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# Occasional paper

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Extreme Wage  
Inequality: Pay at the  
Very Top

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## **Abstract**

We provide new evidence on the growth in pay at the very top of the wage distribution in the UK. Sectoral decompositions show that workers in the financial sector have accounted for the majority of the gains at the top over the last decade. New results are also presented on the pay of CEOs in the UK. We show how improved measurement of pay points to a stronger pay-performance link than previously estimated. This link is stronger, and more symmetric, for those firms in which institutional investors play a larger role.

Keywords: wage inequality, firm performance, CEO compensation, performance pay, management

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## I. Introduction

It is well known that the US, UK and many advanced economies have witnessed a sharp rise in wage and income inequality since the end of the 1970s. Much of the evidence on this phenomenon has focused on the evolution of wages between different points in the wage distribution e.g. the 90<sup>th</sup>-10<sup>th</sup> percentile wage differential. More recently, Atkinson, Piketty and Saez (2011) have emphasized how this evidence misses a significant part of the story, namely the remarkable rise in the *share* of income and wages taken by those toward the very top of the distribution.

This paper provides new evidence on the growth in pay at the very top of the distribution for the UK. First, we show how the change in the share of income going to those at the top has been broadly similar in the UK and US. We document that the rise has been predominantly driven by increases in wages rather than investment gains and that these wage gains are overlooked in most data sets either because of top-coding or because the wage measure does not capture important elements of pay. In Section III we focus attention on a specific group of workers that account for the majority of the gains at the top over the last decade, namely financial sector workers. We show the role that bonuses have played in this development and highlight how the financial crisis and Great Recession have left bankers largely unaffected. We then turn to another much examined group of top earners – CEOs. They too have seen considerable gains over the last decade. But much of this increase has come in the form of contingent equity-based pay that depends on relative performance. A suggested policy response to “excessive” executive pay is to provide more opportunity for shareholder “voice”. We show that firms with a large institutional investor base provide a symmetric pay-performance schedule while those with weak institutional ownership protect pay on the downside.

## II. Extreme Income and Wage Inequality in the UK

Although our principal focus is on the last decade it is useful to put the recent data in context. Between 1979 and 2007, the top decile increased their share of total income by 14 percentage points, from 28.4% to 42.6%. The top percentile accounted for fully two-thirds of these gains, seeing their share rise from 5.9% to 15.4%. Interestingly, the magnitude of the gains are almost identical to those observed in the US Excluding capital gains (as the UK data does), the top percentile of US workers saw their share of total income rise from 8.0% to 18.3%.

To dig deeper, we exploit public-use tax return files that are available from the mid-1990s. These data are released without top-coding and provide a breakdown of the source of income and the industry and region of the individual. The sampling frame is all taxpayers. In Table 1 we examine the source of the changing shares of income for those at the top between 1998/9 and 2007/8. During this decade, the top percentile increased its share of the income pie by 2.9 percentage points. This gain was entirely among those of working-age who had not retired from employment. Almost all the gain accrued as a result of earned income, with only 0.4 percentage points accruing due to increased investment income. And of the gains in earned income, the majority occurred as a result of pay from employment, with a smaller contribution from self-employment income.

In Table 2 we break down the change in earned income by one-digit industry. The clear message is that those working in the financial sector have been the key winners over the last decade. Sixty percent of the increase in income share accruing to the top percentile has gone to financial service employees (“Bankers”) although they account for only around one-fifth of such workers.

### **III. Bankers’ Pay**

London is one of the world’s largest financial centres.<sup>1</sup> The increasing importance of finance for the UK can be seen by noting that between 1998 and 2007, the nominal gross-value added of the financial sector rose 103%, compared to 57% for all other sectors. But over the same period, employment in finance rose by only 6%, less than the 11% overall rise. The gains were not evenly spread. A large percentage of those employed in finance work in junior occupations such as bank clerks and secretaries. Such workers have seen no out-performance in their pay over this period relative to similar workers in other occupations. Indeed, quantile regressions show that the premium associated with being employed in finance has shown no upward trend over the last ten years, except at the 90<sup>th</sup> percentile and above.

Among those bankers at the top of the distribution, bonuses have played an increasingly important role. Indeed, none of the gains in wage share accruing to financial sector workers have occurred through changes in salary. The entire rise has occurred in bonuses. The focus on bonuses both in popular discourse and as a target of regulatory concern appears well founded.<sup>2</sup>

Our figures on the importance of financial sector workers can be compared with those for the US estimated by Kaplan and Rauh (2010). They suggest that Wall Street may conservatively account for around 5% of the top 0.5% of the income distribution (and more at the very top). Our results suggest a substantially higher fraction accounted for by financial sector workers in the UK. A key reason for the difference lies in the larger size of the City of London than Wall Street, relative to the size of the rest of the economy in the respective countries.

### **IV. Chief Executive Officers (CEO) Pay**

The pay of CEOs has received extensive analysis. Over the last decade, CEOs in the UK have seen their expected pay roughly double. The median pay of a FTSE-100 CEO is now about 116 times that of the median worker, compared to a ratio of 11 in 1980.<sup>3</sup> This growth in pay broadly matches the gains of those in the top percentile who are not corporate executives. However, there has been a very notable change in the composition of pay for CEOs. Since the mid-1990s, an increasing share of total pay has been in the form of performance-conditional equity grants (and

<sup>1</sup> It is, for example, the largest centre for foreign exchange activity (37% of global total) and for OTC derivatives (46% of global total) (Bank of International Settlements, 2010).

<sup>2</sup> Besley and Ghatak (2013) discuss the optimal taxation and regulation of bonuses in the financial sector.

<sup>3</sup> Although the US also had an order of magnitude increase in this ratio, the levels of inequality are much higher than the UK. The median pay of an S&P 500 CEO was 240 times that of the median worker in 2008, having risen from 26 in 1970.

to a lesser extent share options), whose vesting depends on the performance of the firm *relative* to a peer group.

To examine the issue of pay and performance across the corporate hierarchy, Bell and Van Reenen (2011) constructed a new database of the pay of all workers (from the CEO to the janitor) for over 400 UK-listed companies from 1999-2010. These companies account for around 90% of the total UK stock market capitalization. Data on executive pay comes from the remuneration report in the Annual Accounts, while pay for the rest of the workforce comes from the *Annual Survey of Hours and Earnings*. This is a 1% panel of all UK workers, based on a workers social security number. We are able to link all workers to their firm.

To investigate the pay-performance link throughout the corporate hierarchy Table 3 reports panel models where we control for employee-firm fixed effects ( $\alpha_{ij}$ ):

$$\ln(\text{pay})_{ijt} = \alpha_{ij} + \beta \ln(\text{Performance})_{jt} + \gamma X_{ijt} + \tau_t + \varepsilon_{ijt} \quad (1)$$

where *pay* is *expected* pay granted in the current year for employee *i* in firm *j* at time *t* and *Performance* is measured by total shareholder returns.<sup>4</sup> We include employment and the outside wage ( $X_{ijt}$ ), time dummies,  $\tau_t$ , and an error,  $\varepsilon_{ijt}$ . A clear picture emerges where the association between performance and pay is strong for CEOs  $\beta = 0.222$  and senior executives, an order of magnitude smaller for managers and practically non-existent for workers (0.011).

These results are likely to underestimate the CEO pay-performance relationship. An increasing share of the annual changes in expected CEO rewards come about as a result of changes in the expected value of unvested share and option awards. In the spirit of Hall and Liebman (1998) we re-calculate expected CEO pay to incorporate these valuation changes in unvested prior awards. Once this adjustment is made, we estimate a pay-performance elasticity of about 0.78 – almost three times as large as that reported in Table 3. Such effects are essentially non-existent for workers as their holdings of shares and options are miniscule.

Does corporate control matter for the pay-performance relationship? Aghion, Van Reenen and Zingales (2012) argue that institutional owners such as pension funds may be better at incentivizing CEOs than dispersed ownership. We split the sample of firms into quartiles based on the percentage of outstanding shares held by institutional investors in the initial years of our sample (1997/9). Firms in the lowest quartile are the *low institutional investor* firms while the remaining three quartiles are combined into the *high institutional investor* firms. When we allow for an interaction term on the performance coefficient, we find that the elasticity is higher in the firms with higher institutional investors (0.325 vs. 0.081). To explore this in more detail, we allow for asymmetric effects between a positive and negative performance, again interacted with the institutional investor variable. Firms with higher institutional ownership have a symmetric pay- performance relationship, rewarding CEOs when performance is strong but penalizing them equally as aggressively when corporate performance falters. By contrast, firms with less institutional ownership have lower pay-performance elasticities and this is because of a strong

<sup>4</sup> The results are robust to allowing for lagged terms in performance and using quasi-rents as an alternative performance metric. Complete details of the results are provided in Bell and Van Reenen (2011), which also provides extensive details on the data and definitions.

asymmetry in rewards. Positive performance is rewarded slightly more strongly than other firms, but negative performance is not punished by lower pay. The estimated coefficient on below average performance is not significantly different from zero.<sup>5</sup>

## **V. Conclusions**

Focusing on pay at the top of the UK income distribution, we show (1) much of this is due to the financial sector and (2) there is a strong link between CEO pay and performance, especially when institutional owners have a large equity share.

<sup>5</sup> Hartzell and Starks (2003) also show that the pay-performance is larger when institutional investors are more important for a large sample of US firms. They do not however explore whether this effect is driven by the asymmetry we find.

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**TABLE 1: INCOME AND WAGE INEQUALITY IN THE UK, 1998/9-2007/8**

	(1)	(2)	(3)	(4)
	Top 1% Level in Base Year	$\Delta$ Top 1%	Top 0.1% Level in Base Year	$\Delta$ Top 0.1%
<b>Share of Total Income</b>				
Total	12.5	2.9	4.4	1.7
<i>of which non-retired</i>	10.8	2.9	3.7	1.8
Investment Income	1.8	0.4	1.0	-0.1
Earned Income	9.0	2.5	2.7	1.9
<i>of which</i>				
Wage Income	6.2	1.7	1.9	1.0
Self-Employment Income	2.2	1.0	0.7	0.8
Other Earned Income	0.6	-0.2	0.1	0.1

**Notes:** Columns (1) and (3) report the share of total income accruing to the top percentile and top 0.1 percentile respectively in 1998/9. Columns (2) and (4) report the change in those shares between 1998/9 and 2007/8.

**Source:** Authors' calculations from public-use tapes of the *Survey of Personal Incomes*, HMRC.

**TABLE 2: SECTORAL DECOMPOSITION OF EARNED INCOME CHANGES FOR THE TOP PERCENTILE, 1998/9-2007/8**

	(1)	(2)	(3)	(4)
	Level in Base Year	$\Delta$ Total Earned Income	$\Delta$ Wage Income	$\Delta$ Self- Employed Income
Total	9.0	2.5	1.7	1.0
Financial Intermediation	2.1	1.5	1.1	0.4
Business Services	2.9	0.8	0.5	0.3
Manufacturing	0.9	-0.2	-0.2	0.0
Wholesale & Retail Trade	0.9	-0.1	0.0	-0.1
Health Services	0.4	0.3	0.1	0.2
Public Services & Education	0.1	0.1	0.0	0.0
Construction	0.3	0.0	0.1	0.0
Transport & Communication	0.3	0.0	-0.1	0.0
Other Industries	1.0	0.1	0.1	0.2

**Notes:** The first column reports the share of total earned income accruing to the top percentile in 1998/9. The final three columns report the change in that share between 1998/9 and 2007/8.

**Source:** Authors' calculations from public-use tapes of the *Survey of Personal Incomes*, HMRC.

**TABLE 3: PAY-PERFORMANCE ELASTICITIES ACROSS THE CORPORATE HIERARCHY**

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	CEOs	Other Board Executives	White-Collar Managers	All Other Workers
<i>Performance</i>	0.222 (0.030)	0.208 (0.025)	0.023 (0.006)	0.011 (0.004)
# Observations	4277	10464	20445	94650
# Workers	897	2338	5108	23738

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*Notes:* The coefficients are those on performance as measured by  $\ln(\text{total shareholder returns})$  in four separate regressions where the dependent variable is  $\ln(\text{total expected ex-ante pay})$ . All regressions include worker-firm match fixed-effects, the  $\ln(\text{employment})$ , a measure of the  $\ln(\text{outside wage})$  and a full set of time dummies. Standard errors in parentheses below coefficients are clustered at the firm level.

*Source:* Bell and Van Reenen (2011).

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