques to remove
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.

The main mechanism through which additional leverage became embedded within the financial system involved banks circumventing capital requirements and lax regulations, which allowed for misleading capital structure reporting. 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. 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. Especially, Basel II, implemented just prior to the GFC, made few significant changes to regulatory capital requirements in relation to conduits leading to a reduction of overall capital requirements.

Much risk weight 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. In the pre-GFC era banks funded a large amount of their assets with short-term liabilities through the use of conduits and off-balance sheet vehicles. 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. To offset this and other risks, sponsor banks granted credit facilities and guarantees to their conduits, which meant that banks essentially remained liable for conduits’ losses.

Credit lines to conduits were subject to less than 20 percent capital requirements than were required against on-balance sheet assets, provided that such lines had a term of less than a year. Thus, most banks extended credit lines to conduits that had duration of 364 days or


192 The securitization process may be used to convert lower-grade individual financial products into higher-grade securities. See Jeremy C. Stein, Securitization, shadow banking & financial fragility, 139 Daedalus 41 (2010).
193 See BASEL II, supra note 173.
195 US depository institutions increasingly funded their total assets by borrowing in short-term debt markets. In the 1960s, approximately 2 percent of US banks’ balance sheets were funded in these markets; by 2008, this had reached 22 percent. See Margaret M. Blair, Leverage and Private Sector Money Creation, 36 SEATTLE UNIV. L. REV. 417, 438 (2013).
196 See TURNER REVIEW, supra note 181, at 20.
197 Brunnermeier notes: “The Basel I accord … required that banks hold capital of at least 8 percent of the loans on their balance sheets; this capital requirement (called a "capital charge") was much lower for
less and did not retain capital buffers high enough to withstand heavy losses from conduits.\(^{198}\) Although conduits exposed sponsor banks’ risks identical to those linked with on-balance sheet financing. Also some of the most active purchasers of structured financial products were banks themselves; approximately 50 percent of asset-backed AAA-securities remaining within the banking system, merely adding to total bank leverage.\(^{199}\) Namely, most credit risks remained in the banking system, albeit well concealed.\(^{200}\) By 2007, commercial banks’ off-balance sheet vehicles had total assets of $2.2 trillion, more than the assets of hedge funds ($1.8 trillion) and more than half of the total of the five largest investment banks ($4 trillion).\(^{201}\) These banks suffered the greatest losses and lost most in equity valuation during the GFC.\(^{202}\)

These risks were attenuated by the increasing maturity mismatch on the balance sheet of investment banks, which funded many of their operations through repurchase agreements (“repos”), exposed them to potential liquidity shortfalls, if repo financing channels became compromised.\(^{203}\) In 2007 the short-term debt market collapsed\(^{204}\) posing a serious liquidity problem. Inspite the liquidity cushion that big banks enjoyed due to their deposit base, in practice both universal banks and investment banks failed to raise funds to bolster their funding base once the GFC unfolded. Thus, the liquidity crisis soon turned into a solvency question for many institutions, which, for the reasons given below, were severely undercapitalized.

The dual advent of risk-weighted capital requirements and financial innovation has enabled banks to engage in RWO for the best part of the past two decades. An authoritative OECD study has demonstrated that mega-banks used their internal-ratings based (IRB) approach to the Basel Accords to manage risk-weighted assets (RWAs) in a manner that allowed banks to comply with higher capital requirements with very small increases in their equity base. Moreover, this research confirms that RWO has not abated since the GFC.\(^{205}\) This has resulted in several large European banks operating with relatively low levels of contractual credit lines. Moreover, there was no capital charge at all for “reputational” credit lines – noncontractual liquidity backstops that sponsoring banks provided to structured investment vehicles to maintain their reputation. Thus, moving a pool of loans into off-balance-sheet vehicles, and then granting a credit line to that pool to ensure a AAA-rating, allowed banks to reduce the amount of capital they needed to hold to conform with Basel I regulations while the risk for the bank remained essentially unchanged.” See Brunnermeier, supra note 179, at 80-81; see also Viral A. Acharya and Philipp Schnabl, How Banks Played the Leverage “Game”, in RESTORING FINANCIAL STABILITY: HOW TO REPAIR A FAILED SYSTEM (Viral V. Acharya & Matthew Richardson eds., 2009) 85.

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\(^{198}\) See IMF, Containing Systemic Risks, supra note 180, at Box 2.5.

\(^{199}\) See IMF, Containing Systemic Risks, supra note 180, at Box 2.5.


\(^{201}\) For example, in 2007 Citigroup was responsible for 25 percent of the market in SIVs. Its biggest SIV, Centauri, had lent out $21 billion before the credit crunch. It was not included in the consolidated accounts of Citigroup plc in 2006. Citigroup announced write-downs in 2008 of approximately $41 billion. See Acharya & Richardson, supra note 145, at 207.

\(^{202}\) See GILLIAN TETT, FOOL’S GOLD: HOW UNRESTRAINED GREED CORRUPTED A DREAM, SHATTERED GLOBAL MARKETS AND UNLEASHED A CATASTROPHE (2009) 263.

\(^{203}\) See Acharya et al., supra note 199, at 83-84.

\(^{204}\) See Gary Gorton & Andrew Metrick, Securitized banking and the run on repo, 104 J. FIN. ECON. 425 (2012).

\(^{205}\) See BLUNDELL-WIGNALL & PAUL E. ATKINSON, supra note 126.

These trends are demonstrated in the following chart on US bank leverage ratios, which shows the dramatic effect on leverage levels exerted by the forced incorporation of conduit finance on bank balance sheets from 2007:

**Chart 3: US Bank Leverage Ratios 2001 – 2009\footnote{Source: FED. DEPOSIT INSURANCE CORP.}**

Similar levels of leverage can be observed in the European banking sector, which experienced a marked expansion in balance sheet leverage over a similar period, particularly following the amendments made to the capital adequacy framework by Basel II:
The data presented above demonstrates the inadequacies of RW 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 concise overview of BCBS proposals to introduce leverage ratios whether as a reporting tool or a backstop capital adequacy requirement and a balanced analysis of the utilities and dis-utilities attached to introduction of leverage ratios.

V. A GLOBAL LEVERAGE RATIO?

A. The Leverage Ratio Debate

In many regions (especially the EU) banks are the largest single source of credit intermediation, acting as vehicles for pooling public savings and transforming their maturities in order to serve long-term investment goals. They operate under a leveraged model of


209 The BCBS note: "One of the main reasons the economic and financial crisis, which began in 2007, became so severe was that the banking sectors of many countries had built up excessive on and off-balance sheet leverage. This was accompanied by a gradual erosion of the level and quality of the capital base . . . The crisis was further amplified by a procyclical deleveraging process and by the interconnectedness of systemic institutions through an array of complex transactions.” See BASEL III, supra note 101, at 1.
fractional reserve banking which provides efficiency in the distribution of funds for investment. Thus, leverage is fundamental to financial system development and economic growth. Accordingly, 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. 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 leverage ratio is bound to create perverse incentives. The fact that a leverage ratio does not distinguish different types of bank assets by their riskiness could mean that banks feel encouraged banks to build up relatively riskier balance sheets or expand their off-balance-sheet activity. 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.

As explained in Part III, excessive leverage generates significant governance/agency costs by virtue of its influence on senior executive behaviour and the “ratchet” effect, discussed by Admati et al., whereby worthy projects are ignored by an over-leveraged bank in favour of lower quality loans. Only a well-calibrated leverage ratio can eliminate these costs. Inevitably such a ratio will improve the quality of bank loans. Moreover, given the number of other restrictions imposed on the formal banking sector in the post-2008 regulatory climate, it is possible that instead of a shift to riskier assets banks would focus on extracting a premium from their existing customer relationships, leading to a marked improvement in their customer services and banking products.

A second potent argument 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. However, the majority of contemporary

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210 The contribution of bank credit and financial system development to economic development is thoughtfully demonstrated in Ross Levine, Financial Development and Economic Growth: Views and Agenda, 35 J. ECON. LIT'URE 688 (1997).
211 For a discussion of this literature, see David VanHoose, Theories of bank behaviour under capital regulation, 31 J. BANK. FIN. 3680 (2007).
213 See W’LD BANK GR’P, THE LEVERAGE RATIO, supra note 1.
214 See id.
215 Inefficient increases in leverage resemble risk-shifting problems, where shareholders take an action for their own benefit that harms existing creditors.
216 See Admati et. al., supra note 18.
studies show that leverage controls are an overall welfare enhancing mechanism. Conceptual studies show that to be the case when lending markets are competitive. This finding implies that, while imposing leverage ratios regulators must also relax restrictions on competition to allow new entrants to the market. On the other hand, the majority of recent empirical studies show that even in less than perfectly competitive markets, a leverage ratio has a beneficial impact on institutional and systemic stability without affecting growth.

It is possible that the divergence between studies calculating the impact of leverage ratios (and other capital requirements) is due to the fact that the studies providing a strongly positive assessment of leverage ratios take into account historical data to quantify the financial stability benefits of new capital regulations. In countries like Switzerland and the US, where historic banking data is readily available, such data can be used by requisite studies to measure, apart from costs, also the increased financial stability benefits. The most recent empirical study has measured the impact from the introduction of leverage ratios in Switzerland, a country that was among the first to impose an un-weighted leverage ratio on its banks. It identified significant welfare gains from this regulatory change, rather than feared losses; the study finds no impact on cost of lending (interest rate differential-spread) or number of new loans granted (rate of credit expansion).

(suggesting that based on the cumulative impact of Basel II capital requirements on economic growth, the financial reforms under Basel III will lead to a 2.9% reduction in the level of real GDP by 2020, implying an annual GDP decline of 0.3%); see also Harry DeAngelo & Rene M. Stulz, Why High Leverage is Optimal for Banks, (Fisher College of Bus. Working Paper No. 2013-03-08, 2013, available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2254998. However, this paper presents the authors’ requisite model and does not contain any empirical data.


219 A Swiss study has found that: “the increase of capital levels as foreseen by Basel III and the Swiss Too Big to Fail (TBTF) regulations will accordingly reduce the probability of systemic crisis by 3.6% and yield an expected permanent annual GDP benefit of 0.64%. Thus, social benefits exceed social costs by a factor of nearly 11.” See Georg Junge & Peter Kugler, Quantifying the impact of higher capital requirements on the Swiss economy, Mimeo, 5, (2012), available at http://www.unibas.ch/fileadmin/wzw/redaktion/makro/Papers/G_Junge_P_Kugler_July_02_2012_V3_fina.pdf (providing a quantitative view and estimating the long-run costs and benefits of substantially higher capital requirements using empirical evidence on Swiss banks to assess both benefits and costs). Even allowing for statistical errors this is a massive finding. Yet it is far from being the result of an isolated study. For further discussion, see also Douglas J. Elliot, Quantifying the Effects on Lending of Increased Capital Requirements, (The Brookings Inst’ion Working Paper, 2009), available at http://www.brookings.edu/~/media/research/files/papers/2009/9/24%20capital%20elliott/0924_capital_elliott.pdf; Hanson et. al., supra note 169 (finding that costs of substantially higher capital requirements are rather modest); see also David Miles, Jing Yang, Gilberto Marcheggiano, Optimal Bank Capital, 123 Econ. J 567 (2013) (performing cost and benefit calculations on UK data and conclude that marginal benefits exceed marginal costs up to an equity capital level of 20% of risk weighted assets (RWA) for UK banks. The social costs resulting from a 50% reduction of leverage are estimated to amount to 0.15%, or 3% if a discount rate of 5% is applied); BASEL COMM. BANK’G SUP’VISION, AN ASSESSMENT OF THE LONG-TERM ECONOMIC IMPACT OF STRONGER CAPITAL AND LIQUIDITY REQUIREMENTS, (2010), available at http://www.bis.org/publ/bcbs173.htm (finding that, based on a survey of a large number of empirical studies of banking crises, the expected benefits of substantially higher capital requirements (raising the CET1 capital ratio by 100) amount to benefits of 5.21% assuming a discount factor of 5%).

220 See Junge & Kugler, id.
There are other arguments mitigating in favour of introduction of leverage ratios. First recent research on the relationship between bankers’ equity-based compensation and the state of the relevant economy at any particular point in time confirms this view.\(^{221}\) It demonstrates 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 pro-cyclicality in the financial system.

Secondly, an un-weighted 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 structured financial products, will always give rise to uncertainty about bank’s capital levels. The Basel system of risk-weighting has also been criticised as excessively complex and highly difficult to understand, rendering it ineffective as a source of market discipline, given also its susceptibility to gaming. In fact, investors have reported losses of confidence in the risk-weighting system\(^{222}\) and in the capacity of banks to calculate their levels of RWAs, even amongst specific asset classes.\(^{223}\) Recently reported wide discrepancies in British banks’ capital ratios when non-weighted assets are measured against own funds\(^{224}\) provide enough evidence to make any confident investor in the banking sector and prudent bank regulator to lose sleep.\(^{225}\) This uncertainty severely undermines rather than reinforces market discipline.

\(^{221}\) See Alon Raviv & Elif Sisli-Ciamarra, Executive compensation, risk-taking and the state of the economy, 9 J. Fin. Stab’ty. 55 (2013).  
\(^{222}\) The UK’s most senior regulator has stated before a Parliamentary Committee: [One] area . . . is the RWA issue . . . we need to bring . . . a sensible set of measures to judge capital, which for me is a combination of a risk-weighting approach and a leverage approach, but also what is a sensible underpinning of the risk-weighting system to stop this drive to the bottom. [A related point] . . . is that we need a lot more transparency to the outside world about how this system works. It is interesting—I talk a lot to investors and the analyst community . . . and they do not understand it and they have lost confidence in it. See House of Commons Treas. Comm., Bank of England 2012 Financial Stability Report, (2012) (testimony of Andrew Bailey, head of UK’s Prudential Regulation Authority) 10, available at http://www.publications.parliament.uk/pa/cm201213/cmselect/cmtreasy/873/873.pdf.  
\(^{224}\) See Bank of England News Release, ‘Prudential Regulation Authority (PRA) completes capital shortfall exercise with major UK banks and building societies,’ Jun. 20, 2013 available at http://www.bankofengland.co.uk/publications/Pages/news/2013/081.aspx (noting that Standard Chartered had the strongest Core Equity Tier One capital to RWAs ratio at 9.8 percent. Stripping away risk-weighting left it with an un-weighted leverage ratio of 4.3 percent. However, many UK banks are not so well-capitalized. Barclays, for example, reported Core Equity Tier One capital of 8.5 percent, but, its un-weighted leverage ratio was 2.9 percent. Lloyds Banking Group and RBS each had un-weighted leverage ratios of 3.1 percent, against Core Equity Tier One capital to RWAs ratios of 8.2 percent and 6.5 percent, respectively). Indeed, in the same release, the Prudential Regulation Authority stated that UK banks have a collective capital shortfall of £13.7 billion.  
\(^{225}\) This is how the Financial Times reported these discrepancies: “The UK’s five biggest banks are considered among the best capitalised in Europe on the traditional measure of core tier one equity divided by risk-weighted assets . . . The ratios range from 12.3 per cent at HSBC down to 10.3 per cent at Royal Bank of Scotland... The disclosed leverage ratios strip out the effect of risk modelling, which has the effect of more than
Thirdly, there is remarkable inconsistency in the way bank models measure RWA risk. Research by the Basel Committee confirms considerable variation across banks in the reporting of risk-based measurement of assets. Whilst 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’ modelling choices, and accounting requirements and practices. Most of these variations may be explained by the fact that banks are able to “use whatever models they like, provided supervisors sign off on basic rules of their use. The same [product] therefore may be priced differently in two different banks.” In the event of a crisis all this hard-wired uncertainty as to the true state of bank capital reserves will lead to a near certain loss of confidence in the banking system and at the very least to an investor flight from bank shares, as it happened during the GFC.

Fourthly, there is a growing body of empirical evidence, which 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. The OECD has found that Basel Tier One capital levels were not a statistically significant predictor of default risk. When analysed on the basis of un-weighted leverage ratios, however, a significant statistical link was present. As noted by the authors of the OECD

doubling the size of every bank’s balance sheet and more than tripling that of Barclays . . . [The] unvarnished look at each bank’s borrowing produces far different results. As of December 31, Standard Chartered had the strongest ratio at 4.5 per cent, meaning that it has assets equal to 22 times its capital. Barclays has the weakest, with 2.8 per cent. That means Barclays had assets worth more than 35 times its capital base.” See Brooke Masters, The Leverage Story Banks Want to Hide, FIN. TIMES, Apr. 8 2013, available at http://www.ft.com/cms/s/0/3c660d16-a02e-11e2-88b6-00144fabe1d0.html#axzz2jKIBh9.


228 See Stefan Ingves, ‘From ideas to implementation’, Remarks by Mr Stefan Ingves, Governor of the Sveriges Riksbank and Chairman of the Basel Committee on Banking Supervision, at the 8th High Level Meeting organized by the Basel Committee on Banking Supervision and the Financial Stability Institute and hosted by the South African Reserve Bank, Cape Town, Jan. 24 2013, 6, available at http://www.bis.org/review/r130124a.pdf.

229 See BLUNDELL-WIGNALL & ATKINSON, supra note 126, at 19.

230 See Avgouleas, supra note 11.

231 See ADRIAN BLUNDELL-WIGNALL & CAROLINE ROULET, OECD J.: FIN. MkET TRENDS: BUSINESS MODELS OF BANKS, LEVERAGE AND THE DISTANCE-TO-DEFAULT, (2013). For this study, the OECD examined a
study a simple leverage ratio is a much better predictor of default risk than RWA measures which are invariably subjected to RWO.\textsuperscript{232} In the same mode, Andy Haldane of the Bank of England has put together a persuasive set of data showing that leverage has been a better predictor of bank survival than capital.\textsuperscript{233}

Here it should be noted that, while the United States had a leverage ratio as a prudential tool, it failed to give any warning signs, as a result US banks were at the centre of the GFC. Nonetheless, in this case the culprit was the prescribed ratio’s inability to catch off balance sheet exposures in a period that US banks were massively engaged in off balance sheet activity. This implies that the way the leverage ratio is calculated and how off balance sheet exposures are accounted is a process as important as identifying the right ratio.

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.\textsuperscript{234} More specifically, by targeting individual financial institutions, a leverage ratio as a front-stop can restrict leverage building up at the systemic level. 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. This will make all the difference, especially in a medium-severity downturn when corporates or households have little incentive to deleverage sharply, as it will keep the flows of credit relatively steady, thereby avoiding liquidity asphyxia. Namely, frontstop leverage ratios can restrict the leverage cycle and thus contain the often-devastating impact of a ‘leverage cycle crash’.\textsuperscript{235}

For the aforementioned reasons, there exists considerable support for the introduction of leverage ratios to supplement existing RWA capital disclosure or as a front-stop measure. The following section shall briefly survey and critically evaluate mooted reforms.

\textbf{B. Introducing a Leverage Ratio}

The Basel III Accord requires that banks have a minimum of 6 percent Tier One capital (comprising 4.5 percent 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 percent.\textsuperscript{236} Any bank with an un-weighted leverage ratio of less than 3 percent will be deemed to be under-capitalized. The distinction between the two measures is that leverage ratios strip out

\footnotesize{sample of 94 US and EU internationally active commercial banks and broker dealers with market capitalizations of over $5 billion, over the period 2004-2011.}

\textsuperscript{232}See \textit{id.} at 16.

\textsuperscript{233}See Haldane & Madouros, \textit{supra} note 212, at 14; tables 2-5 & charts 4-6.

\textsuperscript{234}See W'\textsc{ld} B\textsc{ank} G\textsc{rp}, THE LEVERAGE RATIO, supra note 1.

\textsuperscript{235}While they disagree with Basel leverage ratio the benefits of smoothing the ‘leverage cycle’ and the inability of interest rates to do this job have been noted in Fostel & Geanakoplos, \textit{supra} note 88, at 32.

\textsuperscript{236}See BAS\textsc{el} III, \textit{supra} note 101, at 61. The leverage ratio is defined as the quarterly average total assets less deductions that include goodwill, investments deducted from Tier 1 capital, and deferred taxes. \textit{See also} W'\textsc{ld} B\textsc{ank} G\textsc{rp}, THE LEVERAGE RATIO, \textit{supra} note 1.
the effects of risk-weighting models.\footnote{See BASEL III, supra note 101, at 12.} The ratio is designed to place a limit on the capacity of banking organizations to leverage their capital base, and to provide safeguards against possible RWA modelling error.\footnote{As the BCBS has noted, “the [GFC] demonstrated that credit losses and write-downs come out of retained earnings, which is part of banks’ tangible common equity base.” See id. at 2.} Banks have been given until 2018 to comply fully with the implementation of the leverage ratio.

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 really low, certain jurisdictions have drawn up their own plans for imposing a leverage ratio and, indeed, have opted to go further than the 3 percent ratio; in particular the United States. Prior to the GFC, the U.S. required its banks to report on a simplified leverage ratio, based on banks’ Tier One capital ratio and their total on-balance sheet RWAs.\footnote{Banks were rated on the ‘BOPEC’ system (the condition of the BHC’s Bank subsidiaries, Other nonbank subsidiaries, Parent company, Earnings, and Capital adequacy) to determine the level of capital required. Those banks that scored highly on this system were required to hold Tier One capital of 3 percent of RWAs, whilst those that scored poorly were required to hold 4 percent. These rules have since been updated. See Risk-Based Capital Guidelines: Market Risk, 77 Fed. Reg. 53,060 (Final Rule, Aug. 30, 2012) (12 C.F.R pts. 3, 208, 225, 324, 325, 525, 217, 324).} Given the aforementioned failure of the previous U.S. leverage ratio to produce any warning signs, mostly due to the fact that off balance sheet exposures were not adequately caught, the Dodd-Frank Act has adopted a more sophisticated approach to reporting the leverage ratio. The Federal Reserve is required to establish the enhanced risk-based and leverage capital requirements for ‘covered companies’; that is, bank holding companies with total consolidated assets of at least $50 billion, and nonbank financial companies that the Financial Stability Oversight Council has designated for supervision by the Federal Reserve Board.\footnote{See DODD-FRANK supra note 61, § 165.} Banks and other financial organizations are required to report to the market and regulators on their leverage ratio at regular intervals under the Prompt Corrective Action (PCA) regulations. The leverage ratio itself for all banking organizations is set at 4 percent,\footnote{See Regulatory Capital Rules: Final Rule, supra note 227.} although certain large banking organizations are subject to a lower leverage ratio if they utilise the advanced IRB approach to RWAs, requiring them to have a minimum total leverage exposure of 3 percent.\footnote{See id., at 62143.} However, a further supplementary rule has been introduced to cover the largest most interconnected bank holding companies (BHCs), categorised as those with more than $700 billion in consolidated total assets, or $10 trillion in assets under custody (covered BHCs). These banks would be required to maintain a Tier One capital leverage buffer of at least 2 percent above the minimum supplementary leverage ratio requirement of 3 percent (for banks which use the advanced IRB approach), for a total of 5 percent. Insured subsidiaries of BHCs (‘Insured Depository Institutions’) must maintain at least a 6 percent supplementary leverage ratio to be considered “well capitalized” under the agencies’ PCA framework.\footnote{See Regulatory Capital Rules: Regulatory Capital, Enhanced Supplementary Leverage Ratio Standards for Certain Bank Holding Companies and Their Subsidiary Insured Depository Institutions, 79 Fed. Reg. 24,528 (Final Rule: May 1, 2014) (12 C.F.R pts. 6, 208, 217, 324).} Failure to exceed the 5 percent ratio 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 US
banks, although will not implemented in its entirety until January 2018. Furthermore, there are additional requirements for leverage restrictions in times of crisis.  

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

The Canadian “assets to capital multiple” is a more comprehensive leverage ratio because it also measures economic leverage to some extent. It is applied at the level of the consolidated banking group by dividing an institution’s total adjusted consolidated assets—including some off-balance-sheet items—by its consolidated (Tier 1 and 2) capital. Under this requirement total adjusted assets should be no greater than 20 times capital, although a lower multiple can be imposed for individual banks by the Canadian supervisory agency, the Office of the Superintendent of Financial Institutions (OSFI). This is more conservative than the previous U.S. incarnation of the leverage ratio—and the inclusion of off-balance-sheet items strengthens the ratio even more. Indeed, the stringency of Canada’s leverage ratio has been cited as one factor—along with sound supervision and regulation, good cooperation between regulatory agencies, strict capital requirements, and conservative lending practices—contributing to the strong performance of its financial sector during the financial crisis.

In 2008 the Swiss regulator FINMA, in strengthening capital adequacy requirements, introduced a minimum leverage ratio under Pillar 2 of Basel II solely for Credit Suisse and UBS. The Swiss leverage ratio is based upon the Basel III definition of Tier 1 capital as a proportion of total adjusted assets and is set at a minimum of 3% at the consolidated level and 4% at the individual bank level. To calculate the leverage ratio, the balance sheet under

244 Dodd-Frank places a limit of 15:1 leverage for an institution with $50 billion of assets or more that poses a “grave threat to the financial stability of the U.S. when such a limit would mitigate the threat”. This limitation applies in very narrow circumstances, and is designed as a remedial, rather than a preventative measure, triggered to contain a risk once it has been identified rather than to prevent risk from materializing. See DODD-FRANK supra note 61, § 165 (j)(1).
245 See EU CAPITAL REQUIREMENTS DIRECTIVE, supra note 57.
246 Details of the current supervisory review process are available here http://www.eba.europa.eu/supervisory-convergence/supervisory-disclosure/supervisory-review.
International Financial Reporting Standards (IFRS) is adjusted for a number of factors. Some adjustments provided are very common, such as exclusion of the replacement values of derivatives to reduce the effects of the strict netting rules under IFRS. On the other hand, the deduction of the entire domestic loan book indicated that the Swiss authorities wanted to ensure that the leverage ratio would not hamper the expansion of the domestic credit market in the middle of a recession. The restriction was removed in 2013. In fact, the Swiss government has considered raising the leverage ratio to 6%-10%—naturally attracting the wrath of the Swiss banking industry—as it regards the current 4% ratio inadequate.

The UK has considered leverage ratios and the benefits of incorporating them into its national regulatory framework. The Independent Commission on Banking (chaired by Sir John Vickers) recommended that UK banks should maintain capital of 10 percent of RWAs, and that global systemically important banks (G-SIBs) headquartered in the UK ought to maintain at least 17 percent 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 UK Parliamentary Commission on Banking Standards recommended “the leverage ratio [in the UK] to be set substantially higher than the 3% minimum required under Basel III.” However, the Financial Services (Banking Reform) Act 2013, did not mandate the introduction of any leverage ratio, and the UK’s Prudential Regulation Authority (PRA) has announced a much lower leverage ratio, requiring:

[M]ajor UK banks and building societies to meet a 7% CET1 capital ratio and a 3% Tier 1 leverage ratio – after taking into account adjustments to risk-weighted assets


254 This proposal won support from several leading UK central bankers, including Sir Mervyn King, former Governor of the Bank of England, and Andrew Haldane, Executive Director for Financial Stability at the Bank of England. Indeed, Haldane has argued for a leverage ratio of between 4 and 7 percent. See Haldane & Madouros, supra note 212, at 20.

255 See VICKERS REPORT, supra note 253, at 4.57.

256 See BANKING STANDARDS REPORT, supra note 67, at 7. The Parliamentary Commission called for the “relinquishing [of] political control over decisions over the leverage ratio, the single most important tool to deliver a safer and more secure banking system, which is properly a matter for regulators.” See id. at 13.

(RWAs) and CET1 capital deemed necessary by the PRA – from 1 January 2014. These firms will be expected to maintain a 3% Tier 1 leverage ratio under the definition set out in the CRR. This standard will be reviewed in 2014 once Basel and CRR leverage ratio definitions are finalised.

Notwithstanding the aforementioned reforms, we are still quite far from a globally agreed leverage ratio that is well calibrated, instead of Basel III’s 3%, which is widely seen as very weak constraint on bank risk seeking. Moreover, there is a strong industry and regulatory preference in favour of using leverage ratios as a backstop measure.\footnote{\textit{See} \textit{EURO. BANKING FEDERAT’N, EBF RESPONSE TO CONSULTATION ON REVISED BASEL III LEVERAGE RATIO FRAMEWORK AND DISCLOSURE REQUIREMENTS,} Sept. 20, 2013, \textit{available at} http://www.ebf-fbe.eu/uploads/EBF%20response%20to%20consultation%20on%20Revised%20Basel%20III%20Leverage%20Ratio%20Framework....pdf \textit{(requiring more clarity on how the Basel III leverage ratio will be applied and expressing industry’s preference to use the leverage ratio as a backstop measure).}} As explained in the Part V.A., such a ratio provides better results in terms of macro-economic stabilization, institutional soundness and elimination of leverage agency costs when it is used as a frontline measure. Finally, the remedial timescale and sanctions framework remains unclear when the leverage ratio is consigned to being a mere monitoring benchmark\footnote{Characteristically the European Banking Authority describes “[t]he [CRR] leverage ratio [as] a new monitoring tool which will allow competent authorities to assess the risk of excessive leverage in their respective institutions”. \textit{See EURO. BANKING AUTH., LEVERAGE RATIO, available at} http://www.eba.europa.eu/regulation-and-policy/leverage-ratio.} rather than as a frontline regulatory requirement.

VI. \textbf{CONCLUDING REMARKS}

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 behaviour the only way to save senior bankers’ careers, generating massive governance/agency costs, even if mis-aligned compensation incentives play no part. As Admati \textit{et al} have shown, bank shareholders exhibit constant preference for debt finance over equity and have no incentives to ask bank executives to reduce leverage.\footnote{\textit{See}. Admati \textit{et al.}, \textit{supra} note 18.}

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, leverage, in combination with the general opacity of bank balance sheets and asset substitution, creates intense information asymmetries between bank

\textit{\footnotesize \textsuperscript{258} See EURO. BANKING FEDERAT’N, EBF RESPONSE TO CONSULTATION ON REVISED BASEL III LEVERAGE RATIO FRAMEWORK AND DISCLOSURE REQUIREMENTS, Sept. 20, 2013, available at http://www.ebf-fbe.eu/uploads/EBF%20response%20to%20consultation%20on%20Revised%20Basel%20III%20Leverage%20Ratio%20Framework....pdf (requiring more clarity on how the Basel III leverage ratio will be applied and expressing industry’s preference to use the leverage ratio as a backstop measure).}
management and their monitors, which merely adds to the ineffectiveness of market discipline in the banking sector.\footnote{261}

This state of affairs is lamentable. Yet contemporary debate and regulatory reform has until now mostly been concerned with containing banker short-termism through controls on private compensation contracts. This article has shown that such controls may not resolve bank governance risks. It is therefore arguable that regulating bankers’ pay is insufficient when it comes to containment of leverage agency costs. A more effective remedy would be to design proper capital requirements to regulate the risk of financial institutions. But given the ability of banks to manipulate risk weights attached to capital requirements this approach would also present considerable loopholes. Therefore, the most effective way to control banks’ propensity to build a highly risky asset base is to impose on banks and other financial institutions, depending on the nature of their business and involvement in credit intermediation, a numerical un-weighted leverage ratio, namely a simple leverage multiple.\footnote{262}

Most of the regulatory initiatives to introduce a leverage ratio intend to use it as a backstop, namely, a way to control the soundness of RWA capital reserves. We have already examined arguments that using a leverage ratio as a front-stop rather than a backstop is a better risk management matrix in the banking sector.\footnote{263} But such a measure comes at a cost, since the risk sensitivity of bank assets is neglected forcing banks to hold more capital than what is necessary, a recognized social cost. This is a major shortcoming. Therefore, the only way to defend the introduction of a leverage ratio as a front-stop is if additional benefits may be shown. This article has suggested that the very significant bank governance gains brought by a well-calibrated leverage ratio used as front-stop outweigh the welfare losses resulting in by banks holding some excess capital. Equipping such a leverage ratio with a mechanism that would allow it to be varied in accordance with business cycle indicators would allay any economic growth concerns attached to its operation during a downturn. Also adapting the ratio to the economic cycle is an objective benchmark that is immune to institutional gaming.

As regards banker’s pay, clever and adaptable forms of private contracting may still be preferred to regulation. For example, one form of compensation that has remained largely unexplored is the use of debt as a benchmark for setting executive compensation. Some research suggests the introduction of a mechanism in executive contracts that allows the strike price of stock options to vary according to the price of the debt incurred by the company. Thus, in the event increased leverage, which enhances default probability, executives would have to take action to bring leverage down.\footnote{264} Empirical analysis confirms that market participants believe that linking executive compensation to the risk of default will reduce firm

\footnote{261} See Martin F. Hellwig, A Reconsideration of the Jensen-Meckling Model of Outside Finance, 18 J. FIN. INTERM’TION 495 (2009); see also Avgouleas and Cullen, supra note 20.

\footnote{262} The leverage ratio limit could also be expressed as a range with a long-term target level. Alternatively, there could be a mechanism to relax the limit during downturns to contain procyclicality and dissuade banks from deleveraging during a downturn, as would have been the case in the face of constant fixed caps on the leverage ratio.

\footnote{263} See also Haldane & Madouros, supra note 212, at 19-20.

riskiness.\textsuperscript{265} A similar effect may be achieved by remunerating managers with debt, rather than equity, making their compensation contingent on the firm remaining solvent. This form of compensation can reduce incentives to leverage, since higher leverage levels carry a relatively increased threat of bankruptcy.\textsuperscript{266}

Control on leverage will inevitably lead to smaller banks with stronger capital structures and more robust risk management controls boosting the resilience of the financial system in the event of a crisis. At the same time, requisite controls offer more effective checks on bankers’ incentives to engage in risk-seeking behaviour than mere regulation of compensation packages. Therefore, the world’s key jurisdictions should have as one of their top reform priorities the identification of appropriate leverage ratios for each type of financial institution and stage of the business cycle, through painstaking research.\textsuperscript{267} A well-calibrated leverage ratio can prove an effective measure in containing rent-seeking and smoothing up the leverage cycle to improve bank governance, prevent deep recessions, and safeguard financial stability.


\textsuperscript{267}Indicatively the UK’s conservative and pro-business Chancellor George Osborne has called for a review by the Bank of England of the right level of weighted funds that should be held by British banks, and whether the Bank of England needs to use such leverage ratio as frontstop tool alongside RWA capital requirements. See Huw Jones & Matt Scuffham, Osborne asks BoE to consider extra powers to curb banks, Reuters News Agency, Nov. 26, 2013, available at http://uk.reuters.com/article/2013/11/26/uk-boe-leverage-idUKBRE9AP0BN20131126.