



Incentive pay and bank risk-taking: Evidence from Austrian, German, and Swiss banks



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ABSTRACT

We use payroll data in the Austrian, German, and Swiss banking sector to identify incentive pay in the critical banking segments of treasury/capital market management and investment banking for 67 banks. We document an economically significant correlation of incentive pay with both the level and volatility of bank trading income—particularly for the pre-crisis period 2003–2007, in which incentive pay was strongest. This result is robust if we instrument the bonus share in the capital market divisions with the strength of incentive pay in unrelated bank divisions like retail banking. Moreover, pre-crisis incentive pay appears too strong for an optimal trade-off between trading income and risk, which maximizes the net present value of trading income. Further analyses indicate that the bonus moderation during the crisis has removed excessive pre-crisis incentive pay.

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1. Introduction

In 2013, the European Parliament proposed new EU-wide legislation on bank bonuses, and even in the U.S. executive pay was scrutinized in the post-crisis years (e.g. the Say-on-Pay rule included in the 2010 Dodd–Frank Act). Large bonus payments for employees in the banks' financial market divisions were allegedly responsible for excessive risk-taking. Limits on bonus payments were justified as a way to curb risk-taking incentives (e.g. Dunning, 2010).

Yet there is only scarce empirical evidence about the nexus between the proportion of performance contingent pay and the amount of risk-taking in financial institutions. One obstacle to such an analysis is the lack of publicly available information about banks' internal incentive and bonus systems. Reporting requirements are typically limited only to a bank's CEO and board members, who may neither earn the highest bonuses nor make the most pertinent risk choices. This paper exploits a large payroll data set to extract incentive pay measures for 67 banks in

Austria, Germany, and Switzerland in the period 2004–2011. In particular, we are able to measure performance-contingent pay in the two most critical bank segments, investment banking and treasury/capital markets, at all levels of the bank hierarchy.

Our analysis pursues four objectives. First, we document the importance of bonus payments across bank functions and hierarchies in the Austrian, German, and Swiss banking systems for the period 2004–2011. We show that the *Bonus Share*, defined as the average bonus relative to the total salary, decreased by roughly 20% across bank functions in the crisis period 2008–2011 relative to the pre-crisis period 2004–2007. The decrease is much stronger, at approximately 40%, for employees in the investment banking and treasury/capital market segments, even though overall trading income did not decrease during the crisis period 2008–2011.

Second, we document the robust correlation of pay incentives with the bank's trading income and its volatility. On average, trading income in our sample amounts to 9% of the gross interest income of a bank and shows a systematic correlation with both the equally and hierarchy-weighted strengths of bonus payments in a bank. This positive correlation is particularly pronounced in the pre-crisis period and extends to the volatility of trading income. By averaging our pay incentive measure over a four-year period we attempt to mitigate concerns for reverse causality whereby favorable trading profit realizations generate higher pay-outs of performance-contingent contracts. Nevertheless, averaging

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the incentive pay by itself is unlikely to solve the endogeneity problem completely.

A third contribution consists in a causal analysis for which we propose two instruments: If banks vary exogenously in the degree to which they feature an “incentive culture”, we can use the *Bonus Share* in other bank segments, like retail banking or corporate banking, as proxies for pay incentives in the bank’s capital market segment. To further validate this instrument, we check whether the *Bonus Share* in these functionally unrelated bank segments exhibits any significant intertemporal correlation with annual trading income. This is not the case, which suggests that bank bonus pools are indeed segment-specific.¹ A second instrument consists in the share of employment outside the capital market divisions relative to total employment. This serves as a proxy for governance deficiencies, as a bank with a large retail, private, and corporate banking segment might monitor its traders with a different intensity than banks whose core business is investment banking. Previous research has found weaker bank governance to be related to higher incentive pay (Fahlenbrach, 2009) and bank risk (Hau and Thum, 2009).

Our two instruments show a strong first-stage correlation with the *Bonus Share* of a bank’s capital market employees. The instrumental variable regressions produce large and statistically significant coefficients for traders’ *Bonus Share*—suggesting that high incentive pay causes both a high level and a high volatility of trading income.

In a fourth step we analyze the trade-off between trading income and its volatility. It is straightforward to show that, if trading revenue is generated mostly through self-financing trading strategies without net capital requirements, the net present value (NPV) maximization of the risk-adjusted cash flow of trading is equivalent to the maximization of its Sharpe ratio. From the perspective of NPV (or asset value) maximization, the optimal incentive pay for a bank’s trading operation should maximize the Sharpe ratio of trading income, defined as the ratio of trading returns and their standard deviation. Our regression analysis suggests that bonus incentives were too strong to maximize the Sharpe ratio of trading income in the pre-crisis period.² This contrasts with the crisis period 2008–2011, for which bonus incentives are shown to have a positive marginal effect on the Sharpe ratio of trading income. The drastic bank bonus reduction during the crisis might have been a political overreaction, changing investment bankers and traders from over-into underincentivized employees.

A limitation of the analysis is that we cannot observe the exact type of speculative activity that a bank engages in. For the same reason, we cannot identify which bank employees within the investment banking segment contribute most to a bank’s risk choices. Hence, the exact transmission channels remain something of a black box to be explored in future research. Another limitation of the analysis is its focus on the second moment of trading income; the Sharpe ratio compares trading income only to its standard deviation. Ignoring higher moments can be problematic if the call option nature of bonus pay entices traders to accept high tail risks, i.e. unlikely yet very negative outcomes. However, we find no significant correlation between the skewness of trading income and the strength of pay incentives.³ We also collect data on crisis-related write-offs and government bailouts as alternative risk measures. Neither of the two statistics is significantly correlated with the strength of pay incentives.⁴

¹ We regress the *Bonus Share* in bank segments unrelated to trading on *Trading Income*, standardized by *Gross Interest Income*, bank, and time fixed effects. The regression coefficient of *Relative Trading Income* is not significant at the 5% level. If we filter the instrument from any temporal (but not cross-sectional) covariation with trading income, our results remain robust.

² Limited liability of shareholders in combination with high bank leverage can rationalize this finding whereby incentive pay aligns employee interests with those of shareholders in pursuit of equity value rather than bank asset value maximization.

³ We concede that the measurement of the skewness of trading income is noisy as we have only annual data on trading income.

⁴ Of all banks with data on trading income and bonus payments only 32 report crisis-related losses or write-offs in their annual statements. Our sample of banks with data on bonus payments covers nine of 10 banks that received public capital injections and 11 of 19 banks that demanded government guarantees in Austria, Germany, or Switzerland.

The discussion of the literature in the next section and the development of the hypotheses in Section 3 are followed by a description of the data in Section 4. Section 5 explores the structure of incentive pay at the employee level and aggregate bank level. Section 6 begins by characterizing the correlation between pay incentives and the level and volatility of trading income. This is followed by instrumental variable regressions about the causal link and an estimation of the marginal effect of incentive pay on the Sharpe ratio of trading income. Section 7 concludes.

2. Literature

The 2007–2008 financial crisis has ignited a political debate about what is often termed “excessive” bank compensation practices. In Europe this has resulted in EU-wide legislation to cap the bonus pay of bank executives (European Parliament, 2013, page 201). A popular referendum in Switzerland has tried to cap the highest executive pay package at 12 times the lowest salary paid out in the same firm (Federal Assembly, 2013).⁵ Financial sector pay has become a particular focus of public discontent, because a substantial increase in compensation in the financial industry can be observed in the run-up to the recent crisis (e.g. Philippon and Reshef, 2012, for the U.S. banking industry). Moreover, Bell and Van Reenen (2010) document that about 60% of the increase in pre-crisis extreme wage inequalities in the U.K. was due to the financial sector.

The political debate is related to a broader academic dispute about the determinants of executive pay in general, with two opposing views. A technological explanation in defense of high remuneration focuses on changes in the marginal productivity of corporate leadership in a competitive labor market for executives (Gabaix and Landier, 2006). This view is supported by new cross-sectional evidence of CEO sorting by ability, pay, and firm size in Sweden (Adams et al., 2014). Philippon and Reshef (2012) argue that increased wages in the financial industry may simply reflect changes in the working environment, including an increase in skill intensity, job complexity, and earning risks. Recent theoretical research focuses on the competition for talented workers as a key factor of high salaries in the financial industry (C el erier and Vall ee, 2013). Bannier et al. (2013) suggest that bonus payments are increasing with the intensity of competition for managerial talent. Moreover, companies seem to raise their executives’ pay after losing executives to other firms (Gao et al., 2013). An opposing view relates executive pay to corporate governance problems and the weakness of shareholder rights. Hakenes and Schnabel (2014) suggest that bailout expectations may induce steeper incentive schemes, whereas bonus schemes become flatter if problems of effort arise. While excessive risk-taking may only manifest itself in the long run, short-run cash payouts can be enormous and performance measures may not properly account for long-term risks. The pay of bank executives in particular seems to have largely overcompensated top managers for what turned out to be disastrous long-run equity returns (Bebchuk et al., 2010; Bhagat and Bolton, 2014).

The issue of optimal incentive pay is particularly relevant for banks because of their high leverage. Given bankruptcy costs or public guarantees for too-big-to-fail banks, even an incentive contract that is optimal from the shareholder perspective (by maximizing the bank equity value) may not maximize a bank’s total asset value and thus imply excessive risk-taking from a welfare perspective (Bolton et al., 2014). While higher bank capital requirements appear to be the first-best regulatory intervention (Admati et al., 2010), restrictions on bankers’ equity pay component have also been considered as a means of dealing with limited liability externalities (Thanassoulis, 2012; Acharya et al., 2013; Bannier et al., 2013).

Much of the U.S. literature has focused on equity compensation for CEOs and executive board members, which generally implies a strong

⁵ The proposition to curb executive pay was rejected by two-thirds of the voters.

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