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Two Lessons from History and Current Policy

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# Remuneration in Banking: Two Lessons from History and Current Policy

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## Abstract

The paper evaluates the current approach to remuneration policy in the financial sector through the lens of the history of pay proposals. This history can be seen as a series of attempts to align interests of financial firms' insiders with interests of a varying range of outsiders. Even though interests were getting aligned, excessive risk taking remained, because each proposal overlooked an important group of outsiders. The history offers two lessons relevant for the current debate. First, modern banking involves an important group of outsiders overlooked by the current pay policy – ultimate asset holders. Their interests could be taken into account by separating remuneration policy for commercial and investment banking and by linking pay in investment banking to performance of securities originated, floated and traded. Second, the persistent problem of overlooked outsiders suggests that the very approach to pay in commercial banking should be changed. Instead of searching for an indirect alignment, remuneration could be linked directly to leverage-adjusted profitability of commercial banking operations, making the remuneration policy a tool of countercyclical macro-prudential regulation. The proposed measures could supplement and strengthen the current remuneration policy focusing on the bonus cap and deferred compensation subject to malus and clawback. The paper makes particular reference to the current UK remuneration policy, the core arguments and conclusions, however, apply to a broad range of countries.

**Keywords:** banking, remuneration, bonuses, deferred compensation, clawback, malus

**JEL Classification Codes:** B26, E58, G21, G28

## 1. Introduction

The question of remuneration in the financial sector has attracted a lot of attention since the crisis that started in 2008. Total wages in the financial sector have been rising in absolute terms and as a share of total wages in the UK and US since the 1980s. This trend cannot be explained by differences in investment in human capital, leading some to interpret it as rent extraction (Philippon and Reshef 2012). The pay, moreover, lacked pronounced cyclicity, which contrasts with the macroeconomic cycle to some extent generated by the dynamics of the financial sector. Employees of financial firms who were often seen as partly responsible for the crisis continued receiving substantial bonuses even during and after the crisis (Crotty 2009). The prevalent compensation mechanisms and instruments have created perverse incentives, with equity-based pay amplifying risk-taking (Tung 2011).

The rise in remuneration in finance, its lack of cyclicity, and the associated incentive structure have triggered a discussion in both policy and academic circles on how to regulate it.

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This paper contributes to the ongoing debate by evaluating the current approach to regulating remuneration against the backdrop of the longer-term history of pay proposals. The paper identifies two lessons from history and corresponding policy implications that could supplement and strengthen the current pay regime. The UK remuneration policy is taken as a starting point of analysis, the lessons from history and policy recommendations, however, apply to a broader range of countries implementing compensation policy in response to the recent international initiatives.

The history of remuneration policy can be seen as a history of attempts to internalise interests of a varying group of outsiders into the incentive structure of bank insiders. All the previous pay proposals to some extent resolved a conflict of interest they aimed to resolve. They were, however, ineffective at curbing excessive risk taking due to overlooking some relevant group of outsiders. From their perspective, risks remained excessive. Two lessons follow from this history.

First, similar to the previous historical instances, the current remuneration policy and debate around it overlook interests of an important group of outsiders that rose to prominence with the market-based finance – ultimate asset holders. To prevent the history from repeating itself, interests of this group of outsiders should be taken into account in the current policy. This can be done by regulating pay in investment and commercial banking separately and by linking pay in investment banking to the long-term performance of the assets originated, floated, and traded. Commercial and investment banking divisions of universal banks should have separate remuneration regimes, with each having its own relationship between remuneration and performance and own measures of profit, assets and liabilities. Without such “ring-fencing” of pay structures there is a risk of making individual financial institutions safer, but at the cost of increased systemic risk externalities and fostering income opportunities in the financial sector that would remain unregulated.

Second, the previous attempts to align interests of insiders and outsiders by internalising interests of the latter into the incentive structure of the former were only moderately successful. This history of trials and errors suggests that the way of thinking about the problem and framing the question need to be changed. Instead of trying to accomplish an alignment indirectly and allow incentives to attune through the market mechanism, it might be better to have a regulator set a direct link between pay and risk taking and embed it in the countercyclical macro-

prudential policy. A possible way to accomplish it would be by linking commercial banking remuneration to leverage-adjusted profitability of the commercial banking divisions. A separation of the pay policy for commercial and investment banking would not only account for the interests of the ultimate asset holders mentioned before, but would also provide a reliable yardstick for the commercial bank performance. Such yardstick is hard to establish if pay in investment and commercial banking is treated indiscriminately. Profits of narrow commercial banks, on the other hand, are dominated by the interest spread and commercial banking fees and exclude unrealised gains associated with mark-to-market accounting. Similarly, commercial banking assets and liabilities are dominated by loans and deposits the values of which are known and stable, contrary to the fundamentally uncertain and volatile values of investment banking assets and liabilities. Furthermore, to account for the business and credit cycles, the connection between pay and risk-adjusted performance could be set in a countercyclical manner by a macro-prudential regulator, as opposed to leaving it to the discretion of individual financial institutions. This could make the pay policy a tool of macro-prudential regulation.

The rest of the paper is organised as follows. Section 2 summarises the current remuneration policy in the UK and its common criticisms. Section 3 outlines the history of the first wave of pay proposals focusing on alignment between managers and shareholders, and section 4 – between managers and long-term shareholders. Section 5 addresses the more recent proposals to align interests of insiders with debt-holders and taxpayers. Section 6 discusses implications of the market-based finance for the composition of outsiders, risk transfer across the society, and the changing character of bank revenues. The section highlights two lessons from history of pay proposals in the context of the market-based finance. Based on a critical appraisal of the history of pay proposals and lessons learned from it, sections 7 and 8 focus on policy recommendations for investment and commercial banking, respectively. Section 9 concludes.

## **2. Remuneration Policy in the UK After the Crisis**

The crisis that started in 2008 brought to public attention the discrepancy between the substantial rewards for bankers in the upturn and the absence of comparable penalties in the downturn. Such asymmetric remuneration structure in banking came to be seen as a factor that contributed to the crisis by incentivising misconduct and encouraging risk taking. Since then, there have been several initiatives at the international and national levels aiming to align

remuneration in banking with risk taking and long-term performance of financial firms. At the international level, Financial Stability Board issued Principles for Sound Compensation Practices in 2009, followed by the EU bonus cap as a part of the Fourth Capital Requirements Directive (CRD IV) in May 2013.

In the UK the current remuneration policy is set by the FCA/PRA (2014) Remuneration Code applicable to risk-takers and senior management of banks, building societies and investment firms. In line with the international initiative, the Code limits variable remuneration<sup>2</sup> to the maximum of 100 percent of fixed remuneration (or 200 percent with shareholders' agreement), requires at least 40 percent of variable pay to be deferred for 3-5 years, subject to malus – cancellation of the unvested deferred remuneration under certain circumstances, including misconduct and action that led to a failure in financial performance or risk management of the firm. The rule applies on a group basis and affects not only persons directly culpable, but also those indirectly responsible due to their seniority or role in the firm. These are the individuals expected to be aware of misconduct but having failed to take action to prevent the consequences for the firm. The amount that can be withheld as malus covers all costs incurred on a firm, including costs of regulatory action, direct and indirect financial losses, reputational damage and impact on all stakeholders, including taxpayers.

In 2014 PRA consulted on clawback that is expected to come into force on 1 January 2015 and further strengthen the Remuneration Code. This amendment will require employees to return a part of remuneration already vested over the previous 6 years, if there is evidence of misconduct or action having led to a failure in financial performance or risk management. Clawback is expected to apply to the same range of circumstances, individuals and amounts as malus.

The bonus cap and deferred compensation subject to malus and clawback are the main two pillars of the current pay policy. It is expected that the possibility of ex-post risk adjustment of rewards will be translated into an ex-ante change in behaviour and lower risk taking. The changes in remuneration policy since the crisis are an important step forward. There are, however, three main concerns about the effectiveness of the new policy.

First, since the policy came into force the limit on variable compensation (the bonus cap) has been more than offset by the rise in upfront remuneration, increasing total staff costs in the

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<sup>2</sup> At least 50 percent of variable remuneration should be in shares or share-like instruments.

largest four UK banks, especially in Barclays and HSBC (Figure 1). The decline in employment in banking since the crisis meant that per-capita remuneration increased even more drastically – by about 30 percent in Barclays, HSBC and Lloyds between 2007 and 2012 (Figure 2). This is not very surprising, given that bonuses have been viewed in banking not as “an added extra for outperformance”, but rather as an expected part of pay for “satisfactory performance” (PCBS, 2013: 391). Furthermore, given that malus and clawback apply only to variable compensation, the bonus cap reduces the scope for recouping deferred awards, which goes against the general direction of the current policy aiming to increase the possibility of risk adjustment (PCBS, 2013: 391-393, Braddick, 2014: 3).

Second, deferral for 3-5 years might not be sufficient to align the time horizon of remuneration and risks, given that the business cycle usually lasts 7-10 years and credit cycle – up to 20 (PCBS, 2013: 9, 399). The same argument would apply to limiting clawback to 6 years after vesting.

Finally, malus and clawback will not be effective measures unless they are supplemented by a policy addressing staff turnover as a common way of avoiding these measures. When an employee leaves a bank, deferred compensation is usually forfeited and the new employer adds the amount of accumulated deferred compensation to the benefits package at hiring. Such “golden handshakes” that have been a common way of cleaning the slate would make malus and clawback ineffective. There are two possible ways to address this problem. Regulations can require that deferred compensation is not forfeited and received at a later date even if an employee leaves a company. Alternatively, if buy-outs are allowed, a regulator can impose malus or clawback on the new employer who would pass it onto the employee “on behalf of” the regulator and previous employer (PCBS, 2013: 401, 406, FSF, 2009: 12-13).

Regulation of the compensation practices similar to the one in the UK has also been developed in other countries as a response to the Principles for Sound Compensation Practices issued by Financial Stability Board (2009). For example, deferred compensation subject to malus is now required in Australia, deferral with clawback – in China, and EU jurisdictions have been implementing malus, clawback, and bonus cap (see FSB (2013) for a list of references to national regulation of compensation). The arguments in the remainder of the paper, therefore, apply to a broad range of countries.

Are there any issues overlooked by the current remuneration proposals and the discussion around them? A look at the history of pay proposals can offer interesting insights.

### **3. First Wave of Alignment: Managers and Shareholders**

What is at stake with designing a pay structure in a firm, especially a financial firm? It is usually assumed that at the heart of the matter lies a conflict of interests. Individual interests of bank insiders differ from individual interests of other members of the society – bank shareholders, debt holders, and taxpayers. A pay structure in the financial sector is expected to mitigate these differences.

A history of proposals on pay in financial institutions can be seen as a series of attempts to align interests of insiders with interests of a varying range of outsiders. Each of these proposals was developed to address problems coming from a lack of such alignment. Even though the resulting compensation practices resolved some of these problems by internalising interests of others into the individual interests of bank insiders, they proved to be insufficient mainly because insiders' interests remained unaligned with interests of some other range of outsiders. In this way old proposals have been giving way to new proposals attempting to align what has not been aligned yet.

The intellectual origin of the idea of alignment of interests of insiders and outsiders of modern corporations can be traced back to a seminal paper by Jensen and Meckling (1976). The paper sought a solution to a widely acknowledged fact of that time – that managers have a tendency to run business for their own interest. According to Jensen and Meckling (1976: 11-12), the presence of shareholders generates agency costs that would have been absent in an individually owned enterprise and results in a set of activities that make the value of a firm less than what it would have been otherwise. These agency costs were one of the key reasons for a spread of proposals to align interests of managers and shareholders, which planted the seeds of the shareholder value orientation. This orientation has become the main principle of corporate governance in the US and UK in the 1980s, usually achieved by paying managers with stock and stock options (Lazonick and O'Sullivan 2000).

Pay with stocks and stock options did not emerge in the 1980s. In fact, top managers of the US corporations have been receiving stock options since 1950. That year new legislation gave stock options a tax advantage by taxing them as a capital gain, thus, at a rate lower than the

labour income tax rate. As a result, stock and stock options have become a significant source of managerial income in the 1950-60s (Lazonick and O'Sullivan 2000: 24-25). Nevertheless, a true watershed in CEO compensation practices happened only after the mid 1970s. Since then total compensation, its pay-for-performance components, and pay-performance sensitivity have been rising rapidly (Frydman and Saks 2010).

Although stock-based pay was on the rise in the 1980s, CEO compensation still had trivial responsiveness to stock performance in 1974-1986 (Jensen and Murphy 1990a: 260). Pay-performance sensitivity – typically measured by the change in CEO wealth for every \$1000 change in shareholder wealth – amounted only to \$3.25. For Jensen and Murphy (1990a), this was an indicator of insufficient alignment of interests of managers and shareholders. It was the willingness to strengthen the link between pay and performance that led Jensen and Murphy (1990b) to recommend a further increase in the equity incentive compensation.

Stock-based pay came to play an even more important role in the 1990s – partly as a response to the debate initiated by Jensen and Murphy, and partly as a consequence of new legislation from 1992 limiting tax deductible executive compensation to \$1 million, except for performance-based pay (Core and Guay 2010: 1). While the mean real salary and bonuses of CEOs of the largest publicly traded U.S. firms increased by 97.3 percent between 1980 and 1994, the mean value of CEOs stock options rose by 682.5 percent (Hall and Liebman 1998: 661). Stock options as share of total average CEO compensation increased from 19 to 48 percent between 1980 and 1994. With that, the pay-performance sensitivity also rose. The trend persisted. In 1994-2001, CEO pay has doubled, and option-based compensation rose at an even faster rate (Holmstrom and Kaplan 2003: 9). By 2003 equity-based compensation of S&P500 CEOs has increased to 59 percent of their total compensation, after a historical record level of 78 percent in 2000 (Bebchuk and Grinstein 2005: 290).

The banking sector exhibits the same trend as the corporate sector as a whole. Equity compensation as a share of total CEO compensation for financial service firms has increased from slightly above 40 percent in 1995 to about 70 percent in 2008 (Balachandran et al., 2010: 48). Fahlenbrach and Stulz (2011) examine a sample of 95 U.S. bank holding companies (BHC). They find that at the end of 2006 total BHC CEO annual compensation averaged \$7.8 million, and less than 10 percent of it was in the form of base salary (Fahlenbrach and Stulz 2011: 16). The rest is performance-based pay, with stock grants amounting to 34 percent and option grants



– another 21 percent of total annual compensation, on average. In addition, CEOs received performance bonuses averaging to \$5.3 million in 2006, 55 percent of which also came in the form of equity. These CEOs already held large equity stakes in their firms, worth 6.7 times the value of the annual compensation and bonuses combined, and these equity stakes create further and even stronger incentive effects than annual compensation.

With such large stakes in company's equities, managers have developed a personal interest in the stock market performance of their corporation. This has brought the interests of management and shareholders closer to each other, but has not made them identical.<sup>3</sup>

First, managers have incentives to take higher risks than would be desirable for shareholders (Bebchuk and Spamann 2010). Stock options create an asymmetry between their holders and regular shareholders by generating gains if the market price is above the strike price, while simultaneously protecting from losses in the opposite scenario. Regular shareholders, on the other hand, gain if the share prices go up, but also lose in case of a price decline. A wide use of stock options, insulating management from consequences of poor performance, maintained a demarcation line between managers and shareholders, impeding a full alignment. It is therefore not surprising that Becht et al. (2003: 83) conclude that stock options “are at best an inefficient financial incentive and at worst create new incentive or conflict-of-interest problems of their own”.

In addition to the asymmetry between managers and shareholders coming from stock options, there are factors specific to banking that make alignment of these two groups of interests particularly hard. Government guarantees in the form of deposit insurance and lender of last resort create moral hazard and implicitly encourage increased risk taking. Moreover, banks are usually more leveraged than non-financial corporations because of the very nature of their business, which further insulates the insiders. This effect of leverage is reinforced by a common practice of bank insiders to hold equity of bank holding companies, not a subsidiary bank they work for, which adds an extra layer of leverage (Bebchuk and Spamann 2010).

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<sup>3</sup> Bebchuk et al. (2002: 845-846) make an even stronger claim – pay for performance is not a solution to the agency problem, it is rather a product of this very problem. According to their “managerial power approach”, managers have control over setting their own pay. As a result, they can use their power to set compensation schemes that would be inefficient from the perspective of shareholders. For Bebchuk et al. (2002) the rhetoric of maximising shareholder value is merely a camouflage for managerial rent extraction at the expense of shareholders. Managers use this camouflage to justify their high pay to shareholders and general public and to prevent their outrage.

Second, in addition to a higher risk-taking propensity of managers than of shareholders, interests of these two groups also differ in their time horizon. Pay with stocks and stock options has made managers short-term oriented, to the detriment of the longer-term shareholders. Managers came to focus on short-term stock performance and act in ways increasing the speculative component of the stock price (Bolton et al., 2006).

#### **4. Second Wave of Alignment: Managers and Long-Term Shareholders**

It is the problem of managerial short-termism that brought to life the second wave of proposals on pay, this time trying to align interests of insiders with those of long-term shareholders. Several compensation mechanisms were designed to retain the benefits of alignment between shareholders and managers, yet assuring that it is the long-term shareholders' interests that count. This goal was usually accomplished through deferred compensation (and pension) and restricted stock (and stock options).<sup>4</sup> The difference between the two is that in deferred compensation vesting is postponed by a number of years after the grant date, whereas restricted compensation is postponed by a number of years after leaving the company due to resignation or retirement (Romano and Bhagat 2009). By design, these compensation mechanisms, while maintaining an alignment between interests of managers and shareholders, prolong managers' time horizon, thus, making their interests similar to those of long-term shareholders. Until the recent crisis, deferred and restricted compensation have been a common compensation practice.

The literature acknowledges some of the issues of implementation of these compensation mechanisms. For example, by how many years should compensation be deferred or restricted? How to mitigate moral hazard arising from staff turnover giving insiders an opportunity to shorten the time period of such deferral or restriction? In cases when bankruptcy is expected, how to prevent early retirement with lump sum settlement or slowing down reorganisation to bargain (Wei and Yermack 2011)? Bebchuk and Spamann (2010) argue that in addition to these issues of implementation, as important as they are, there is a fundamental structural problem with the very alignment of interests of insiders and shareholders. Although such alignment eliminates excessive risk taking from the perspective of shareholders, there still remains excessive risk

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<sup>4</sup> A more recent proposal of shareholders' vote on compensation ("say-on-pay") can be seen as a measure achieving a similar type of alignment. Managerial reputation is often viewed as another important factor of such alignment.

taking from the perspective of others – bond- and other debt holders. For Bebchuk and Spamann (2010), the root cause for that lies in an asymmetric payoff structure of the equity-based compensation. Equities create an opportunity for unlimited gains and limited losses. Such insulation from losses encourages risk taking that is not desirable from a social perspective. As a result, as long as insiders are paid with equity, their interests might be aligned with shareholders – short- or long-term depending on the specifics of the compensation structure – but a conflict of interests between insiders and bond and other debt-holders remains.

Prior to the recent crisis academic evidence of the relationship between executive compensation and excessive risk taking was “surprisingly sparse” (Balachandran et al., 2010: 2). Chen et al. (2006) were among the first to show that stock options induce risk taking in commercial banking, across alternative risk measures, with an aid of the data for 68 banks in 1992-2000. In the aftermath of the crisis several studies have documented a positive relationship between executive compensation and excessive risk taking.

For example, using a sample of 549 bank-years for publicly traded banks from 1992 to 2002, Mehran and Rosenberg (2008) find that stock option grants lead CEOs to undertake riskier investments, reflected in higher equity and asset volatility. Using data on executive compensation for finance firms in 1990-2008, Cheng et al. (2010) also find a positive relationship between total CEO pay and stock price volatility.<sup>5</sup> Balachandran et al. (2010) use a more direct measure of excessive risk taking – probability of default – which they consider to be superior to the more commonly used volatility of firm’s performance on the stock market. They use panel data for 117 financial firms from 1995 through 2008 and find that the proportion of equity-based compensation in the form of restricted stock and stock options in total CEO pay is positively related to default probability. Balachandran et al. (2010: 32) conclude that “the financial institutions lead by executives whose remuneration was heavily weighted in equity (stock and options) were more likely to be marked by excessive risk taking”. Finally, studying a sample of 95 U.S. BHC, Fahlenbrach and Stulz (2011) find that a better alignment between CEO incentives and shareholder interests is associated with a worse bank performance in crisis. Fahlenbrach and Stulz (2011: 19) define “dollar gain from +1%” as “the dollar change in the value of the CEO’s equity portfolio for a 1% change in the stock price”. This is a measure of

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<sup>5</sup> They explain this relationship by higher demand for risk by certain types of ultimate investors (in particular, institutional investors) rather than corporate mis-governance.

sensitivity of the CEO's equity portfolio to changes in shareholder value. They find that a one standard deviation increase in dollar gain from +1% in 2006 is associated with a decrease in buy-and-hold returns by 9.6 percentage points, a decrease in ROE by 10.5 percentage points, and a fall in ROA by 0.77 percentage points in 2007-2008. On the basis of this evidence they conclude that CEOs whose incentives are more aligned with shareholders take higher risks.

### **5. Third Wave of Alignment: Managers, Debt-holders, and Taxpayers**

Recent proposals to pay insiders with debt can be seen as an attempt to address the core problem pointed out by Bebchuk and Spamann (2010), namely, the conflict of interests between insiders and bond and other debt holders arising due to asymmetric payoff associated with the equity-based compensation.<sup>6</sup> These proposals differ in specifics, but all of them aim at aligning insiders with a broader range of interests, including those of bond holders, depositors, and also indirectly government and taxpayers. Such alignment would to some extent counteract and reverse the effects of the alignment between shareholders and insiders, thus, lowering risk taking. Ironically, while earlier proposals aimed at encouraging risk taking, the current proposals aim at taming it. For this reason, new compensation practices are expected to supplement and strengthen efficiency of prudential regulation by partially eliminating incentives to act against it. The proposed measures would also impose market discipline on insiders, especially if they are compensated with debt that is publicly traded.

These proposals fall into one of the two categories – on pay with inside debt (debt issued by a firm) which would achieve a desired alignment *ex ante*, and on pay that can be reversed, thus, assuring an alignment *ex post*.

Jensen and Meckling (1976: 65) were the first to mention inside debt as “an inexpensive way for the owner-manager with both equity and debt outstanding to eliminate a large part (perhaps all) of the agency costs of debt”. They did not consider it a relevant form of pay at that time though, mainly because they thought that a wage contract has characteristics similar to inside debt. The difference between inside debt and wage became appreciated more recently. Aiming at aligning managers and debt-holders *ex ante*, Edmans and Liu (2011) and Wei and

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<sup>6</sup> The idea to align interests of insiders with bank depositors, debt holders, and tax payers was expressed earlier by Macey and O'Hara (2003). More recently, Cheng et al. (2010: 23) also conclude that “any effort for regulation of pay should begin with an analysis of the wedge between the interests of the firm (either management or shareholders themselves) and the taxpayer, who may end up bearing losses from too-big-to-fail firms, instead of a wedge between shareholders and management”.

Yermack (2011) suggest structuring deferred compensation in such a way that the payoff would mimic debt. For that, payoff should be an unfunded and unsecured payment, and no investment in company's equity should be allowed. If any of these conditions are not met, deferred compensation would remain equity-based, aligning interests of insiders and shareholders, not debt-holders. Tung (2011) proposes to pay insiders with subordinated debt, whereas Bolton et al. (2011) suggest pegging pay to a CDS spread to account for interests of a broader range of debt-holders, while also making it standardised, inherently countercyclical, and cheaper for the firm than regular deferred compensation due to no need to discount future gains. Markets can misprice risk, especially in the case of complex instruments like CDS. For example, CDS spreads were a poor indicator of deterioration of bank capital during the crisis (Haldane 2011: 9). Markets can, moreover, amplify the price cycle for these instruments. For these reasons, pegging insiders' pay to a CDS spread might not be an effective policy tool. A proposal by Bebchuk and Spamann (2010) avoids the risks of pegging pay to a CDS spread while retaining the core advantage of the recommendation by Bolton et al. (2011), namely, internalising interests of a wide range of debt-holders in the compensation structure of insiders. Bebchuk and Spamann (2010: 43-44) suggest to pay bank insiders with a proportionate slice of a broad basket of securities – common and preferred shares, bonds, minus actual or expected payments made by the government in support of the bank.

An alignment ex post can be achieved through malus or clawback – two forms of recouping a part of remuneration. Malus involves cancellation of deferred unvested compensation, or a part of it, whereas clawback requires an employee to pay back a part of deferred compensation already vested. In the UK malus provision is a part of the new Remuneration Code, and clawback is expected to come into force on 1 January 2015.<sup>7</sup>

There is no agreement in the literature which types of inside debt should be used to align interests of insiders with those of debt-holders and taxpayers. In particular, what would be an appropriate maturity and seniority of debt used for regulatory purposes? How should this debt be treated by rating agencies and in relationship to regulatory capital? What would be tax treatment of this income, and should these wage payments be tax deductible? Finally, some expect the transmission mechanism between inside debt-based pay and performance to be weaker in the

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<sup>7</sup> Crotty and Epstein (2009) were among the first to advocate for clawback right after the outbreak of the crisis.

banking sector than for the non-financial corporations, due to deposit insurance, lender of last resort function and other implicit government guarantees (Tung and Wang 2011).

In spite of these concerns and limitations, several empirical studies find that paying bankers with inside debt does lower risk taking and improve individual bank performance. For example, using a sample of 83 bank CEOs from the Compustat database and proxying inside debt by a sum of defined benefit pensions and deferred compensation, Tung and Wang (2011) find that despite the moral hazard associated with deposit insurance and other government guarantees, inside debt dampens CEOs risk taking incentives in the financial sector and results in a better bank performance in crisis (July 2007 – December 2008). Buy-and-hold stock returns of banks in the 90<sup>th</sup> percentile for CEO inside debt-to-equity ratio are 23.7 percent higher and shareholder value is \$406 million higher than for banks in the 10<sup>th</sup> percentile (Tung and Wang 2011: 20). A higher CEO debt-to-equity ratio is associated with a higher ROA. Finally, a higher CEO inside debt-to-equity ratio in 2006 is accompanied by lower risk taking in July 2007 – December 2008, reflected in a lower standard deviation of daily stock return residuals, higher bond returns, lower average annual loan loss provision as a share of total assets<sup>8</sup>, and a smaller share of total assets invested in private mortgage-backed securities.

These results support the findings from the earlier studies of private firms in general, including both financial and non-financial firms. For example, Sundaram and Yermack (2007) study CEO pensions in 237 Fortune 500 companies in 1996-2002. They find that as the value of a CEOs' pension increases relative to the value of their equity holdings, the risk taking incentives are dampened and expected probability of firm's default declines. When the CEO's debt-to-equity ratio exceeds this ratio for the firm, distance to default is 0.3-0.4 standard deviations higher (Sundaram and Yermack 2007: 1580-83).

Wei and Yermack (2011) find that a negative relationship between inside debt and risk taking is also expected by investors. In other words, investors expect managers to run their firms more conservatively and take less risk when they hold large inside debt positions. Wei and Yermack (2011) examine the reaction of public debt and equity markets to new disclosures on the value of 299 CEOs' pensions and deferred compensation in 2007. They find that when the

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<sup>8</sup> Tung and Wang (2011: 23) interpret a low level of loan loss provision as evidence of banks issuing less risky loans. This interpretation is not entirely convincing, as a low level of loan loss provision might also indicate insufficient provision for losses, therefore, higher default risk for the bank. They acknowledge this concern, but do not consider it to be significant in light of their other findings on the relationship between inside debt and risk taking.

CEO's inside debt-equity ratio exceeds this ratio for the firm, the disclosure triggers a wealth transfer from equity holders to debt holders. Bond prices rise, equity prices fall, and the price volatility drops for both debt and equity. Similarly, Gerakos (2010) finds that pension benefits are associated with higher quality debt ratings, also suggesting that pension benefits may reduce risk taking.

A look at the history of compensation practices makes this history appear as a series of attempts to align interests of insiders and a particular group of outsiders – shareholders, long-term shareholders and, more recently, debt-holders and tax payers. Each such attempt was followed by a realisation that even though a newly designed compensation scheme might have succeeded at its specific goal, it has not accounted for a conflict of interests between insiders and some other outsiders. And in each case such lack of alignment has in turn triggered excessive risk taking from the perspective of those neglected outsiders, which ultimately called for new pay proposals. Is this lesson from history relevant for the current proposals to pay insiders with debt? Are there relevant outsiders whose interests are neglected in the current policy, which could potentially result in its ultimate inefficacy and excessive risk taking in spite of a change in pay? To answer these questions, next section considers some changes in the financial systems over the past few decades that have important implications for the composition of outsiders, risk, and the character of bank revenues, consequently, for the compensation practices as well.

## **6. Pay in the Times of Market-Based Finance and Ultimate Asset Holders**

In the modern financial systems the relative role of financial markets has been increasing compared to traditional commercial banks. This is sometimes described as a shift from bank-based to market-based finance. Financial markets, however, cannot exist without supporting financial institutions, including investment banks, and in this sense markets are not exactly an alternative to banks.<sup>9</sup> A part of the shift from bank-based to market-based finance are the changes in the character of banking business that come with a rise of capital markets.

Both commercial and investment banks perform the same fundamental function with respect to the rest of the economy – liquidity provision to the ultimate borrowers – but they do it in different ways. Commercial banks hold the assets issued by the ultimate borrowers and raise

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<sup>9</sup> This is a particular case of a broader need for a corporation to coordinate the activities of the economy and resource allocation. On this broader argument about the “visible hand” of managers replacing the “invisible hand” of the markets, see Chandler (1977).

funds to finance this operation through either collecting deposits or, more often, issuing their own liabilities. By facilitating IPOs and floating other securities, investment banks, by contrast, do not usually hold the assets issued by the ultimate borrowers and rather sell them to others.

This difference has two implications. First, contrary to commercial banks that concentrate risks on their balance sheets, investment banks pass the risks of the ultimate borrowers onto the ultimate asset holders and thus scatter risk across the society. Second, as elaborated in greater detail in Levina (2014), the macroeconomic sources and the character of bank revenues are also fundamentally different. Interest payments that are the main source of commercial bank revenues represent a re-division of the flows of income of the ultimate borrowers. Thus, depending on a type of a borrower, interest revenues come from gross profits of non-financial corporations, wages of households, or tax revenues of the state. By contrast, at the moment of their accrual to investment banks, fees for underwriting, other security issues, M&A and trading come from redistribution of monetary assets of the ultimate lenders (ultimate asset holders) who by buying these securities receive a claim on future stream of income. The same can be said of securitization fees that, in spite of accruing to commercial banks, resemble fees from underwriting typical for investment banks. Thus, revenues of investment banks represent a wealth transfer from the ultimate asset holders to financial institutions, in anticipation of a stream of future cash flows (Levina 2014). Whether this anticipation will be met is always uncertain.

With a rise of capital markets the way in which banks provide liquidity changes, and with that risks are spread across the society and bank revenues come directly from the ultimate lenders. These changes have an important consequence: in a market-based financial system the ultimate security holders become important bank outsiders. This is particularly important in the context of a long-term rise in private pensions and other forms of security holdings by households in the UK and the US, leaving households exposed to risks of asset devaluation. These risks are significant. For example, in the US household financial assets as a share of disposable income dropped by 17% between 2007 and 2008 and have not recovered to their pre-crisis level until 2013 (Figure 3). This decline was mostly driven by devaluation of equity shares, and also to some extent by a decline in pension fund and life insurance reserves and mutual fund shares. Between June 2007 and March 2009 household stock-market equity holdings declined in value by 51.5 percent (\$10.8 trillion) after adjusting for inflation (Emmons, Noeth 2012). Although in the UK the decline in household financial assets as a share of disposable income was



somewhat less pronounced than in the US – 13% between 2007 and 2008 – the indicator still has not reached its pre-crisis level in the periods when the data are available (Figure 4). In this case, the devaluation was mostly driven by a drop in life and pension fund reserves. Between October 2007 and March 2009 the ultimate asset holders across the world bore \$34.4 trillion global wealth losses – losses associated with equity devaluation (Liu 2010). The recent crisis is not an exception. For example, in the UK and US household financial assets declined on an even greater scale between 1999 and 2002, following the dot.com bubble (Figures 3-4). Thus, an increase in financial asset holding by households comes hand in hand with rising household vulnerability (Brooks 2009).

In this context, there are two lessons to be learned from the history of remuneration discussed in sections 3-5 above. First, just like previous pay proposals, the current remuneration policy overlooks an important group of outsiders. This time, it is the ultimate asset holders. Given that outsiders relevant for investment banking differ from those in commercial banking, remuneration in these two forms of banking should be regulated separately. The second lesson from history comes from the moderate success of the previous attempts to internalise outsiders' interests into insiders' incentives indirectly, through the market mechanism. There has always remained some group of relevant outsiders whose interests were overlooked, resulting in excessive risk taking from their perspective. We should consider changing the whole approach to thinking about the issue. Instead of trying to identify a relevant group of outsiders and align interests indirectly, a better approach would be to establish a direct link between remuneration and a measure of risk taking set by a macro-prudential regulator accounting for systemic risk. The next two sections discuss these two lessons and possible regulatory responses.

## **7. Pay in Investment Banking: Whose “Skin in the Game”?**

The first lesson from the history of pay proposals suggests that the current remuneration policy overlooks interests of an important group of outsiders – ultimate asset holders. For this reason, remuneration in investment banking should be regulated differently from remuneration in commercial banking. Current policy does not address this question. Yet, the size of compensation in investment banking makes a well-thought through policy even more important. In 2007-2012, per-capita pay in investment banking divisions of the largest three UK banks was 3.7 times as large as pay in commercial banking divisions, on average (Figure 5).

By not separating principles of remuneration in commercial and investment banking, the current pay policy bears the risk of incentivising securitization and increased risk externalities (from the perspective of commercial banks) and the risk of not addressing the core problems with incentive structure (in investment banking).

From the perspective of commercial banks, the focus of the current remuneration policy on default risk of the bank itself encourages better risk management. Credit risk can, however, be lowered either by increased monitoring of borrowers or by removing the riskier assets from the balance sheets through asset sales and securitization. The latter lowers credit and default risk while also generating revenues that form the basis for employee remuneration. Thus, although the focus of the current policy might lower default risk for banks themselves, it would create further incentives for commercial banks to sell and securitize loans, transferring risks to the ultimate asset holders. This will intensify the conflict of interests between insiders and the ultimate asset holders, and the history of excessive risk taking from the perspective of overlooked outsiders might repeat itself.

From the perspective of investment banks, the current remuneration policy does not address an important conflict of interests. Aligning remuneration with risks borne by banks is important, but this risk is only one form of risk associated with investment banking. Another, and possibly more significant from the perspective of society as a whole, is systemic risk externalities – risks created and spread across the society through origination and trade in securities. Deferred compensation subject to malus and clawback addresses only the first form of risk, but not the second. Even if the current policy would lower the probability of default of individual banks, it does not deal with the aspects of financial sector that represent a “lemon plantation” – a space where low quality assets are not only traded, as in the “market for lemons” in Akerlof (1970), but also originated in the first place, as often pointed out in the context of securitization and underwriting.

There are regulations that account for the interests of the ultimate security holders by requiring banks to have “skin in the game” – retain a portion of the issue underwritten or securitized. Although this measure ties bank performance to the performance of assets underwritten or securitized, this link is not further translated into employees’ pay. In that sense, the existing regulations make securitization and investment banking activities resemble commercial banking in terms of retaining some of the risks on the balance sheets – but only

commercial banking as it existed before the pay regulation aiming to align these risks with employee remuneration. To account for the interests of the ultimate asset holders, remuneration policy should translate banks' "skin in the game" into the employees' "skin in game".

For example, banks are required to retain at least 5 percent of the asset backed securities (ABS) on their books. By making banks bear some of the risk, this policy is meant to assure banks screen borrowers at the moment of issuing a loan. If ABS devalue, the losses would be absorbed by bank capital, but it would only have a marginal impact on insiders' income. First, the impact of such devaluation would affect all the insiders through their equity-based pay, as opposed to the insiders directly responsible for the issue per se. Second, devaluation of 5 percent of the ABS is negligible compared to losses borne by the ultimate asset holders, calling for a more direct relationship between their interests and insiders' pay. Third, current proposals to pay with debt, instead of equity, would make insiders' income immune to equity devaluation, cutting off the relationship between the skin in the game and insiders pay altogether.

Similarly, when securities are retained on the books of investment banks during the process of underwriting, it is supposed to incentivise insiders to avoid a failure of the issue. Such policy can be an effective short-term incentive, but it does not connect investment bankers' pay to a longer-term performance of the issue. This in turn encourages attempts to make short-term revenues and personal income at the expense of the long-term asset holders.

The issues arising from the current remuneration policy for both commercial and investment banking can be addressed by having separate remuneration policies for these two forms of banking. This measure could be seen as a principle for remuneration. Remuneration policy for investment banks should differ from policy for commercial banks. In universal banks, investment and commercial banking divisions should be regulated separately, each according to its own pay regulation.

Remuneration in commercial banking will be discussed in greater detail in the next section. At this stage it is important to note that pay in commercial banking should be linked to revenues and risks of only commercial banking activities, removing the incentive to securitize to boost rewards and lower risks.

Remuneration in investment banking should make the skin in the game thicker by assuring that it applies not only to bank balance sheet, but is also translated into employees' pay. To address systemic risk externalities in investment banking, employees engaged in investment

banking activities could be paid with the securities they originate and float through underwriting, M&A, and securitization, subject to deferral for 7-10 years. Traders' pay could be linked to a stock market index (e.g., S&P500, FTSE100) and deferred as well, to prolong their time horizon and align their pay with the cyclical nature of the stock market. This would lower the incentive to “run the wave” amplifying the asset price cycle, and might possibly dampen its amplitude.

A series of compensation schemes at Credit Suisse have been interpreted as paying “bankers bonuses in the risky debt they helped create” (Moore, Goodway, 2013). In 2008 the Partner Asset Facility (PAF) scheme linked the \$5 billion pool of investment banking directors' bonuses to junk-grade corporate loans and bonds backed by commercial mortgages. In 2011, PAF2 involved paying some of the bonuses in fixed income structured notes exposed to derivative counterparty risk of the bank. And most recently, a part of bonuses was paid in Plus Bonds linked to future performance of sub-investment grade ABS held on trading books in 2012 (Credit Suisse, 2013: 203-204). The scope of these compensation plans is not as significant as one might expect. Plus Bonds amounted only to 4.8 percent of variable remuneration and 1.6 percent of total compensation in Credit Suisse in 2012. These schemes transfer a part of bank's assets – and risks – to employees and link pay to default risk of the bank. The practices at Credit Suisse do not, however, go to the heart of the matter. They address the problem of risks borne, not spread, by investment banks. Systemic risk externalities remain unrelated to remuneration. Although the interests of employees at Credit Suisse are aligned with interests of bank's shareholders, interests of the ultimate asset holders remain overlooked.

## **8. Pay in Commercial Banking: Setting a Yardstick**

The second lesson from history suggests that the previous attempts to internalise outsiders' interests into insiders' incentives indirectly, through the market mechanism, have not brought about an expected reduction in risk taking due to existence of some overlooked group of outsiders. This history of trials and errors means it could be fruitful to change the approach to remuneration and shift the focus of the debate. Einstein argued that “we can't solve problems by using the same kind of thinking we used when we created them”. In case of pay in commercial banking it means that instead of trying to align interests indirectly and define an ever changing relevant group of outsiders – only to discover later that some of them were overlooked again – a better approach is to have regulators set and enforce a direct link between remuneration and a

measure of bank performance. Such approach raises two questions. First, what would be an appropriate measure of bank performance that could serve as a yardstick for employee remuneration? Second, how will the direct regulation of pay in commercial banking fit in the already existing regulatory framework – current pay policy and other forms of central bank policy? The remainder of this section addresses these two questions.

In spite of being a widely used measure of bank profitability and a common yardstick used by banks to set remuneration, return on equity (RoE) is often seen as a poor indicator of bank performance because it encourages leverage and short-termism (Haldane, 2011: 12, PCBS, 2013: 394). Being independent of leverage, return on assets (RoA) is a superior measure, but using it as a performance metrics might amplify risk taking and increase systemic risk externalities. Attempts to increase RoA create incentives for holding riskier assets to raise returns per unit of asset and incentives for securitization and off-balance sheet transactions to lower the value of assets. Adjusting RoA for risk eliminates incentives for holding riskier assets, which makes it a better performance measure than RoE and RoA.

Designing the risk-adjusted RoA is, however, complicated by two sets of issues – around appropriate risk weights and profitability measure. With respect to the first, Basel risk weights are often criticised for being too complex and non-transparent (Haldane, 2012, PCBS, 2013: 449-451). In a complex and uncertain environment, complex regulatory response can be sub-optimal. Leverage could be a better way of adjusting for risks than complex risk-weighted capital measures, not the least because it was a better predictor of bank behaviour in crisis. Designing a risk-adjusted metrics of performance is further complicated by measuring returns and assets. Existing accounting practices result in overstated returns due to mark-to-market accounting. The current market value of assets is also be a poor measure, as it does not account for their liquidity, volatility of stock market prices, and uncertain future value of assets in general.

This brings us to the second benefit of separating commercial and investment banking for purposes of pay regulation. Some of the issues of measuring profitability arise mostly in investment banking. Profits of commercial banks and commercial banking divisions of universal banks comprise mainly interest spread, supplemented by commercial banking fees. These profits do not include unrealised profits from mark-to-marking accounting which accrue to investment banking divisions. Similarly, the value of assets and liabilities is more predictable and less volatile for commercial than for investment banking, as commercial banking assets mostly

consist of loans and liabilities – of deposits, as opposed to marketable and volatile securities with uncertain values typical for investment banks. As a result, if commercial and investment banking are regulated separately, annual leverage-adjusted RoA (with both profitability and leverage measured for commercial banking only) can be a good indicator of commercial bank performance. It can, therefore, be a good yardstick for employee remuneration.

To move away from the previous attempts to align interests indirectly, all of which resulted in overlooked outsiders, remuneration policy set and enforced by regulators can establish a direct link between remuneration and risk-adjusted performance in commercial banking by setting the annual pay ( $w$ ) as

$$w = k \cdot \frac{RoA}{leverage} \quad (1)$$

where  $k$  is the coefficient linking pay and performance and leverage is measured as a ratio of assets to capital. Remuneration policy can not only prohibit using RoE or unadjusted RoA as a yardstick for pay, but also set a ceiling on the coefficient  $k$  to cap the total pay.

The second question that arises with this approach to remuneration policy is about how it would fit in a broader regulatory framework – the existing remuneration policy and the broader monetary and financial stability policy.

Establishing a direct link between remuneration and risk-adjusted performance could supplement and strengthen the current policy of deferred compensation subject to malus and clawback. There are two reasons for that – a more objective and certain character of the yardstick and the possibility of embedding pay policy in the countercyclical macro-prudential regulation.

The main benefit of deferred compensation with malus and clawback is in its mitigating some of short-termism. The possibility of returning a part of remuneration depending on longer-term performance and risk outcomes naturally prolongs employees' time-horizons. By keeping employees' skin in the game, this measure also recreates some of the features of unlimited liability and, as a result, lowers risk taking. There is, however, an important limitation of this policy. The less risk-averse and the more overconfident employees are, the less they expect negative future outcomes, hence, the less likely they are to lower risk taking, even when facing the possibility of an ex-post pay adjustment. The less risk-averse and the more overconfident employees are, the more they hope that short-term gains will exceed potential long-term losses and respond to this by taking high risks. Subjective attitude to risk matters, and malus and

clawback would have a different impact on employees with different risk preferences. In cases of low risk aversion or risk seeking – both common in finance – the possibility of ex-post pay adjustment is not an effective tool for an ex-ante reduction in risk taking.

Linking remuneration to the annual risk-adjusted performance could address this problem by removing both the uncertain and the subjective elements from the relationship between employees' pay and incentives. Uncertain – because in the case of pay connected to current risk-adjusted performance employees' incentives respond to the actual, observable performance, as opposed to the possible future outcomes that might or might not materialise. Removing such uncertainty would also remove the behavioural biases that come with it, especially overconfidence and willingness to “ride the wave”. Subjective – because linking pay to the current risk-adjusted performance involves an objective measure of remuneration set by the regulator that would affect all employees' pay uniformly and would eliminate the role of subjective risk preference. In other words, remuneration connected to the current risk-adjusted performance would have the same impact on more risk-averse employees as on less risk-averse or overconfident.

While deferred compensation subject to malus and clawback addresses the problem of short-termism, linking pay to risk-adjusted performance tackles the issues around subjective risk preferences and uncertainty. In this sense the two policy measures supplement and support each other.

Remuneration policy connecting pay to the risk-adjusted performance has a further benefit – it can be a tool of countercyclical macro-prudential regulation. The coefficient  $k$  connecting pay with performance in the formula (1) above can be set as time-varying. The regulator could lower the ceiling on this coefficient when there is evidence of excessive credit expansion and build-up of instability. This would release funds that instead of being spent on remuneration can be used to increase capital buffers. In other words, the time-varying approach to remuneration can support and reinforce the countercyclical capital buffers in the Basel III framework, in addition to restrictions on dividend payments proposed by Borio (2014: 3-4). Implementing such policy would require empirical research to estimate an appropriate measure of the ceiling on the coefficient  $k$  linking pay with performance, its variation, and conditions that should trigger a downward adjustment of the coefficient.

## 9. Conclusion

The paper evaluates the current approach to remuneration policy in the financial sector through the lens of the history of pay proposals and highlights two lessons from this history that should be taken into account in designing compensation policy today. The current UK policy was taken as a starting point of analysis, nevertheless, the arguments made in the paper apply to a broader range of countries implementing remuneration policy in response to the Principles for Sound Compensation Practices issued by Financial Stability Board.

The development of pay proposals can be seen as a series of attempts to internalise the interests of a varying group of outsiders into the insiders' incentive structure. Each of these proposals achieved its goal to a certain degree, but it was not effective at curbing excessive risk taking because it overlooked interests of some relevant group of outsiders.

The first lesson from this history suggests that, similar to the previous pay proposals, the current remuneration policy and the debate around it overlook a relevant group of outsiders – ultimate asset holders. To address this problem, commercial and investment banking should have separate remuneration policies. Employees in investment banking should be paid with securities they originate and float and security traders should have deferred compensation linked to a stock market index.

According to the second lesson, there is always some group of outsiders whose interests are overlooked by pay policy, which undermines the effectiveness of curbing excessive risk taking. This suggests the approach to remuneration need to be changed. Instead of trying to identify a range of all relevant outsiders and corresponding forms of instruments to pay with, a better way of approaching remuneration in commercial banking would be to let regulators set a direct link between pay and a measure of risk-adjusted performance. Leverage-adjusted RoA can be one such measure. If the macro-prudential regulator prescribes a target relationship between the leverage-adjusted RoA and pay, and varies this relationship depending on the macroeconomic conditions and the state of the credit and financial markets, this approach would have a further benefit of using remuneration policy as a tool of countercyclical macro-prudential regulation. Markets systematically misprice risk, and behavioural biases of their participants reinforce it. Linking pay to a measure of risk-adjusted performance set by a macro-prudential regulator would be a cruder measure than fine-tuning through markets, but it also could be more effective, simpler, and leave fewer regulatory loopholes.



The proposed two lessons from history and corresponding policy measures could supplement and strengthen the current remuneration policy focusing on the bonus cap and deferred compensation subject to malus and clawback.

## **Bibliography**

- Akerlof, George A., 1970, "The Market for "Lemons": Quality Uncertainty and the Market Mechanism", *Quarterly Journal of Economics*, Vol. 84, No. 3, pp. 488-500.
- Akerlof, George and Rachel Kranton, 2010, "It is time to treat Wall Street like Main Street", *Financial Times*, February 24, 2010.
- Balachandran, Sudhakar, Bruce Kogut, and Hitesh Harnal, 2010, "The Probability of Default, Excessive Risk, and Executive Compensation: A Study of Financial Services Firms from 1995 to 2008", Columbia University, unpublished. Available at [http://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=1914542](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1914542)
- Bebchuk, Lucian A. and Holger Spamann, 2010, "Regulating Bankers' Pay", John M. Olin Center for Law, Economics, and Business, Discussion Paper No. 641, Harvard.
- Bebchuk, Lucian, Jesse Fried and David Walker, 2002, "Managerial Power and Rent Extraction in the Design of Executive Compensation," *University of Chicago Law Review*, Vol. 63, No. 3, pp. 751-846.
- Bebchuk, Lucian and Yaniv Grinstein, 2005, "The Growth of Executive Pay", *Oxford Review of Economic Policy*, Vol. 21, No. 2, pp. 283-303.
- Becht, Marco, Patrick Bolton and Ailsa Roell, 2003, "Corporate Governance and Control", in: George M. Constantinides, M. Harris, Rene M. Stulz (eds.), *Handbook of the Economics of Finance: Corporate Finance*, Elsevier.
- Bolton, Patrick, José Scheinkman and Wei Xiong, 2006, "Executive Compensation and Short-Termist Behaviour in Speculative Markets", *Review of Economic Studies*, Vol. 73, No. 3, pp. 577-610.
- Bolton, P., Mehran, H. and Shapiro, 2011, "Executive compensation and risk taking", *Federal Reserve Bank of New York Staff Report No. 456*.
- Borio, Claudio, 2014, "Macroprudential frameworks: (too) great expectations?", Contribution to the 25th anniversary edition of *Central Banking Journal*, available online at <http://www.bis.org/speeches/sp140813.pdf>.
- Braddick, Katharine, 2014, "The changing face of prudential policy", Speech at The Future of Financial Services Summit, Bank of England.

- Brooks, Petya Koeva, 2009, "Households Hit Hard by Wealth Losses", World Economic Outlook, IMF, available online at <https://www.imf.org/external/pubs/ft/survey/so/2009/num062409a.htm>
- Chandler, Alfred D., 1977, *The Visible Hand: The Managerial Revolution in American Business*.
- Chen, Carl R., Thomas L. Steiner, and Ann Marie Whyte, 2006, "Does stock option-based executive compensation induce risk-taking? An analysis of the banking industry", *Journal of Banking and Finance*, Vol. 30, No. 3, pp. 915-945.
- Cheng, Ing-Haw, Harrison Hong, and Jose A. Scheinkman, 2010, "Yesterday's Heroes: Compensation and Creative Risk-Taking", NBER Working Paper No. 16176, available at <http://www.nber.org/papers/w16176> .
- Core, John and Wayne Guay, 2010, "Is there a case for regulating excessive pay in the financial services industry?", University of Pennsylvania Wharton School, January 25. Available at: [http://knowledge.wharton.upenn.edu/papers/download/Brookings\\_Core\\_Guay\\_1\\_25\\_10\\_SS\\_RN.pdf](http://knowledge.wharton.upenn.edu/papers/download/Brookings_Core_Guay_1_25_10_SS_RN.pdf)
- Credit Suisse, 2013, Annual Report, available online at [https://www.credit-suisse.com/publications/annualreporting/doc/2013/csg\\_ar13\\_compensation\\_en.pdf](https://www.credit-suisse.com/publications/annualreporting/doc/2013/csg_ar13_compensation_en.pdf).
- Crotty, James, 2009, "The Bonus-Driven "Rainmaker" Financial Firm: How These Firms Enrich Top Employees, Destroy Shareholder Value and Create Systemic Financial Instability", University of Massachusetts Amherst, Economics Department Working Paper Series, Paper 2, available online at [http://scholarworks.umass.edu/econ\\_workingpaper/2/](http://scholarworks.umass.edu/econ_workingpaper/2/).
- Crotty, James and Gerald Epstein, 2009, "Avoiding a Financial Meltdown", *Challenge Magazine*, January/February.
- DeYoung, Robert, Emma Y. Peng, and Meng Yan, 2013, "Executive compensation and business policy choices at U.S. commercial banks", *Journal of Financial and Quantitative Analysis*, Vol. 48, No. 1, pp. 165-196.
- Edmans, A. and Q. Liu, 2011, "Inside Debt", *Review of Finance*, Vol. 15, No. 1, pp. 75-102.
- Emmons, William R. and Bryan J. Noeth, 2012, "Household Financial Stability: Who Suffered the Most from the Crisis?", St. Louis Fed, available online at [http://www.stlouisfed.org/publications/pub\\_assets/pdf/re/2012/c/financial\\_stability.pdf](http://www.stlouisfed.org/publications/pub_assets/pdf/re/2012/c/financial_stability.pdf)
- Fahlenbrach, Rüdiger and René M. Stulz, 2011, "Bank CEO Incentives and the Credit Crisis", *Journal of Financial Economics*, Vol. 99, No. 1, pp. 11-26.
- FCA/PRA, 2014, Remuneration Code, Senior Management Arrangements, Systems and Controls (SYSC), Chapter 19A, Release 151, available online at <http://media.fshandbook.info/content/full/SYSC/19A.pdf>.

- FSB, 2013, FSB Member jurisdictions: National regulation and supervisory guidance on compensation, available online at [http://www.financialstabilityboard.org/publications/r\\_120709.pdf](http://www.financialstabilityboard.org/publications/r_120709.pdf).
- FSB, 2009, FSB Principles for Sound Compensation Practices, Implementation Standards, Financial Stability Board, available online at [http://www.financialstabilityboard.org/publications/r\\_090925c.pdf](http://www.financialstabilityboard.org/publications/r_090925c.pdf).
- FSF, 2009, FSF Principles for Sound Compensation Practices, Financial Stability Forum, available online at [http://www.financialstabilityboard.org/publications/r\\_0904b.pdf](http://www.financialstabilityboard.org/publications/r_0904b.pdf).
- Frydman, Carola and Raven Saks, 2010, “Executive Compensation: A New View from a Long-Term Perspective, 1936-2005”, *Review of Financial Studies*, Vol. 23, No. 5, p. 2099-2138.
- Gerakos, Joseph, 2010, “CEO Pensions: Disclosure, Managerial Power, and Optimal Contracting”, Pension Research Council, Working Paper No. 2007-5, available at [http://faculty.chicagobooth.edu/joseph.gerakos/pdfs/gerakos\\_pensiondisclosure.pdf](http://faculty.chicagobooth.edu/joseph.gerakos/pdfs/gerakos_pensiondisclosure.pdf)
- Haldane, Andrew, 2012, “The Dog and the Frisbee”, Speech at the Federal Reserve Bank of Kansas City’s 36th economic policy symposium, “The Changing Policy Landscape”.
- Haldane, Andrew, 2011, “Control Rights (and Wrongs)”, Wincott Annual Memorial Lecture.
- Hall, Brian J. and Jeffrey B. Liebman, 1998, “Are CEOs Really Paid Like Bureaucrats?”, *Quarterly Journal of Economics*, Vol. 113, No. 3, pp. 653-691.
- Holmstrom, Bengt and Steven N. Kaplan, 2003, “The State of U.S. Corporate Governance: What’s Right and What’s Wrong?”, *Journal of Applied Corporate Finance*, Vol. 15, No. 3, pp. 8-20.
- Jensen, Michael C. and William H. Meckling, 1976, “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure”, *Journal of Financial Economics*, Vol. 3, No. 4, pp. 305-360.
- Jensen, Michael C. and Kevin J. Murphy, 1990a, “Performance Pay and Top-Management Incentives”, *Journal of Political Economy*, Vol. 98, No. 2, pp. 225-264.
- Jensen, Michael C. and Kevin J. Murphy, 1990b, “CEO Incentives – It’s Not How Much You Pay, But How”, *Harvard Business Review*, No. 3, pp. 138-149.
- John, K., Mehran, H. and Y. Qian, 2007, “Regulation, subordinated debt and incentive features of CEO compensation in the banking industry”, Federal Reserve Bank of New York Staff Report No. 308.
- Lazonick, W. and M. O’Sullivan, 2000, “Maximizing shareholder value: a new ideology for corporate governance”, *Economy and Society*, Vol. 29, No. 1, 13-35.

- Levina, Iren, 2014, “A Puzzling Rise in Financial Profits and the Role of Capital Gain-Like Revenues”, PERI Working Paper No 347, University of Massachusetts Amherst, available online at [http://www.peri.umass.edu/fileadmin/pdf/working\\_papers/working\\_papers\\_301-350/WP347.pdf](http://www.peri.umass.edu/fileadmin/pdf/working_papers/working_papers_301-350/WP347.pdf).
- Liu, Henry C.K., 2010, “The Crisis of Wealth Destruction”, Roosevelt Institute, available online at <http://www.rooseveltinstitute.org/new-roosevelt/crisis-wealth-destruction>
- Mehran, Hamid and Joshua Rosenberg, 2008, “The effect of employee stock options on bank investment choice, borrowing, and capital”, Federal Reserve Bank of New York Staff Reports, No. 305, available at [http://www.newyorkfed.org/research/staff\\_reports/sr305.pdf](http://www.newyorkfed.org/research/staff_reports/sr305.pdf)
- Moore, James and Nick Goodway, 2013, “You made it, you eat it: Credit Suisse pays staff in risky debt”, Independent, 4 January 2013, available online at <http://www.independent.co.uk/news/business/news/you-made-it-you-eat-it-credit-suisse-pays-staff-in-risky-debt-8439289.html>
- PCBS, 2013, “Changing banking for good”, Report by the Parliamentary Commission on Banking Standards, available online at <http://www.parliament.uk/bankingstandards>.
- Philippon, T. and A. Reshef, 2012, “Wages and Human Capital in the U.S. Finance Industry: 1909–2006”, Quarterly Journal of Economics, Vol. 127, No. 4, pp. 1551-1609.
- Romano, Roberta and Bhagat, Sanjai, 2009, “Reforming Executive Compensation: Focusing and Committing to the Long-term”, Faculty Scholarship Series, Paper 1921.
- Sundaram, Rangarajan K. and David L. Yermack, 2007, “Pay Me Later: Inside Debt and Its Role in Managerial Compensation”, Journal of Finance, Vol. 62, No. 4, pp. 1551-1588.
- Tung, F., 2011, “Pay for Banker Performance: Structuring Executive Compensation for Risk Regulation”, Northwestern University Law Review, Vol. 105, No. 3, pp. 1205- 1252.
- Tung, F. and X. Wang, 2011, “Bank CEOs, Inside Debt Compensation, and the Global Financial Crisis”, Boston University School of Law Working Paper No. 11-49.
- Wei, C. and D. Yermack, 2011, “Investor Reactions to CEOs’ Inside Debt Incentives”, Review of Financial Studies, Vol. 24, No.1, pp. 3813-40.

## Appendix

Figure 1

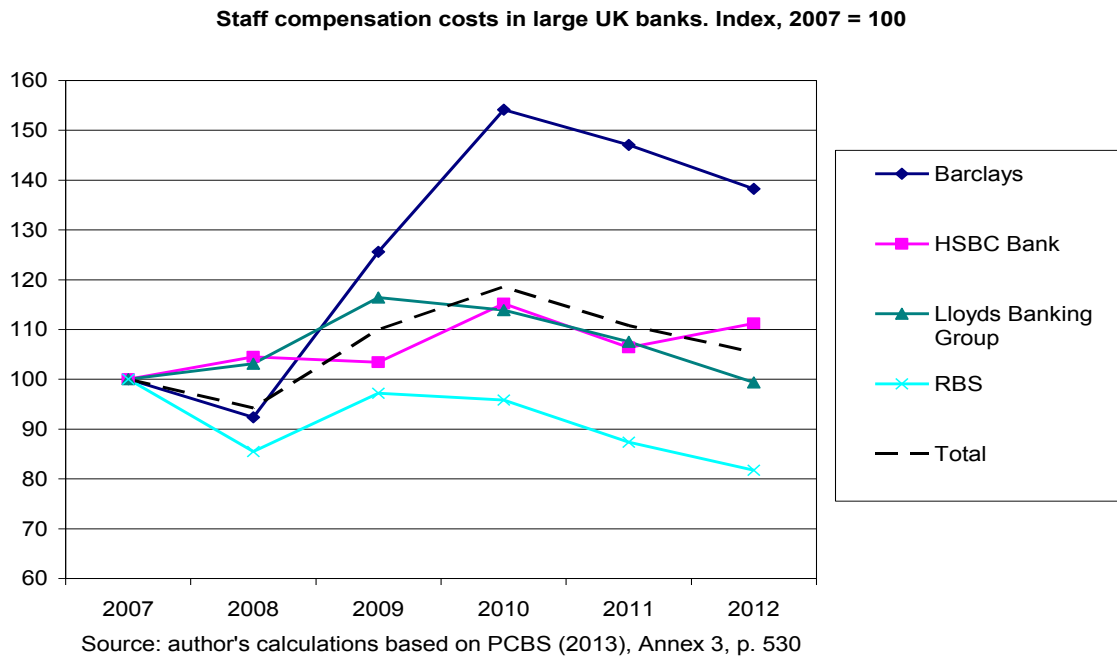


Figure 2

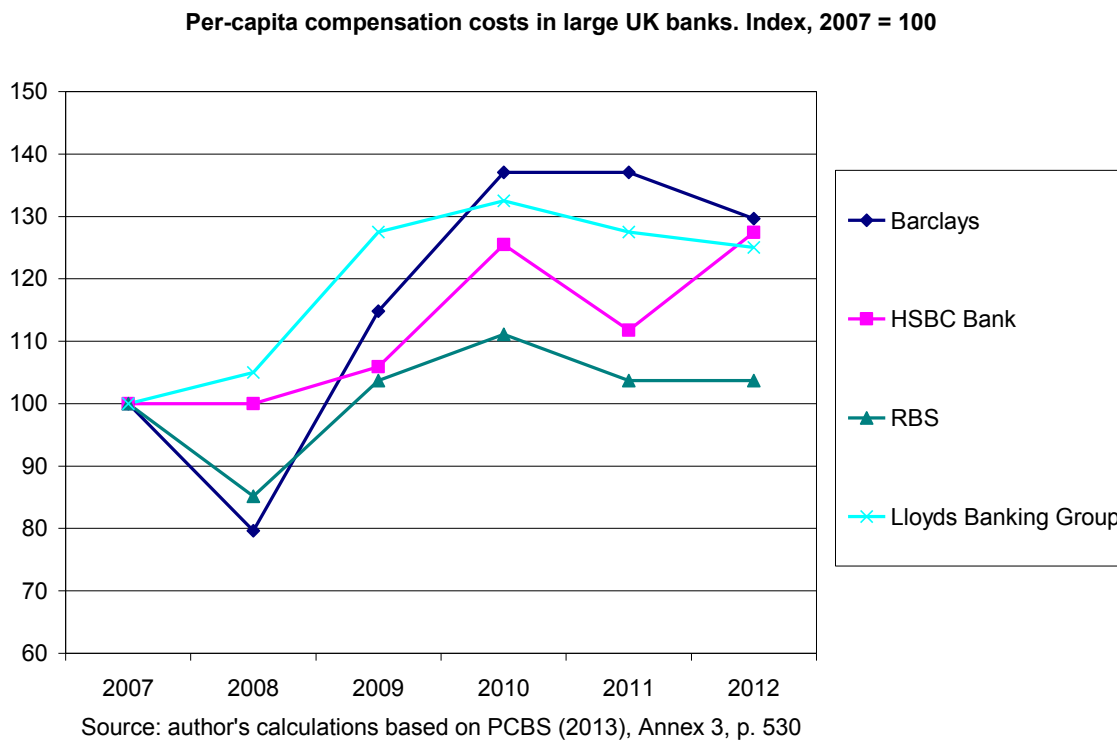


Figure 3

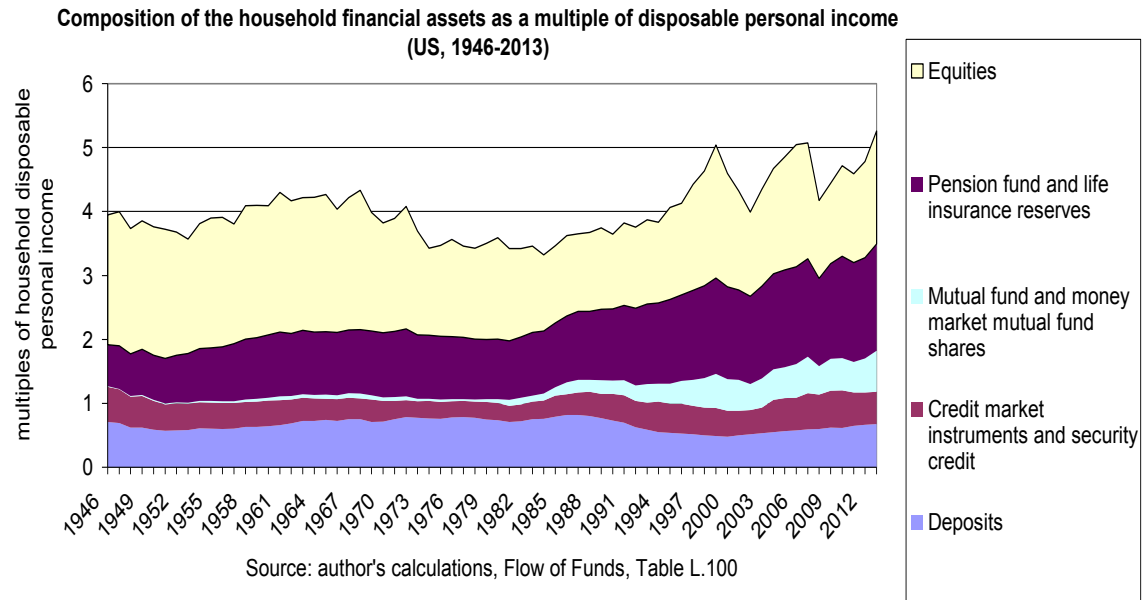


Figure 4

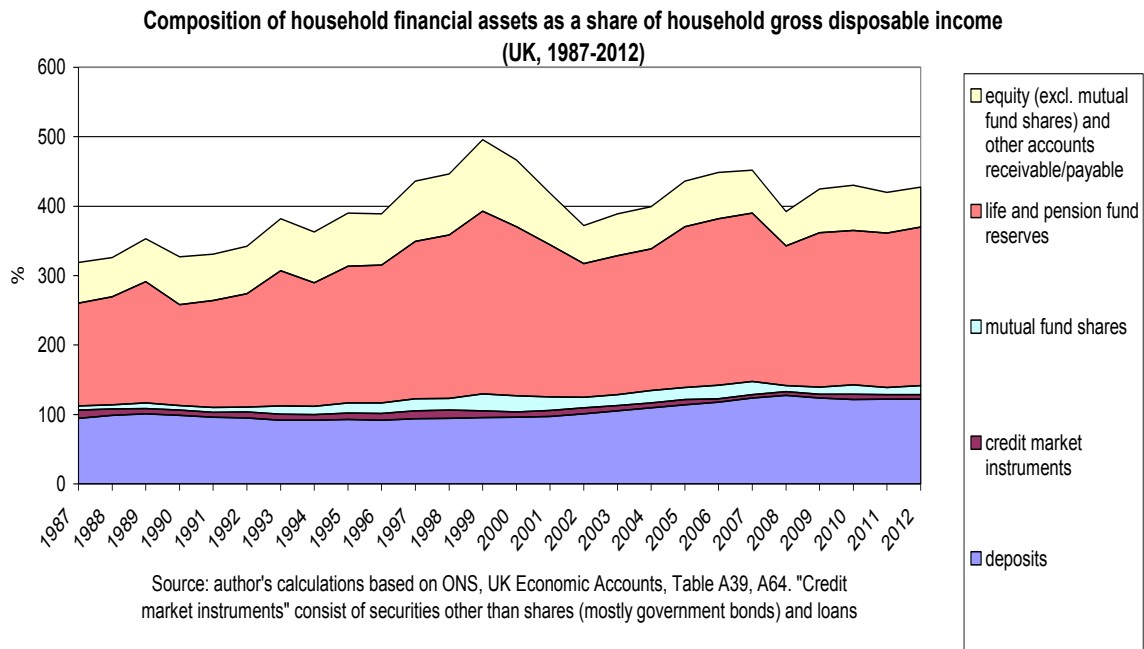


Figure 5

