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Are Firms Paying More For Performance?

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Abstract
Despite its potential to raise productivity, performance-related-pay (PRP) is not widespread in market-oriented economies. Furthermore, despite secular changes conducive to its take-up, there is mixed evidence as to whether it has become more prominent over time. Ours is the first paper to present firm-level data for the Britain on both the incidence and size of bonus payments in the 2000s. We decompose the share of the total wage bill accounted for by bonuses into the shares of employment in the PRP and non-PRP sectors, the ratio of base pay between the two sectors, and the gearing of bonus payments to base pay within the PRP sector. We show that there was some growth in the share of total pay accounted for by bonuses in Britain in the mid-2000s. However this rise – and subsequent fluctuations since the onset of recession in 2008 – can be almost entirely explained by changes in the gearing of bonus to base pay within the PRP sector. There has been no substantial change in the percentage of employment accounted for by PRP firms; if anything it has fallen over the past decade. Furthermore, the movements in the gearing of bonuses to base pay in the economy at large are heavily influenced by changes in the Finance industry: a sector which accounts for a large proportion of all bonus payments in the British economy.

Key words: Performance pay, bonuses, recession, business cycle, finance
JEL: J33

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1. Introduction

Labour economists ascribe great importance to performance-related pay (PRP) because, compared to paying fixed time rate wages, it provides opportunities to increase labour productivity by inducing additional effort and attracting high ability workers (Lazear, 1986; Prendergast, 1999). There is abundant empirical evidence in support of these propositions in settings as diverse as windshield repairs (Lazear, 2000), strawberry picking (Bandiera et al., 2007), and tree planting (Shearer, 2004). Given its economic benefits one might expect the incidence of PRP to be high in market-oriented economies. Yet early studies found PRP was less pervasive than might have been anticipated if it was optimal for most firms.

It is perhaps for this reason that Lemieux, MacLeod and Parent's (LMP) (2009) seminal paper attracted so much attention. Using the Panel Study of Income Dynamics (PSID) they found the incidence of PRP jobs in the United States increased from 38% in the late 1970s to around 45% in the 1990s. More telling still, they speculated that secular changes in technology might lie behind the growth of PRP. The first of these changes is skills-biased technical change (SBTC) which has increased demand for skilled labour in industrialised economies, inducing employers to attract the most able workers by linking their rewards to performance. The second potential technical reason for the growth of PRP has been the advances in information and communication technologies which have reduced the costs of collecting and processing information about worker performance (op. cit., 3). Since these trends in SBTC and monitoring costs are likely to be pervasive across advanced market-oriented economies, albeit to varying degrees, it is conceivable that they may have led to growth in the use of PRP in recent years.

However, recent studies inspired by LMP have raised important questions about current trends, at least for the United States. First, using establishment data from the Bureau of Labor Statistics' Employer Costs for Employee Compensation (ECEC) series (which derives from the National Compensation Survey) Gittleman and Pierce (2013) show the proportion of jobs with performance pay rose in the 1990s, only to fall in the 2000s such that, by 2013, it had *declined* by about one-fifth in the period since LMD's study period. They test various possible reasons for the decline, but none have much explanatory power. However, they do show that, although the decline is apparent throughout the wage distribution and within industry and occupation, it is concentrated among lower earners. Second, a series of papers have begun to question whether there is positive selection into PRP on ability. Using the PSID used by LMD Heywood and Parent (2012) show that among men the tendency for observationally more able employees to enter PRP jobs is only apparent for whites, not blacks. Indeed they say "if anything [we find] evidence that high-ability blacks sort out of performance pay" (op. cit.: 281). In a second paper using the National Longitudinal Survey of Youth (NLSY), Heywood and Parent (2013) find skilled fathers select into performance pay jobs, whereas skilled mothers select out of

performance jobs. These findings are not consistent with the standard assumptions regarding workers sorting into performance pay jobs on ability, and suggest that any increase in PRP incidence driven by SBTC may not be as straightforward as LMP imply.

These studies raise questions about recent trends in PRP in other market-oriented economies. Cross-sectional comparative studies find low PRP incidence rates of around 10-15 per cent in many European countries, compared to around 40 per cent in the United States. Only Scandinavian countries seem to approach the PRP incidence levels of the United States (Bryson et al., 2013). But have other countries experienced any recent growth in PRP? This paper focuses on developments in Britain, a country in the lower half of international rankings in terms of the percentage of employees who said they were in receipt of PRP in the mid-2000s (Bryson et al., 2013). Evidence through to that point from the Workplace Employment Relations Survey (WERS) indicated an increase since the mid-1980s in the percentage of all workplaces in Britain using PRP schemes, though it was far from uniform across different types of PRP (Pendleton et al., 2009). However, the latest WERS, conducted in 2011, suggests that PRP has reached a plateau and that, in the case of employee share plans, usage has actually fallen (van Wanrooy et al., 2013). The emerging picture for Britain thus has some resonance with that portrayed by Gittleman and Pierce (2013) for the United States. There is little else by way of evidence on trends in PRP in Britain however. One exception is the research undertaken by Bell and Van Reenen (2010, 2013) which indicates that annual bonuses have played an important role in the growth of wage dispersion at the top of the earnings distribution, especially in Finance, a sector which is far more significant for the UK economy than it is for the US.

We contribute to this literature by mapping the incidence of PRP using firm-level data that have never been used before in this literature. These data are the Monthly Wages and Salaries Survey (MWSS) which are the basis for the Office for National Statistics' Annual Earnings Index. The MWSS is a monthly survey which employers are required to complete under statute. They are therefore high quality, high frequency data. The survey is large (circa 8,5000 observations per month) and is a census of all large firms and a rotating panel of smaller firms. We use the data to test hypotheses regarding secular and cyclical trends in PRP.

We have three main findings. First, we show that there was some growth in the share of total pay accounted for by bonuses in the mid-2000s. Second, we show that this rise – and subsequent fluctuations – can be almost entirely explained by changes in the gearing (or multiplier) that is applied to base pay in the PRP sector. In contrast, there has been no increase in the percentage of employment accounted for by PRP firms; if anything it has fallen over the past decade. Third, movements in the gearing of bonuses to base pay in the economy at large are heavily influenced by changes in the Finance industry: a sector which accounts for a large proportion of all bonus payments in the British economy. One implication is that further research is needed on how

firms – particularly in Finance but also elsewhere in the economy – decide upon the appropriate size of bonus payments for their workers from one period to the next.

The remainder of the paper is as follows. Section Two reviews the literature briefly and outlines our key hypotheses. Section Three introduces our data and presents our empirical strategy for describing and analysing the data. Section Four presents our results. Section Five concludes.

2. Literature and Hypotheses on the Changing Incidence of PRP

Both the incidence of PRP and the size of performance-related payments to employees are quite heavily contested issues in the literature. There is good economic evidence that PRP elicits greater worker effort and can improve labour productivity.[1] Thus, one might anticipate a high incidence of PRP in the economy, at least in the market-oriented sector seeking to maximise profits. Consequently, evidence suggesting that its incidence is patchy and that, even when it is present, it forms a relatively small percentage of total pay, are met with some surprise and even scepticism.

PRP is not necessarily optimal in some settings. For instance, where it is difficult to link the effort or performance of particular workers directly to output it may not make sense to resort to PRP. In some settings employers may prefer to incentivise employees using other instruments such as career progression via promotion, as is often the case in professions and parts of the public sector.[2] Nevertheless, PRP remains an option for most employers, both in terms of whether to use it and, if so, how much to use. This is the premise behind the "how good is it?" studies which rely on the identification of plausible counterfactual worlds where "like" firms or employees do or do not receive PRP. It is therefore important to understand what might determine that choice in the economy.

It is rare to observe the reasons employers give for the (non)-payment of PRP. Instead, analysts usually observe the incidence of PRP in the population of employees, firms or workplaces. The incidence of PRP, and the size of performance payments, is likely to reflect not only the preferences of employers but also worker preferences. Workers may not wish to share the employer's risk associated with firm or individual performance, preferring instead a standard base wage which does not vary with performance or, if it does vary, for the sensitivity of pay to performance to be relatively low.[3] Employers, recognising the need to trade off efficiency

1 For a review of this literature see Bryson et al., 2013.

2 As Prendergast notes (1999: 10), where a worker is paid a fixed salary in a given period "despite the fact that there is no immediate relation between pay and performance, he is likely to have incentives to exert effort because good performance will improve future contracts. Such reputational concerns imply that effort exertion can occur without explicit pay-for-performance contracts."

3 In agency theory the standard assumption is that firms are risk neutral while workers are risk averse. The choice of contract involves a trade-off between efficiency and insurance. With a fixed wage the worker is fully insured and exerts minimal effort, thus reducing efficiency. In a piece-rate contract the worker bears all the risk (no insurance), while eliciting higher effort and receiving higher earnings. Where output can vary stochastically workers will seek

against insurance, may choose to set the elasticity of pay to performance well below that which might be optimal for profit maximisation. International evidence from employee-level data for the mid-2000s indicates that the percentage of employees in receipt of PRP varies markedly across countries from around 10-15 per cent in most European countries, rising to around 40 per cent in Scandinavia and the United States (Bryson et al., 2013). No such comparative evidence exists with respect to the size of performance payments or their share of total wages.

It is against this backdrop that we test the following hypotheses.

H1: There has been a secular rise in the use of PRP in Britain

There are several reasons why one might expect PRP to have grown over time. These relate to falling worker bargaining power, greater potential benefits of PRP to firms, changes in tasks and production technology, and shifts in the composition of occupations.

As noted earlier, the declining costs of the technologies required to monitor output may encourage increased use of PRP (McGovern et al, 2007) and skills-biased technological change (SBTC) increases the demand for highly productive workers who may be attracted by PRP (LMP, 2009: 3). Bryson et al. (2013) show the likelihood of receiving PRP rises with employee job autonomy in both the United States and Europe and that, in Europe, it also rises among those performing more complex tasks. If SBTC has also resulted in a task-based polarisation of jobs in the economy, the growth of highly skilled autonomous working at the top end of the occupational distribution may also be conducive to the use of PRP.[4] For all these reasons one might expect to see growth in the use of PRP over time and, perhaps, a bigger gearing of pay to performance where PRP is used.

A variant of this hypothesis is that production processes are developing in such a way as to limit the use of traditional individual PRP, such as piece rates, with employers substituting them instead with group-based incentives that complement team-oriented working that characterises an increasing proportion of work settings. Freeman and Kleiner (2005) note the demise of individual PRP in American manufacturing, while Dube and Freeman (2010) and Kruse et al. (2010) point to substantial growth in financial participation schemes and group-based PRP. However, both group-based PRP *and* individual PRP have been rising in Europe (Bryson et al., 2013), perhaps because merit pay - based on subjective assessments of employee performance by managers and supervisors - has been substituting for other forms of individual PRP.

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compensation for higher risk when moving from a fixed-wage to a piece-rate contract. In practice, most incentive pay schemes involve the combination of a base wage, which is fixed, and a variable component (Prendergast, 2000 and 2002a and 2002b).

[4] The changing composition of the workforce accounts for almost one-third of the growth in PRP in the United States during the early 2000s, whereas all the growth in PRP in Europe occurs within-group (Bryson et al., 2013).

LMP (2009) also link the rise of PRP in the United States to the demise of trade unionism which, they suggest, has acted as a constraint on the use of PRP. Using panel data from the National Longitudinal Survey of Youth (NLSY) for the United States O'Halloran (2013) finds that, while there is a negative correlation between unions and most forms of PRP, the opposite is true for piece-rates. Britain has seen a continued decline in unionisation over the last decade (Bryson and Forth, 2011; van Wanrooy et al., 2013). If one accepts the contention that unions act as a constraint on the use of PRP, then one might anticipate their waning influence to translate into a secular rise in the use of PRP in Britain. Evidence through to 2004 indicates a rise in the workplace incidence of PRP in Britain in the previous quarter-century, although there is no clear evidence that this rise is linked to union decline (Pendleton et al., 2009).

The proposition that PRP may rise over time assumes that the amount of PRP in the economy is sub-optimal for employers, or that what was optimal in the past is no longer optimal due to changes in the costs and benefits of PRP. This may not be the case however. The dangers inherent in PRP are ever-present and well-known. They include sabotage, ratchet effects (gaming), and the exclusive focus on incentivised targets to exclusion of other desirable outcomes. Using the Bureau of Labor Statistics' Employee Costs for Employee Compensation (ECEC) data set Gittleman and Pierce (2013) show the percentage of jobs with PRP in the United States fell by 10 percentage points in the 2000s such that their incidence is now lower than it was in the period covered by LMP's (2009) PSID study. This is the first evidence that the continued growth in PRP anticipated by some analysts has not materialised.

H2: PRP is pro-cyclical

Some maintain that PRP schemes are sometimes little more than a pay relabeling exercise. For example, firms respond to tax incentives when setting up profit-related pay and share ownership plans because they are treated as tax-efficient payment methods. This observation may help explain international differences in the incidence of financial participation schemes (Bryson et al., 2013) and the otherwise hard-to-explain changes in the use of share ownership plans and profit-related pay in Britain (Pendleton et al., 2009). Nevertheless, in most instances it seems reasonable to assume that PRP schemes are genuine efforts by employers to link their employees' pay to their own performance or that of the firm, whether as an incentive, or as a means of sharing the risks (or profits) arising from fluctuations in market conditions. Blanchflower et al (1996) provide evidence that wages change in response to sectoral profitability. Therefore we should expect pro-cyclical movement in payments for performance because, on average, one expects individual firms' fortunes to rise and fall with those of the rest of the economy. Fixed base wages may also adjust to macro-economic conditions, but we would expect them to be much less responsive to economic conditions than PRP, and any adjustment we do observe is likely to be less pronounced than the adjustment in performance payments.

Among employees in general there is evidence for Britain that real earnings have become more sensitive to unemployment since the early 2000s (Gregg and Machin, 2012). Although the authors do not investigate how much of this sensitivity is associated with the incidence and size of PRP, the magnitude of the change is such that much of it is likely due to the increased sensitivity of base pay.[5] Empirical support for sensitivity of pay-to-performance is found in the executive pay literature where most or all of the adjustment in compensation comes through performance bonuses and related options. However, Bell and Van Reenen (2011) find non-executive pay is much less sensitive to firm performance. They argue this is because "only senior executives have a large enough share of pay in bonuses to generate a sizeable overall effect on pay" (p. 1) while base pay remains relatively insensitive to firm performance.

Whether firms' propensity to use PRP schemes is affected by the business cycle is less certain, a priori. It will depend, in part, on the bargaining power of workers and firms. Employers may be more eager to share income risks with workers in economic downturns through the promotion of PRP, whereas workers may prefer PRP in economic upswings when there are larger rents to share. Industrial relations scholars point to the inertia in payment systems and the transaction costs associated with changing schemes, considerations which imply movement in and out of PRP is likely to be less responsive to the business cycle than we might otherwise anticipate. Using a very broad definition of performance pay, Gittleman and Pierce (2012) suggest that the steep decline in the number of hours compensated with PRP in the United States since the early 2000s is most likely due to "cyclical factors related to the Great Recession".

H3: Explanations for trends in performance-related pay in Britain will be dominated by what happens in the Finance Sector

Performance-related pay is more common in some sectors and occupations than others due to the role employees perform in generating sales or increasing production. For example, piece rate work is often associated with production line manufacturing while commission on sales is common in Retail. The British economy has a larger Finance Sector than most developed economies due to the role of the City of London as a centre for listing and trading public listed company shares and for trading and investment more generally. Bonuses are an important method by which firms recruit, retain and motivate bankers, traders and other corporate executives. Some have identified bonus payments to bankers as an important component of recent growth in wage dispersion in Britain (Bell and Van Reenen, 2013), while others have speculated whether any increase in the bonus gearing of payments to traders may have induced risky behaviours which may have contributed to the recent financial crisis. Given the size of the Finance Sector in Britain and the traditionally important role of bonuses in the sector we

[5] Van Wanrooy et al. (2013) note a high incidence of pay freezes in the public and private sectors since the onset of recession which is consistent with greater cyclicality in earnings more generally.

hypothesise that bonus activity in the Finance Sector may have played an important role in explaining economy-level movements in bonuses in Britain.

3. Data

The results presented in Section Four are based on analyses of the Monthly Wages and Salaries Survey (MWSS). The MWSS is conducted each month by the Office for National Statistics and provides data for around 8,500 enterprises in Britain. The sample of enterprises (strictly, reporting units) is drawn from the Inter-Departmental Business Register according to a variable probability design. A census is conducted among enterprises with 1,000 or more employees; the sampling fractions then decline through three further strata (500-999 employees; 100-499 employees; and 20-99 employees). Enterprises with fewer than 20 employees are not included in the survey. The survey covers all industries. Our data cover the period January 2000 to March 2013.

The survey contains data on total gross pay for the enterprise in the survey month, as well the amount of bonus/commission included in total gross pay. Separate totals are collected for all weekly-paid and all monthly-paid employees.[6] Bonuses are measured by the survey in the month of payment, rather than during the period over which they are earned. All bonuses are included with respondents being instructed to include: bonuses; commission; performance pay; annual profit from profit-related pay schemes; long-service awards; and – for sporting professions – appearance money. Changes in the way the data were collected mean there is a clear likelihood of under-reporting before the year 2000, so we begin our analysis of MWSS at this point.

Participation in the survey is compulsory and so a high response rate is achieved (around 85 per cent each month). Enterprises with 1,000 or more employees thus typically appear in the survey dataset each month. Enterprises which enter the sample with 20-999 employees are retained for up to five years before being rotated out. It is therefore possible to observe many individual firms at monthly intervals over a considerable period of time, and so to observe changes in the size of bonus payments within firms, both within and across years.

Whilst our analysis is based on the MWSS microdata provided via the UK' Secure Data Service, we can confirm that we are able to use these microdata to replicate ONS' published statistics for Average Weekly Earnings (for which MWSS is the source).

In regression analyses we link the MWSS reporting units to their associated enterprise records in the Business Structure Database (BSD) as a means of extending the list of firm characteristics, which is limited in MWSS. This linkage is feasible for around 95 per cent of all MWSS records, and at least 85 per cent in each year.

[6] For weekly-paid employees, the survey asks for total pay paid to employees in the last week of the month.

4. Results

Figure 1 presents data from the MWSS showing the average real wage bill per employee in each month from January 2000 through to March 2013 for the whole economy. The chart shows separate series which include and exclude bonus payments. The figures are in pounds per week at 2012 prices. The spikes in bonus payments capture the within-year variation in bonus pay due to the timing of end-of-year bonuses paid between December and March.

Base pay rises gently until the onset of recession in July 2008 when it flattens and then begins to fall. Total pay follows a similar pattern, but the rise in total pay steepens between 2005 and 2008, with bonus pay appearing to constitute a rising percentage of total pay in this period. The fall in total pay in 2008/9 also seems sharper than that seen in base pay. Nonetheless, whereas base pay continues to be subdued in 2010, bonus pay bounces back – albeit not to its pre-recession peak. Figure 2 charts the share of total pay that is attributed to bonus payments and confirms that this share rose in the mid 2000s (particularly between 2005 and 2008). The share fell back in 2009 – although only to the level seen in the first half of the decade – before regaining much of its ground in 2010. After this point, end-of-year bonuses appear to fall slightly, whilst it appears that those paid at other points in the year may have risen.

The broad patterns are thus evident from Figures 1 and 2, but the exact scale and timing of the changes is difficult to discern from the charts because of the seasonality of bonus payments. To show these movements more clearly, we aggregate the monthly data into the two bonus seasons namely the "high season" which runs from December to March and the "low season" which runs from November to April. The distinction between the two seasons is clearly evident in Figure 3. The red dots show the mean percentage of pay attributed to bonuses in each month for all pooled years: this is clearly highest between December and March, on average. The whiskers show the spread of mean payments across years: it is apparent that February bonus payments vary most over the years, followed closely by January and March. There is very little variance in the size of bonus payments across years in the "low season".

To show how the share of the wage bill accounted for by bonuses varies year-on-year, Figure 4 reprises Figure 2 but splits each year into its "high" season and "low" season. We see a steady increase in the percentage of pay accounted for by bonuses in both seasons from 2003 until 2007/8, during a period of strong economic growth in Britain. Both series fall after the onset of recession, although both also bounce back to some extent – high season bonuses doing so in

2010 and low season bonuses following in 2011.[7] There is then some retrenchment in 'high season' bonuses between 2011 and 2013, although this is not (yet) apparent in the low season.

Figure 5 shows the growth rate from the previous like-season (e.g. the first bar shows that bonus share in the high season of 2001 was proportionally 14 per cent larger than the bonus share in the high season of 2000). The chart shows that the growth rates in the mid-2000s were similar irrespective of the season; in other words, although the absolute growth in the bonus share was larger within the 'high season' series (see Figure 4), 'low season' bonuses grew proportionately to a similar degree over this period. The chart also confirms that there has been no consistent pattern over the last three years of our series.

These movements in the bonus share are intriguing and, intuitively, we can expect that they may arise through a number of different mechanisms. One possible explanation for the growth in the mid-2000s is that there was an expansion in the share of all firms using PRP, with a consequent decline in the share of firms paying only fixed wages. Another possibility, which might intuitively explain some of the cyclicality in the bonus share, is that there have been changes in the size of bonuses paid out by PRP firms. We can therefore better understand the causes of movements in bonus payments if we decompose the bonus share into its constituent components. In Appendix A, we show that the aggregate bonus share in the economy (the share of all wages attributed to bonus payments) is a function of:

(a) The ratio of employment in bonus paying firms to employment in non-bonus-paying firms (the employment premium in favour of bonus-paying firms) (EP_t)

(b) The ratio of average base pay per employee in bonus-paying firms to average base pay in non-bonus-paying firms (the base pay premium) (RP_t), and

(c) the gearing within bonus-paying firms (the multiplier that bonus-paying firms notionally apply to base pay) (G_t^B).

Formally:

$$B_t = \frac{G_t^B.RP_t.EP_t}{G_t^B.RP_t.EP_t + RP_t.EP_t + 1} \qquad (1)$$

For instance, if the employment premium is 1.10 (bonus-paying firms employ 52.5% of all employees in the economy), the pay premium is 1.05 (average base wages in bonus-paying firms are 5% higher than in non bonus-paying firms), and bonus-paying firms pay out bonuses to the

[7] The full set of values is shown in the final two columns of Table 1 in Appendix B. The chart does not show a 'low season' data point for 2013 we have chosen to end our series in March 2013. MWSS data are available through to Jun 2013, but this would give us a low season containing only three of the eight relevant months.

value of 10% of base pay (a gearing of 0.10, which implies that total pay is 1.10 times the value of base pay), then the overall share of wages attributable to bonus payments is 5.1%.

Tracking the movement in each of these three series over time indicates whether one component has moved more than another over the period in question; Figure 6 shows the monthly trend over our period of observation. It is apparent that the most substantial change - both from month to month and over time - is in the gearing of bonus pay to base pay in PRP firms. The ratio of base pay in PRP and non-PRP firms is flat in comparison. The employment ratio is also relatively flat overall, but drifting slowly downwards. The suggestion here is that firms' propensity to pay PRP has, if anything, been declining, but that movements in the gearing of bonus pay to base pay are more important in understanding changes in the economic importance of performance pay over time.

The broad changes are again easier to discern if the monthly data are aggregated into bonus seasons. Figures 7 and 8 undertake this aggregation and also index each of the three series on the year 2000 (i.e. 2000 = 100).[8] Changes in the gearing within PRP firms are the dominant feature of both the "high" and "low" season charts. The actual values underlying Figures 7 and 8 are shown in Appendix B, Table 1.

We can further simplify the exposition by observing that the employment premium in favour of bonus-paying firms at time *t* (EP_t) and the pay premium in favour of bonus-paying firms (RP_t), together, indicate the share of all base wages in the economy that are paid out by bonus-paying firms (as opposed to non-bonus-paying firms). Formally, this 'base wage share' is

$$S_t = \frac{RP_t.EP_t}{RP_t.EP_t+1} \qquad (2)$$

We can then show that the share of all wages attributable to bonuses at time *t* may be expressed as:

$$B_t = \frac{G_t^B.S_t}{G_t^B.S_t+1} \qquad (3)$$

We use expression (3) as the basis for a shift-share analysis in order to show the influence of changes in G^B and *S* in explaining the total share of the wage bill accounted for by bonuses (*B*). This analysis is presented in Table 1 and confirms that it is the change in gearing - that is, the bonus multiplier applied to base pay within the PRP sector - that explains most of the changing contribution of bonus pay to total pay across the years covered by our sample period. The fourth row in Part A of the table shows, for example, that the bonus share (*B*) fell by 4.38 percentage points between the high season of 2007 and the high season of 2009, and that 4.29 percentage points of this fall could be attributed to the decline in the gearing (*G*) from 27.3% in 2007 to

[8] Note that the high season for 2000 is not a full season because it omits December 1999.

17.5% in 2009; the fall in PRP firms' share of base wages (*S*) from 55.1% to 54.5% could account for only 0.13 percentage points of the overall decline in *B*. Indeed, in each row of Table 1 (Parts A and B) we see that changes in the relative size of the PRP sector do not contribute very much when compared with the influence of changes in the gearing in PRP firms. This is the case in both the "high" and "low" seasons.

To see whether compositional changes in the firm population - such as a shift in the sectoral profile of employment - can account for changes in the gearing of bonuses to base pay, the employment share of PRP firms, and the bonus share in all pay, we switch to regression models. The regressions focus on *S*, *G* and *B*. For each dependent variable, Table 2 first presents estimates for the full sample used in all figures presented above, in which the only regressors are the year dummies (see columns 1, 4 and 7). Table 2 then goes on to present estimates from the BSD-linked sample without controls and with the removal of all imputed values in MWSS (columns 2, 5 and 8); these estimates provide the benchmark for a more complete specification - presented in columns 3, 6 and 9 - in which a range of firm characteristics taken from MWSS and the BSD are added in order to strip the year dummies of the effects of compositional change.[9]

The reference year for this examination of time trends is 2003. In the "high" season there is a statistically significant increase of about 5 percentage points in the total pay bill accounted for by bonuses between 2003 and 2008 (Table 2, column 7). Just under half of this is accounted for by compositional change in firms (last column).[10] The bonus share becomes negative and statistically significant (relative to 2003) in 2009, in response to the recession, but recovers in 2010. All of this movement is accounted for by changes in gearing: there is no trend in the employment share of PRP firms, that is until 2011, when it falls to around 4 percentage points below the level seen in 2003. Similar trends are apparent in the "low" season, though the magnitudes are smaller.

We infer from the analysis above that there was a growth in the economic importance of PRP in Britain in the mid-2000s. However, this arose through increases in the size of bonus payments relative to base pay in PRP firms, rather than a growth in the proportion of all firms using PRP. Furthermore, it ceased, at least temporarily, with the 2008 recession, indicating pro-cyclicality in bonus payments which exceeded any pro-cyclicality in base pay. There was no substantial change

[9] The aforementioned imputations are undertaken by the ONS, which uses real and imputed values in its construction of its measure of Average Weekly Earnings (ONS, 2011). The controls in our regression are industry sector; base pay per employee (quartiles); foreign-ownership; legal status; age; organisation size - employment; organisation size - number of sites; region.

[10] This seems to be largely to do with removing the influence of industry. Finance accounts for a slightly larger share of wage-weighted employment between 2003 and 2007 and, although there are more sizeable shifts elsewhere (e.g. decline of manufacturing, growth of the education and health sectors), these are much less important than Finance in terms of bonus paying. A small increase in the size of the Finance sector is sufficient to make a sizeable impact on the overall trend.

in the size of the PRP sector; indeed it may even have declined in the final 2-3 years of our sample, although we are cautious in stating this too boldly because the decline is only statistically significant in our BSD-linked sample.

Although the employment series in Figures 7 and 8 and in Table 2 look broadly flat during the period in the mid-2000s when the bonus share was growing, it is still possible that this growth does not arise from changes in firm behaviour and that, instead, there was significant churning in the population (i.e. entry and exit from the PRP sector) that brought changes in both the gearing and the bonus share. We find that this is not the case: changes in firm behaviour are important. Figure 9 shows the share of base wages in the 2007 high and low seasons according to the firm's situation in 2003. It shows that a large proportion of all firms paying PRP in 2007 had also paid PRP in 2003 (although there is also a reasonably large share for whom we cannot observe their PRP status in 2003, as they were not in the sample at that time). Table 3 then goes on to show that firms paying PRP in both periods (2003 and 2007) saw the same increase in gearing as the population at large. Put simply, the aggregate changes were not merely the product of switching or churning; instead changes in the gearing of bonuses to base pay within individual firms were economically the more important feature of the PRP landscape over this period.

So far our analyses have been conducted for the whole economy but, as noted earlier, the Finance Sector has traditionally played an important role in bonus payments in Britain. The finance sector is important in any discussion of performance pay because its firms are the most likely of those in any sector to pay bonuses and those bonuses tend to be very large. Figure 10a shows that firms in the Finance sector are more likely to pay bonuses than firms in other parts of the economy (PRP firms account for around 80 per cent of all base wages in the Finance sector, compared with around 65 per cent in Other Private Services). Figure 10b then shows that changes in the gearing of PRP in Finance are much more substantial than the changes seen elsewhere. In consequence, the bonus share is both higher and more variable in Finance than it is in other parts of the economy (Figure 10c).

Table 4 shows the economic significance of the Finance sector in respect of bonuses, by computing the share of all bonus pay – and the share of all base pay - that was paid out to Finance sector workers in our sample period. The share of all bonus pay going to workers in the Finance sector is around two-fifths, but in contrast, they account for only 7% of base pay. Finance is the dominant player in the aggregate picture on bonuses in the British economy.

This raises a question about the size and direction of movements in the gearing and the bonus share across the economy, once the dominant influence of Finance is removed. Figures 11-13 show the trends, which are similar to that seen for the Whole Economy, but the variations are more subtle (and of course the levels are considerably lower). Table 5 presents the regression results for the "high" and "low" seasons respectively. It is apparent that the trends are much less

dramatic than for the whole economy. There is still some growth in bonus pay, but it is considerably smaller in absolute terms. Again, however, it is changes in the gearing that are critical.

What Table 5 and Figures 11-13 highlight is that much of the dramatic change in the bonus share seen in the economy at large can be attributed to movements in the gearing ratio of bonuses to base pay within the Finance sector. Outside the Finance sector, the changes have been considerably more modest. But even here, the gearing (the multiplier that PRP firms opt to apply to the fixed part of their wage bill when deciding on the total amount of remuneration in the firm) that is the key factor. And whilst the variations are less important economically once one moves outside of Finance, the broad trends are nonetheless similar.

5. Conclusion

Despite its potential to raise productivity, performance-related-pay (PRP) is not widespread in market-oriented economies. Furthermore, despite secular changes conducive to its take-up, there is mixed evidence as to whether it has become more prominent over time. Ours is the first paper to present firm-level data for the Britain on both the incidence and size of bonus payments in the 2000s. We decompose the share of the total wage bill accounted for by bonuses into the shares of employment in the PRP and non-PRP sectors, the ratio of base pay between the two sectors, and the gearing of bonus payments to base pay within the PRP sector. We show that there was some growth in the share of total pay accounted for by bonuses in Britain in the mid-2000s. However this rise – and subsequent fluctuations since the onset of recession in 2008 – can be almost entirely explained by changes in the gearing of bonus to base pay within the PRP sector. There has been no substantial change in the percentage of employment accounted for by PRP firms; if anything it has fallen over the past decade. Furthermore, the movements in the gearing of bonuses to base pay in the economy at large are heavily influenced by changes in the Finance industry: a sector which accounts for a large proportion of all bonus payments in the British economy. One implication is that further research is needed on how firms – particularly in Finance but also elsewhere in the economy – decide upon the appropriate size of bonus payments for their workers from one period to the next.

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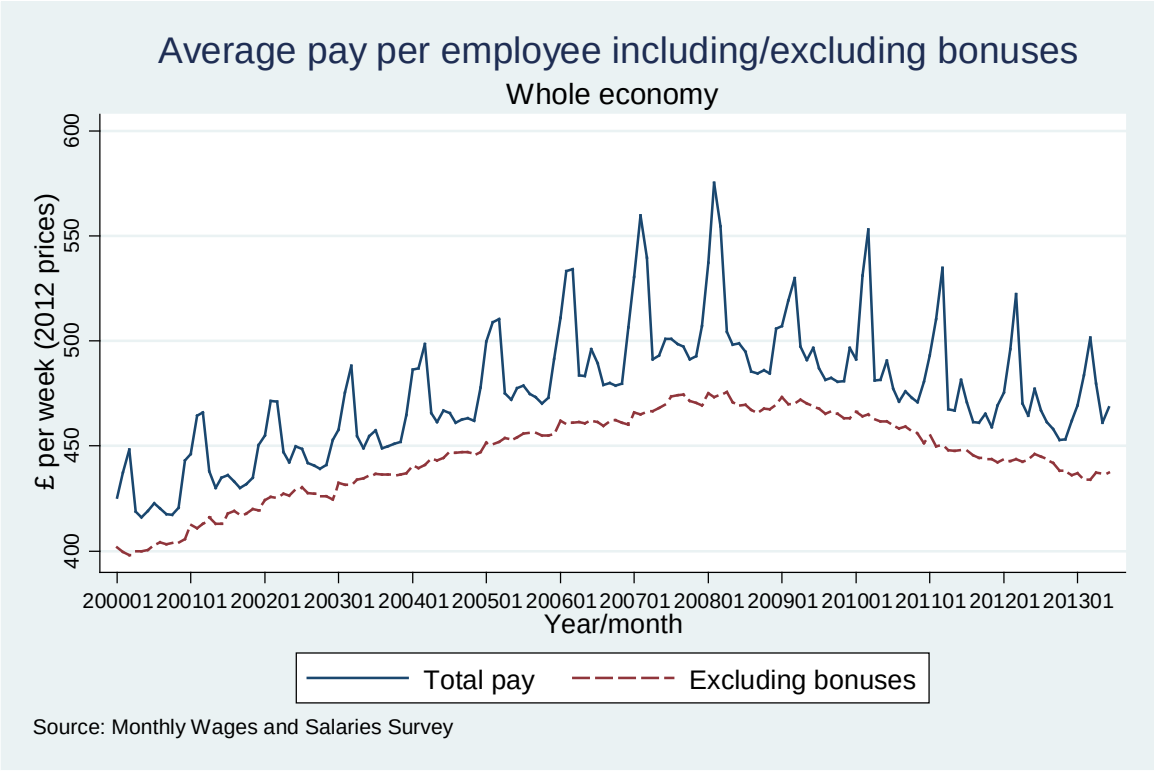
Figure 1: Total Pay With And Without Bonuses, Whole Economy



Source: Monthly Wages and Salaries Survey

Figure 2: Bonuses As A Percentage Of The Total Weekly Pay Bill, Whole Economy

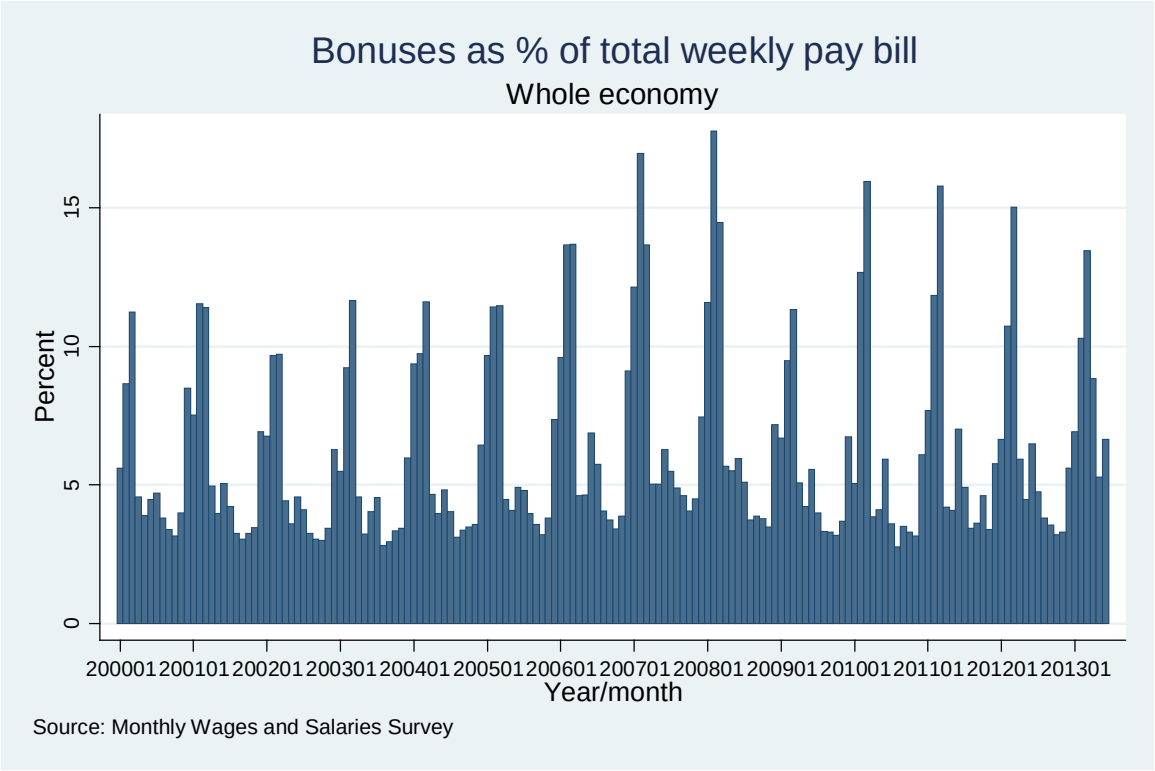


Figure 3: Bonuses Paid in Low and High Season as a Percentage of Total Weekly Pay Bill, Whole Economy

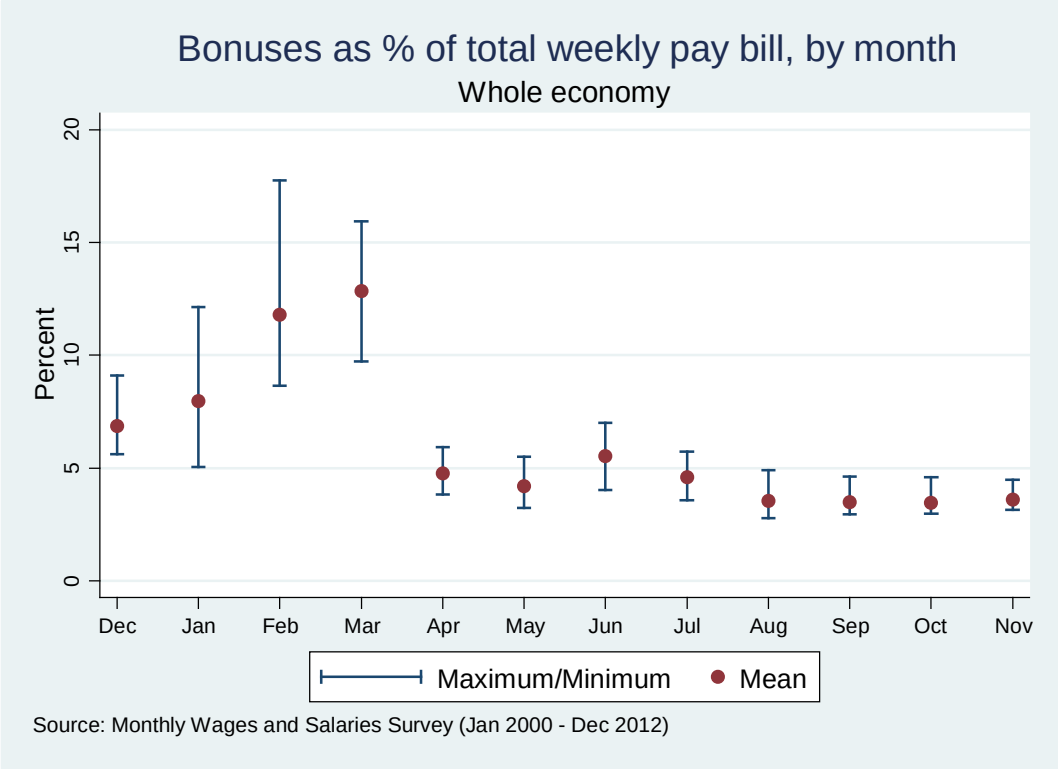


Figure 4: Share of pay bill in bonuses in "high" and "low" bonus seasons, Whole Economy

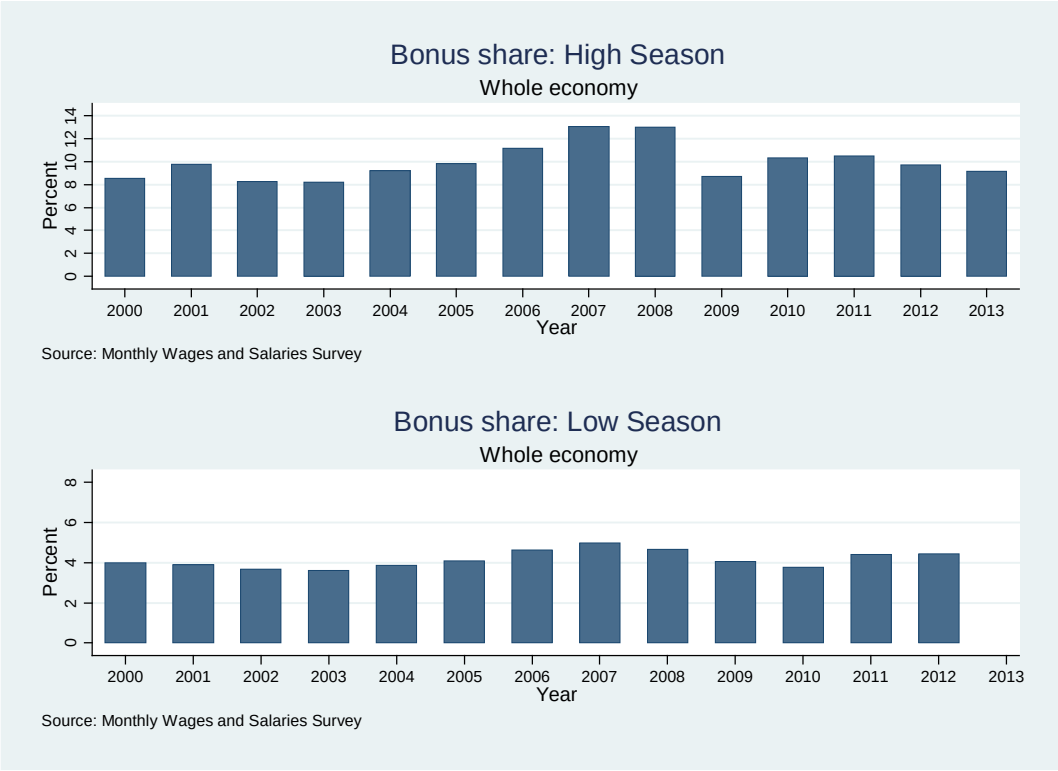


Figure 5: Growth rate in bonuses compared to previous season, whole economy

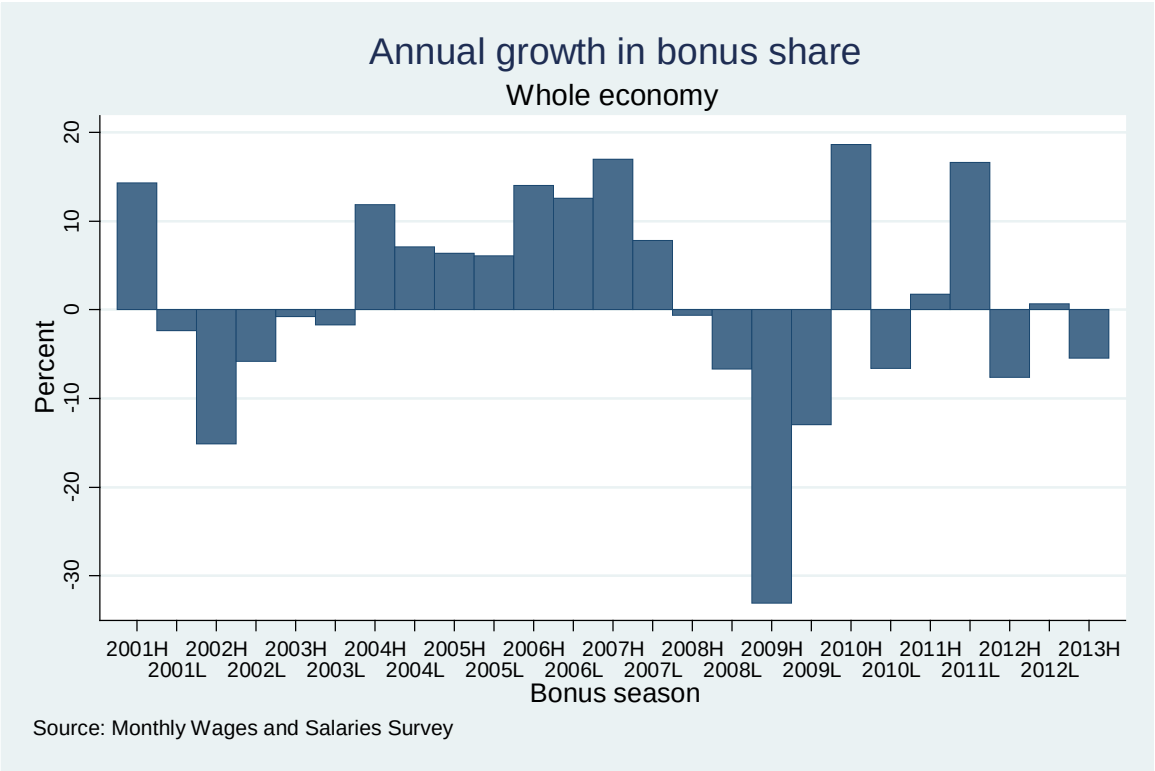
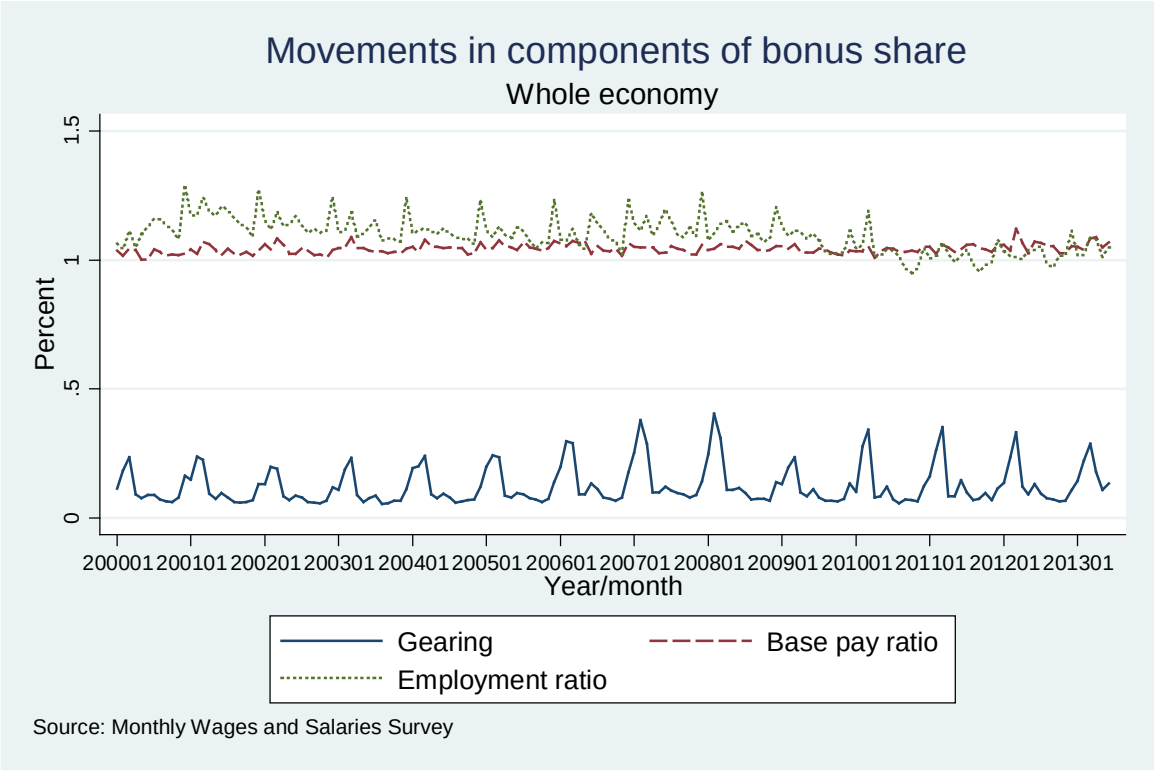
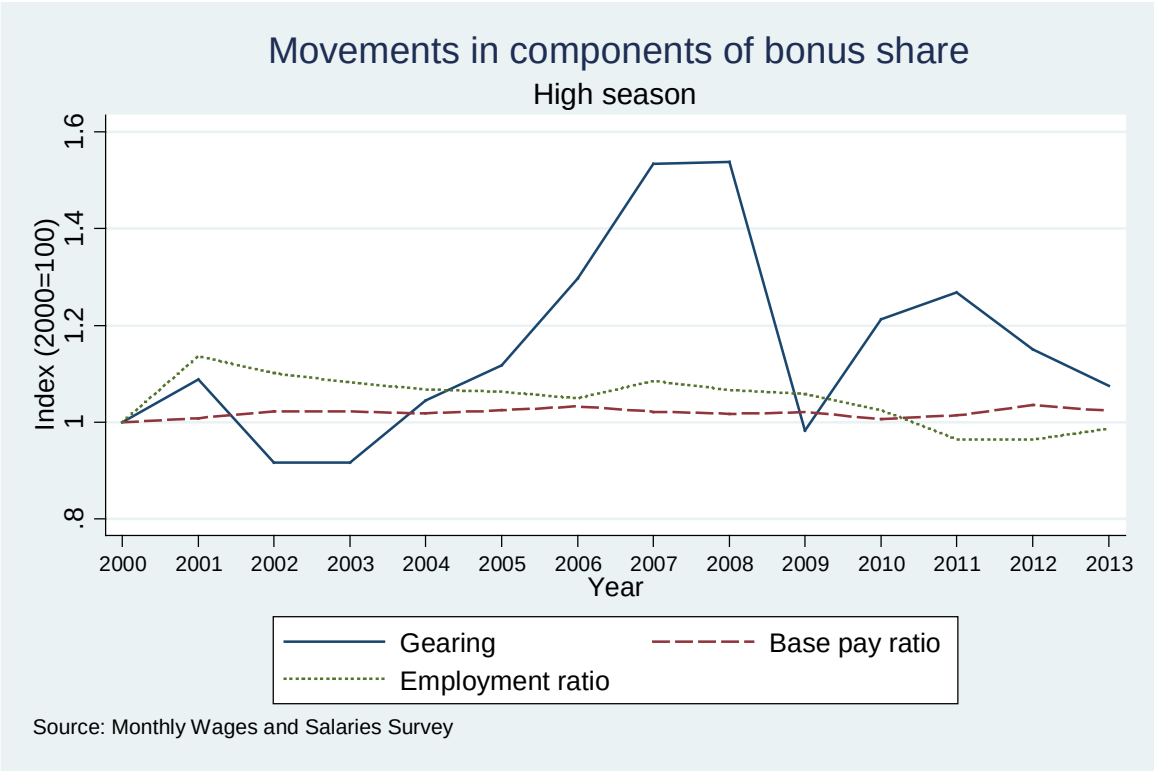


Figure 6: Decomposition of Change in Proportion of Wage Bill Accounted for by Bonuses



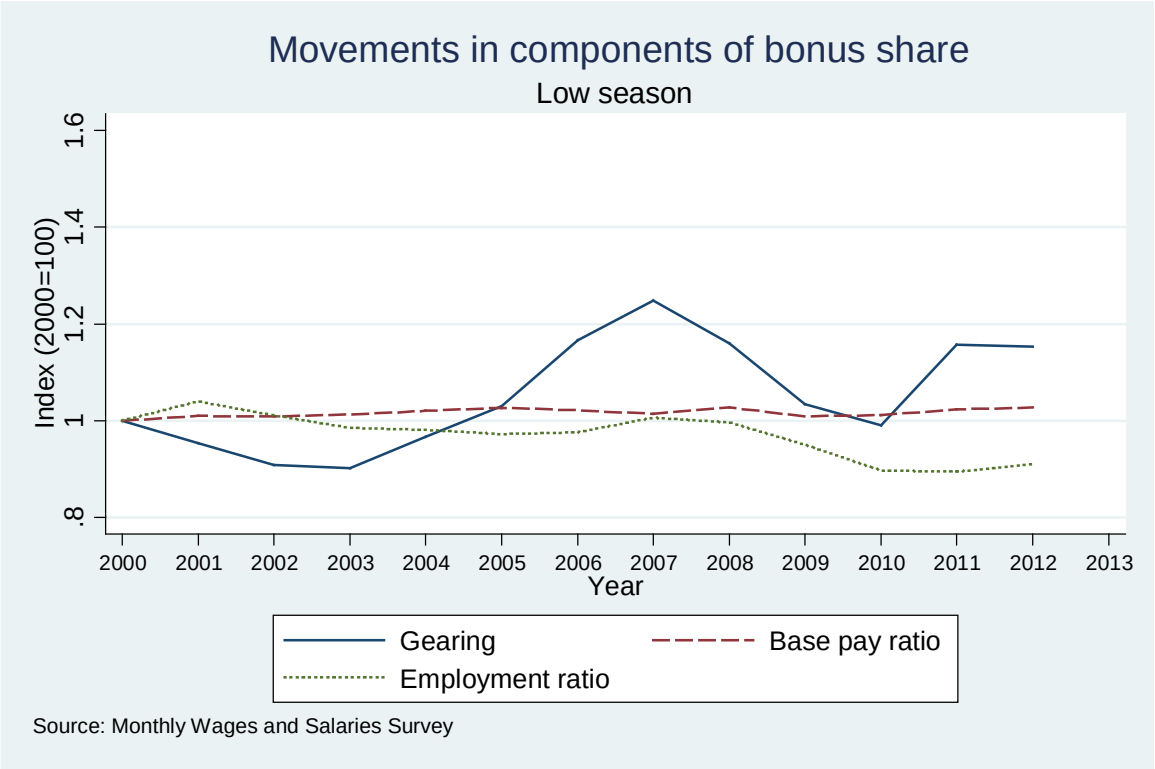
Source: Monthly Wages and Salaries Survey

Figure 7: Movement in Components Explaining Change in Bonus Payments as Percentage of Total Wage Bill During "High" Season (index where 2000=100)



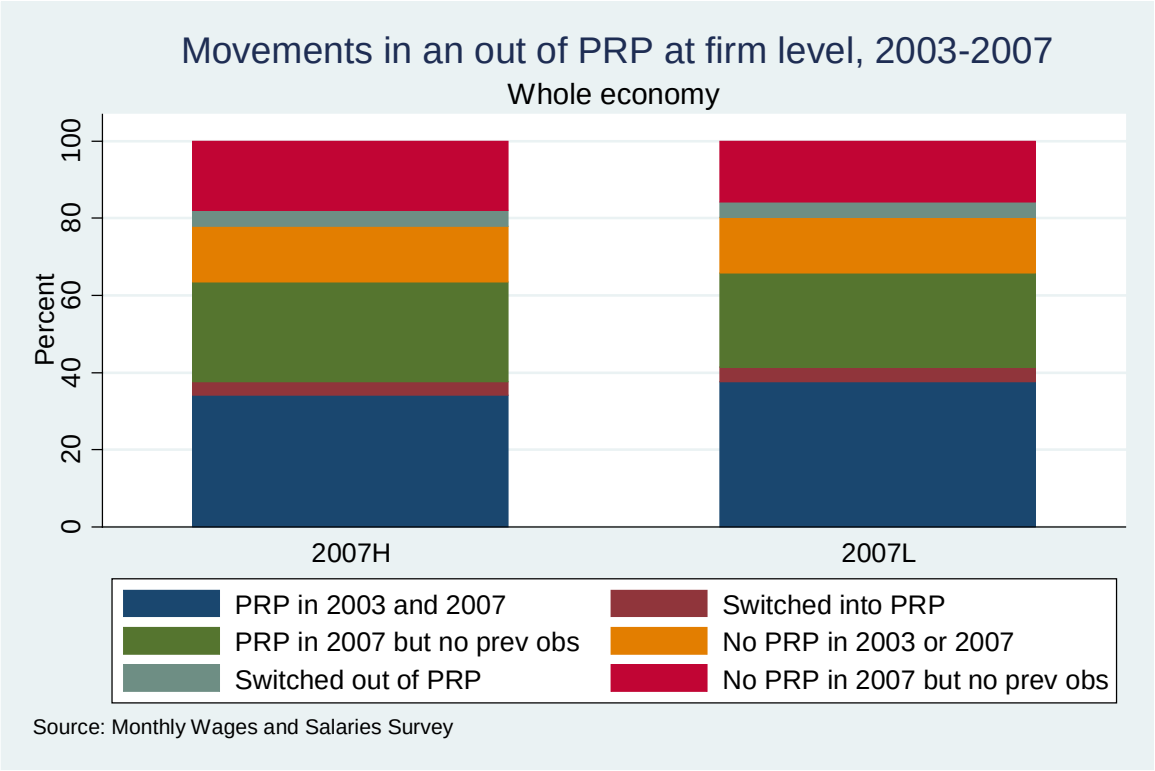
Source: Monthly Wages and Salaries Survey

Figure 8: Movement in Components Explaining Change in Bonus Payments as Percentage of Total Wage Bill During "Low" Season (index where 2000=100)



Source: Monthly Wages and Salaries Survey

Figure 9: Movements in and out of PRP at firm level, 2003-2007



Source: Monthly Wages and Salaries Survey

Figure 10a: Share of base pay for firms making bonus payments, by sector and year

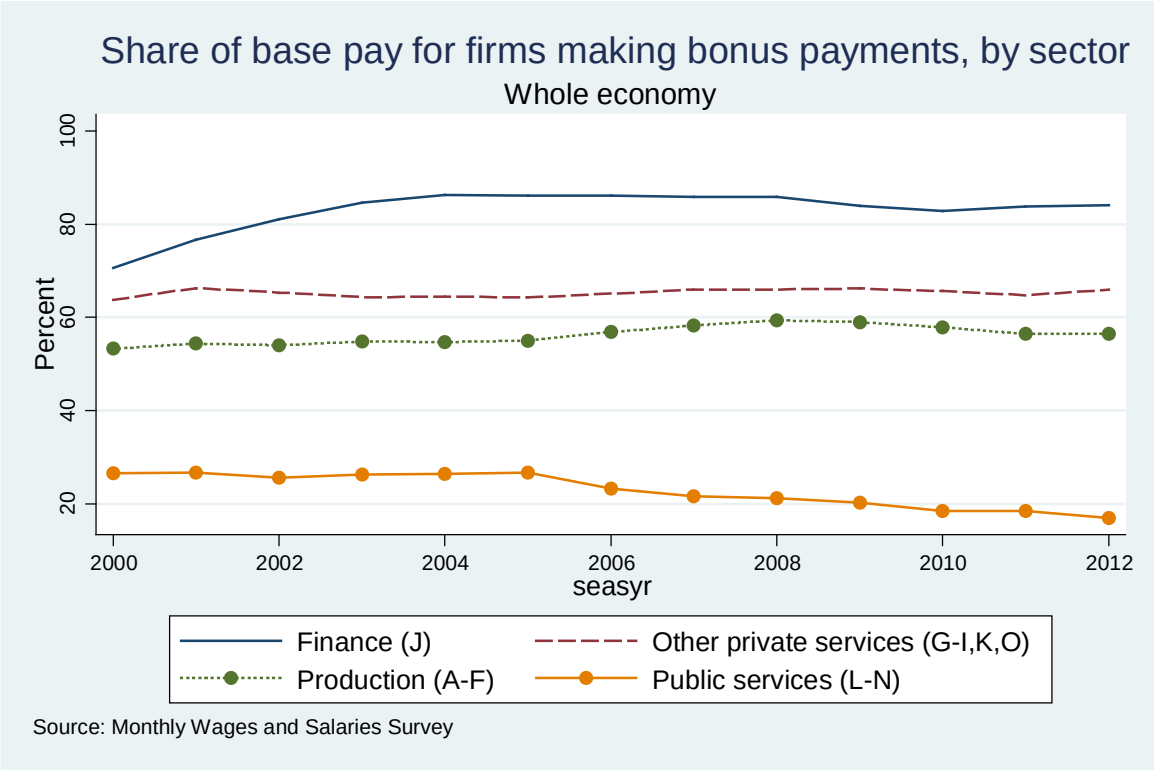


Figure 10b: Gearing of bonus pay to base pay, by sector and year

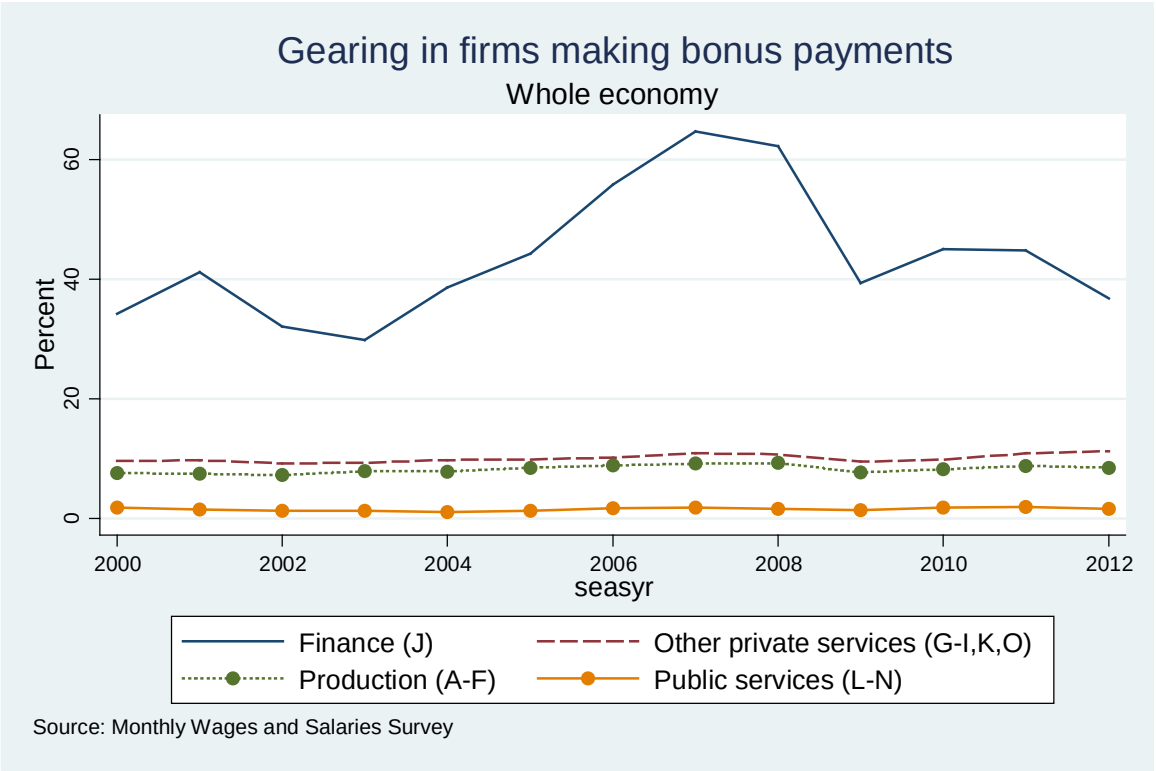
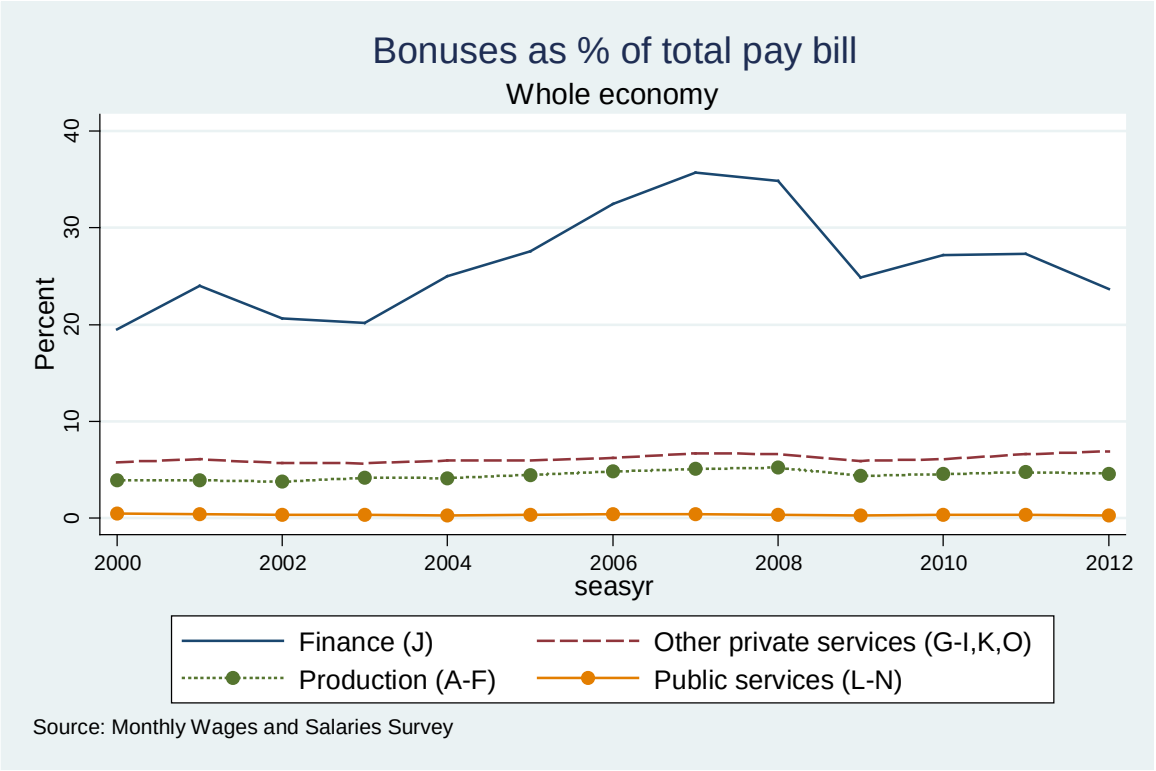


Figure 10c: Bonuses as share of pay bill, by sector and year



Source: Monthly Wages and Salaries Survey

Figure11: Share of pay bill in bonuses in "high" and "low" bonus seasons, Whole Economy minus Finance

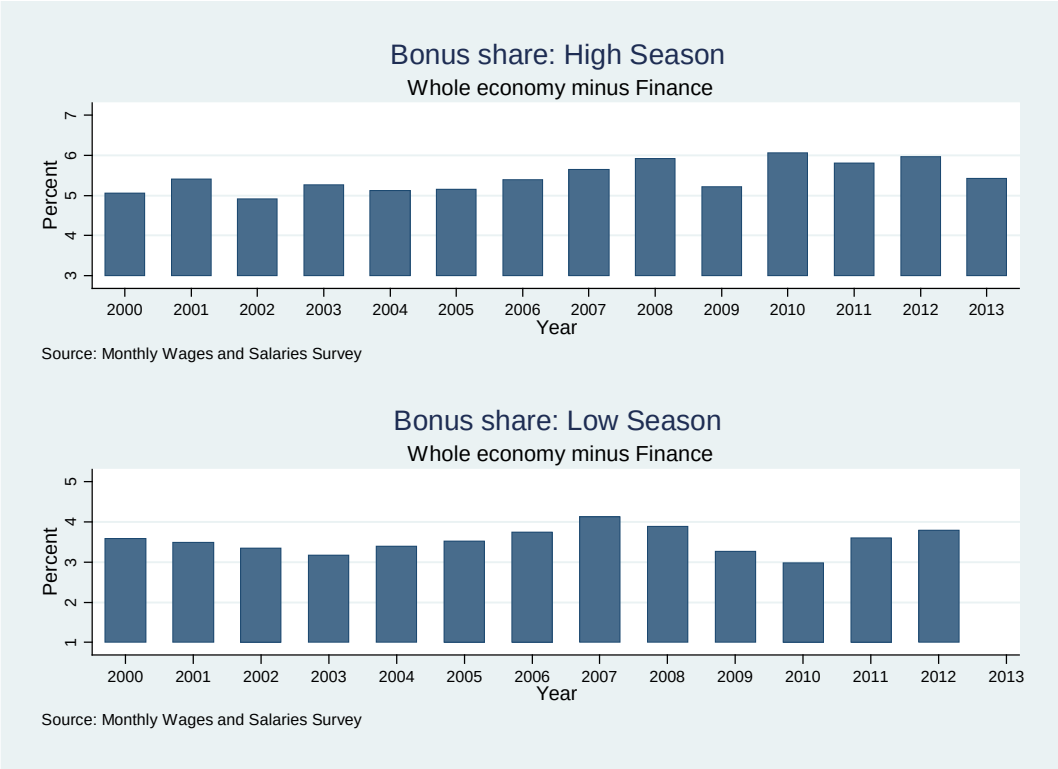
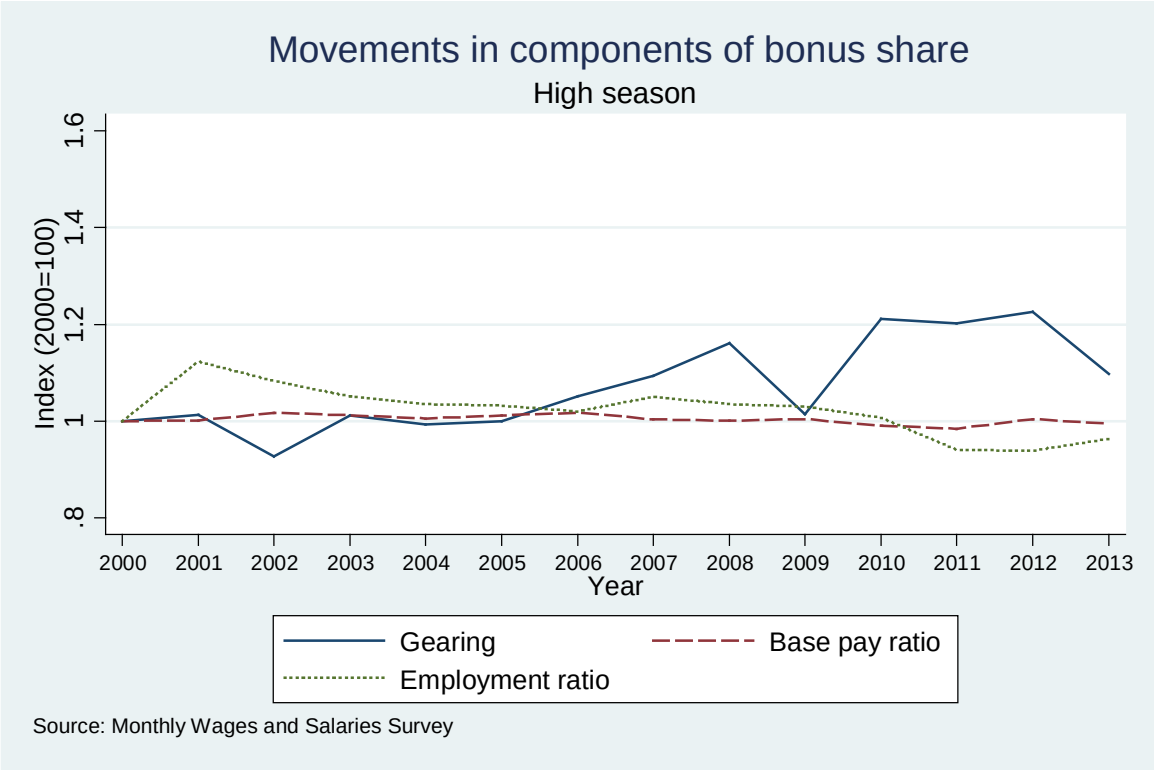
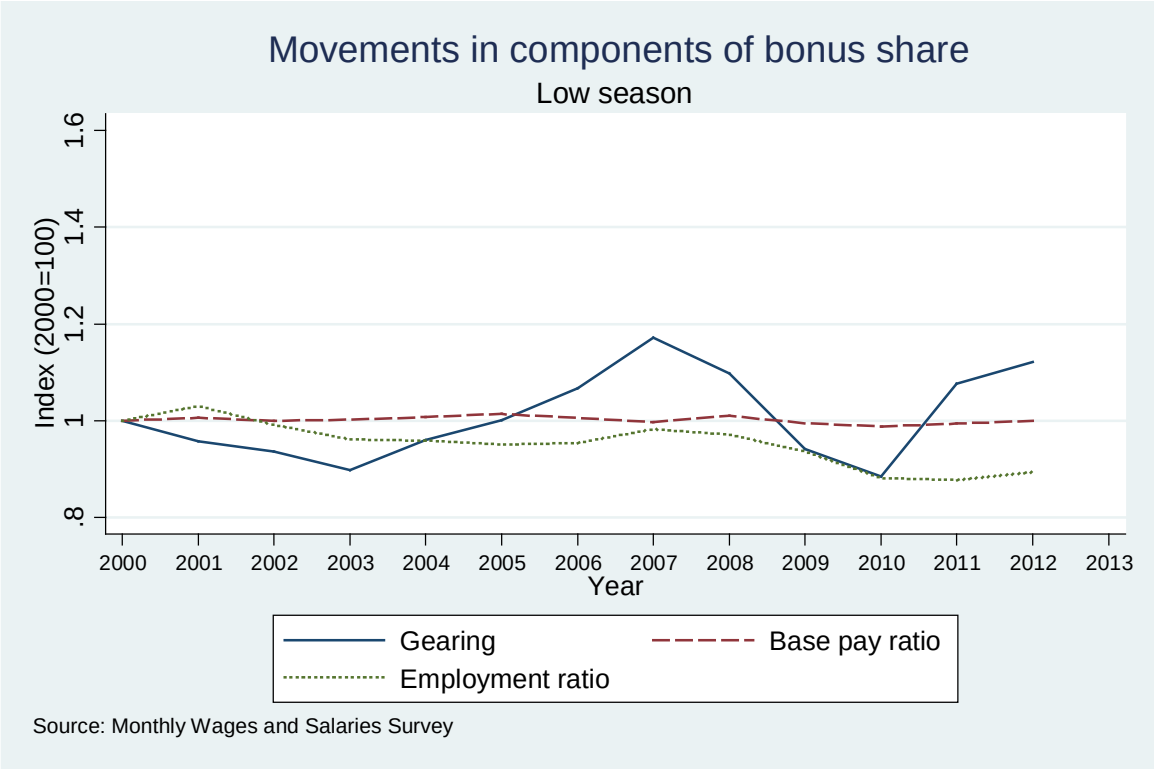


Figure 12: Movement in Components Explaining Change in Bonus Payments as Percentage of Total Wage Bill During "High" Season (index where 2000=100), Whole Economy minus Finance



Source: Monthly Wages and Salaries Survey

Figure 13: Movement in Components Explaining Change in Bonus Payments as Percentage of Total Wage Bill During "Low" Season (index where 2000=100), Whole Economy minus Finance



Source: Monthly Wages and Salaries Survey

Table 1: Shift Share Analysis Accounting for Change in Proportion of all Pay Accounted for by Bonuses, selected years

Part A: High season

		Gearing (G)	Share of base wages (S)	Bonus share (B)	Change in B	Part due to change in G	Part due to change in S	Residual
Start	2000	17.8%	52.6%	8.6%				
Trough	2003	16.3%	55.1%	8.2%	-0.32	-0.66	0.37	0.03
Peak	2007	27.3%	55.1%	13.1%	4.84	4.83	0.01	0.00
Trough	2009	17.5%	54.5%	8.7%	-4.38	-4.29	-0.13	-0.04
Peak	2011	22.6%	52.0%	10.5%	1.80	2.25	-0.36	0.08
End	2013	19.1%	52.8%	9.2%	-1.32	-1.45	0.14	0.02

Source: Monthly Wages and Salaries Survey

Part B: Low season

		Gearing (G)	Share of base wages (S)	Bonus share (B)	Change in B	Part due to change in G	Part due to change in S	Residual
Start	2000	7.8%	53.3%	4.0%				
Trough	2003	7.0%	53.2%	3.6%	-0.38	-0.38	0.00	0.00
Peak	2007	9.8%	53.8%	5.0%	1.37	1.32	0.04	-0.01
Trough	2010	7.7%	50.8%	3.8%	-1.20	-0.99	-0.26	-0.05
End	2012	9.0%	51.6%	4.4%	0.66	0.60	0.05	-0.01

Source: Monthly Wages and Salaries Survey

Table 2: Regressions for Employment Share, Gearing and Bonus Share in "High" and "Low" Seasons, Whole Economy

High season	1	2	3	4	5	6	7	8	9
	Base wage share	**Base wage share**	**Base wage share**	**Gearing**	**Gearing**	**Gearing**	**Bonus share**	**Bonus share**	**Bonus share**
Sample:	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*
Controls:	*No*	*No*	*Yes*	*No*	*No*	*Yes*	*No*	*No*	*Yes*
2000	-0.025*	-0.011	0.003	0.015	-0.002	0.004	0.003	-0.002	-0.003
	[-2.22]	[-0.71]	[0.21]	[1.03]	[-0.11]	[0.21]	[0.50]	[-0.33]	[-0.60]
2001	0.009	0.014	0.014	0.031*	0.010	0.009	0.015*	0.006	0.000
	[1.21]	[1.41]	[1.46]	[2.20]	[0.73]	[0.53]	[2.41]	[1.05]	[-0.06]
2002	0.004	0.006	-0.002	0.000	0.005	-0.005	0.001	0.003	-0.006*
	[0.76]	[0.73]	[-0.19]	[-0.00]	[0.65]	[-0.48]	[0.20]	[0.89]	[-2.21]
2003	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
2004	-0.004	-0.004	0.006	0.023*	0.030*	0.032*	0.010*	0.011*	0.006*
	[-0.71]	[-0.54]	[1.02]	[2.33]	[2.27]	[2.47]	[2.20]	[2.14]	[1.97]
2005	-0.004	0.000	0.005	0.036**	0.040*	0.046**	0.016**	0.016*	0.009*
	[-0.43]	[-0.03]	[0.59]	[3.15]	[2.52]	[2.88]	[3.08]	[2.45]	[2.52]
2006	-0.005	0.006	0.009	0.068***	0.067**	0.067***	0.029***	0.027***	0.016***
	[-0.53]	[0.52]	[0.96]	[4.22]	[3.26]	[3.35]	[4.38]	[3.32]	[3.57]
2007	0.001	0.006	0.005	0.110***	0.118***	0.103***	0.048***	0.046***	0.025***
	[0.05]	[0.42]	[0.39]	[4.68]	[4.09]	[3.91]	[5.25]	[4.31]	[4.58]
2008	-0.005	0.000	-0.007	0.111***	0.139***	0.118***	0.048***	0.053***	0.028***
	[-0.39]	[0.02]	[-0.61]	[5.00]	[4.85]	[4.52]	[5.60]	[5.13]	[5.19]
2009	-0.006	0.007	0.004	0.012	-0.049**	-0.066**	0.005	-0.019**	-0.018**
	[-0.47]	[0.43]	[0.26]	[0.99]	[-2.78]	[-2.83]	[0.85]	[-2.69]	[-3.18]
2010	-0.017	-0.025	-0.018	0.053**	0.041	0.032	0.021**	0.012	0.008
	[-1.29]	[-1.55]	[-1.22]	[3.07]	[1.91]	[1.66]	[2.88]	[1.43]	[1.76]
2011	-0.031	-0.039*	-0.039*	0.063**	0.066**	0.025	0.023**	0.018*	0.007
	[-1.15]	[-1.96]	[-2.28]	[3.02]	[2.83]	[1.18]	[2.84]	[2.16]	[1.54]
2012	-0.025	-0.038	-0.045**	0.042*	0.061**	0.006	0.015*	0.017*	0.003
	[-0.97]	[-1.96]	[-2.81]	[2.55]	[3.26]	[0.26]	[2.33]	[2.38]	[0.58]
2013	-0.023	-0.024	-0.031	0.028	0.031	-0.017	0.009	0.008	-0.005
	[-0.87]	[-1.20]	[-1.94]	[1.73]	[1.63]	[-0.79]	[1.46]	[1.15]	[-1.02]
N	479,113	389,589	389,589	173,951	145,259	145,259	479,113	389,589	389,589
R-sq	0.001	0.001	0.225	0.001	0.003	0.109	0.005	0.007	0.409

t-statistics in brackets; *p<0.05, **p<0.01, ***p<0.001

Table 2 continued

Low season	1	2	3	4	5	6	7	8	9
	Base wage share	**Base wage share**	**Base wage share**	**Gearing**	**Gearing**	**Gearing**	**Bonus share**	**Bonus share**	**Bonus share**
Sample:	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*
Controls:	*No*	*No*	*Yes*	*No*	*No*	*Yes*	*No*	*No*	*Yes*
2000	0.001	0.005	0.011	0.008	0.012***	0.012**	0.004	0.005***	0.007***
	[0.07]	[0.43]	[1.09]	[1.95]	[3.56]	[3.08]	[1.91]	[3.47]	[3.92]
2001	0.013	0.010	0.004	0.004	0.007*	0.005	0.003	0.004**	0.003**
	[1.69]	[0.99]	[0.50]	[1.12]	[2.55]	[1.63]	[1.56]	[3.05]	[2.62]
2002	0.005	0.004	-0.002	0.001	0.002	0.000	0.001	0.001	0.000
	[0.98]	[0.65]	[-0.39]	[0.18]	[0.96]	[0.04]	[0.41]	[1.18]	[0.32]
2003	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
2004	0.001	0.002	0.009	0.005*	0.005*	0.005*	0.003	0.002	0.003*
	[0.13]	[0.32]	[1.72]	[1.98]	[2.05]	[2.26]	[1.90]	[1.88]	[2.53]
2005	0.000	0.008	0.011	0.010**	0.014***	0.014***	0.005*	0.006***	0.006***
	[0.01]	[0.86]	[1.49]	[2.63]	[3.62]	[3.84]	[2.55]	[3.68]	[3.89]
2006	0.000	0.007	0.007	0.021***	0.020***	0.018***	0.010***	0.009***	0.008***
	[-0.02]	[0.59]	[0.63]	[4.48]	[5.00]	[4.54]	[4.48]	[5.05]	[4.64]
2007	0.006	0.009	0.003	0.027***	0.023***	0.020***	0.014***	0.010***	0.009***
	[0.51]	[0.66]	[0.28]	[5.09]	[5.38]	[4.79]	[5.33]	[5.49]	[4.75]
2008	0.006	0.006	0.000	0.020***	0.022***	0.017***	0.010***	0.009***	0.007***
	[0.57]	[0.45]	[-0.03]	[4.23]	[5.00]	[4.04]	[4.54]	[4.87]	[3.85]
2009	-0.010	-0.020	-0.019	0.010*	0.009	0.005	0.004*	0.002	0.001
	[-0.80]	[-1.29]	[-1.33]	[2.20]	[1.82]	[1.00]	[2.00]	[1.19]	[0.36]
2010	-0.024	-0.033*	-0.031*	0.007	0.011*	0.004	0.002	0.002	0.000
	[-1.30]	[-1.97]	[-2.05]	[1.32]	[2.17]	[0.86]	[0.68]	[1.04]	[0.20]
2011	-0.021	-0.034	-0.041**	0.020**	0.026***	0.016**	0.008*	0.008**	0.004
	[-0.82]	[-1.87]	[-2.67]	[2.76]	[3.88]	[2.83]	[2.45]	[2.78]	[1.82]
2012	-0.016	-0.024	-0.034*	0.020**	0.025***	0.013**	0.008**	0.008***	0.004*
	[-0.61]	[-1.23]	[-2.05]	[3.05]	[4.80]	[2.88]	[2.86]	[3.83]	[2.24]
N	889,673	759,490	759,490	304,073	264,904	264,904	889,673	759,490	759,490
R-sq	0.000	0.001	0.223	0.001	0.002	0.048	0.002	0.001	0.100

t-statistics in brackets; *p<0.05, **p<0.01, ***p<0.001

Source: Monthly Wages and Salaries Survey (Jan 2000 – Mar 2013)

Table 3: Variations in gearing, 2003 and 2007

	High season		Low season	
	2003	2007	2003	2007
Firms paying PRP in both years	15%	25%	7%	10%
Firms paying PRP only in 2003	23%		13%	
Firms paying PRP only in 2007		35%		16%

Source: Monthly Wages and Salaries Survey

Table 4: Sectoral shares of all Base Pay And Bonus Pay, Jan 2000 – March 2013

	Share of all bonus pay	Share of all regular pay
Finance (J)	39%	7%
Other private services (G-I, K, O)	45%	45%
Production (A-F)	15%	21%
Public services (L-N)	1%	26%
Total	100%	100%

Source: Monthly Wages and Salaries Survey

Table 5: Regressions for Employment Share, Gearing and Bonus Share in "High" and "Low" Seasons, Whole Economy minus Finance

High season	1	2	3	4	5	6	7	8	9
	Base wage share	**Base wage share**	**Base wage share**	**Gearing**	**Gearing**	**Gearing**	**Bonus share**	**Bonus share**	**Bonus share**
Sample:	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*
Controls:	*No*	*No*	*Yes*	*No*	*No*	*Yes*	*No*	*No*	*Yes*
2000	-0.015	-0.001	0.016	-0.001	0.002	0.000	-0.002	0.001	0.003
	[-1.31]	[-0.07]	[1.19]	[-0.16]	[0.31]	[0.06]	[-0.54]	[0.26]	[1.15]
2001	0.014	0.019*	0.021*	0.000	0.003	0.001	0.001	0.003	0.003
	[1.94]	[2.05]	[2.08]	[0.03]	[0.63]	[0.24]	[0.60]	[1.55]	[1.33]
2002	0.009	0.010	0.005	-0.009**	-0.004	-0.009**	-0.003*	-0.001	-0.003
	[1.60]	[1.26]	[0.64]	[-2.61]	[-1.15]	[-2.68]	[-2.16]	[-0.48]	[-1.87]
2003	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
2004	-0.005	-0.003	0.007	-0.002	0.004	0.005	-0.001	0.002	0.001
	[-0.89]	[-0.39]	[1.07]	[-0.47]	[0.99]	[1.30]	[-0.67]	[0.76]	[0.61]
2005	-0.005	0.000	0.004	-0.001	0.007	0.007	-0.001	0.003	0.002
	[-0.53]	[-0.01]	[0.51]	[-0.31]	[1.68]	[1.72]	[-0.48]	[1.45]	[0.98]
2006	-0.006	0.005	0.008	0.004	0.011*	0.007	0.001	0.005*	0.003
	[-0.64]	[0.42]	[0.81]	[0.83]	[2.49]	[1.45]	[0.53]	[2.42]	[1.54]
2007	-0.002	0.002	0.003	0.008	0.016**	0.008	0.004	0.006**	0.004
	[-0.19]	[0.12]	[0.22]	[1.54]	[2.80]	[1.35]	[1.41]	[2.88]	[1.70]
2008	-0.007	-0.003	-0.008	0.016**	0.021***	0.011	0.007*	0.008***	0.004
	[-0.55]	[-0.21]	[-0.61]	[2.61]	[3.51]	[1.79]	[2.32]	[3.38]	[1.64]
2009	-0.007	0.008	0.005	0.000	-0.004	-0.016*	-0.001	-0.001	-0.005
	[-0.54]	[0.48]	[0.29]	[0.04]	[-0.60]	[-2.33]	[-0.18]	[-0.36]	[-1.84]
2010	-0.016	-0.022	-0.016	0.021**	0.028***	0.016*	0.008**	0.009***	0.005*
	[-1.19]	[-1.34]	[-1.00]	[3.15]	[3.95]	[2.38]	[2.76]	[3.54]	[1.97]
2011	-0.035	-0.043*	-0.042*	0.020*	0.035***	0.017*	0.005	0.008***	0.003
	[-1.20]	[-2.15]	[-2.31]	[2.37]	[4.63]	[2.57]	[1.54]	[3.36]	[1.37]
2012	-0.030	-0.045*	-0.048**	0.022**	0.041***	0.018**	0.007	0.010***	0.004
	[-1.06]	[-2.38]	[-2.89]	[2.66]	[5.61]	[2.61]	[1.93]	[4.04]	[1.46]
2013	-0.026	-0.028	-0.032	0.009	0.022**	-0.002	0.002	0.006*	-0.001
	[-0.92]	[-1.45]	[-1.87]	[1.11]	[2.94]	[-0.27]	[0.46]	[2.22]	[-0.53]
N	457,877	372,691	372,691	159,934	133,853	133,853	457,877	372,691	372,691
R-sq	0.001	0.001	0.183	0.001	0.003	0.064	0.001	0.001	0.119

t-statistics in brackets; *p<0.05, **p<0.01, ***p<0.001

Table 5 continued

Low season	1	2	3	4	5	6	7	8	9
	Base wage share	**Base wage share**	**Base wage share**	**Gearing**	**Gearing**	**Gearing**	**Bonus share**	**Bonus share**	**Bonus share**
Sample:	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*	*All*	*BSD-linked*	*BSD-linked*
Controls:	*No*	*No*	*Yes*	*No*	*No*	*Yes*	*No*	*No*	*Yes*
2000	0.009	0.012	0.019	0.007*	0.007*	0.008*	0.004**	0.004*	0.006***
	[1.04]	[1.01]	[1.81]	[2.35]	[2.10]	[2.11]	[2.59]	[2.38]	[3.55]
2001	0.018*	0.012	0.009	0.004	0.003	0.002	0.003*	0.002	0.003*
	[2.49]	[1.19]	[1.04]	[1.65]	[1.08]	[0.58]	[2.43]	[1.76]	[2.09]
2002	0.007	0.005	0.001	0.003	0.001	-0.001	0.002	0.001	0.000
	[1.28]	[0.70]	[0.08]	[1.30]	[0.34]	[-0.33]	[1.63]	[0.64]	[0.36]
2003	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
2004	0.001	0.001	0.009	0.004**	0.003	0.003	0.002*	0.001	0.001
	[0.12]	[0.21]	[1.48]	[2.65]	[1.39]	[1.54]	[2.51]	[1.32]	[1.56]
2005	0.000	0.007	0.010	0.007**	0.009*	0.008*	0.004**	0.004**	0.004*
	[0.02]	[0.73]	[1.27]	[2.90]	[2.43]	[2.44]	[2.76]	[2.64]	[2.40]
2006	-0.001	0.004	0.005	0.012***	0.014***	0.011**	0.006***	0.006***	0.005**
	[-0.11]	[0.36]	[0.44]	[4.07]	[3.55]	[2.74]	[3.87]	[3.65]	[2.86]
2007	0.004	0.005	0.002	0.020***	0.022***	0.017***	0.010***	0.009***	0.007***
	[0.38]	[0.35]	[0.16]	[5.80]	[4.65]	[3.90]	[5.91]	[4.70]	[3.75]
2008	0.005	0.001	-0.003	0.014***	0.016***	0.011**	0.007***	0.006***	0.004*
	[0.40]	[0.05]	[-0.21]	[4.22]	[3.86]	[2.79]	[4.50]	[3.68]	[2.44]
2009	-0.009	-0.020	-0.020	0.003	0.003	-0.002	0.001	0.000	-0.002
	[-0.67]	[-1.29]	[-1.26]	[0.94]	[0.60]	[-0.41]	[0.64]	[-0.07]	[-0.97]
2010	-0.025	-0.036*	-0.033*	-0.001	0.004	-0.004	-0.002	-0.001	-0.003*
	[-1.30]	[-2.16]	[-2.04]	[-0.29]	[0.96]	[-1.14]	[-1.32]	[-0.78]	[-2.01]
2011	-0.025	-0.041*	-0.045**	0.013*	0.014***	0.005	0.004	0.002	0.000
	[-0.87]	[-2.28]	[-2.72]	[2.11]	[3.63]	[1.45]	[1.62]	[1.74]	[-0.20]
2012	-0.019	-0.031	-0.038*	0.016**	0.019***	0.008	0.006*	0.005**	0.001
	[-0.65]	[-1.62]	[-2.17]	[2.73]	[4.21]	[1.86]	[2.41]	[3.27]	[0.86]
N	850,218	726,099	726,099	279,757	243,895	243,895	850,218	726,099	726,099
R-sq	0.001	0.001	0.180	0.001	0.002	0.058	0.001	0.001	0.091

t-statistics in brackets; *p<0.05, **p<0.01, ***p<0.001

Appendix A

In any given economy, the share of all wages paid out in bonuses in period *t* (the 'bonus share' for period *t*, or B_t) is computed as the ratio between the sum of all bonus payments (Bon_t) and the sum of all wages ($TotWage_t$). That is:

$$B_t = \frac{Bon_t}{TotWage_t} \quad (1)$$

The sum of all bonus payments in period *t* can be written as:

$$Bon_t = G_t^B . \bar{r}_t^B . E_t^B \quad (2)$$

Where:

E_t^B is the total number of employees in firms that paid bonuses in period *t*

$\bar{r}_t^B$ is average regular (or base) pay per employee in these firms in period *t*

G_t^B is the multiple of all regular pay that is added to the wage bill in the form of bonus payments in bonus-paying firms (that is, the gearing of bonus pay to base pay within bonus-paying firms). This gearing is necessarily zero in non bonus-paying firms (G_t^N=0).

Similarly, the sum of all wages paid out in the economy can be expressed as the sum of: all bonuses paid out in bonus-paying firms; all regular pay paid out in bonus-paying firms; and all regular pay paid out in non bonus-paying firms. That is:

$$TotWage_t = G_t^B . \bar{r}_t^B . E_t^B + \bar{r}_t^B . E_t^B + \bar{r}_t^N . E_t^N \quad (3)$$

Where:

E_t^N is the total number of employees in firms that did not pay bonuses in period *t*

$\bar{r}_t^N$ is average regular (or base) pay per employee in these firms in period *t*.

Let RP_t refer to the ratio between average regular pay per employee in bonus-paying firms and average regular pay per employee in non bonus-paying firms. We call this the 'regular pay premium' (or 'base pay premium') in favour of the average employee in a bonus-paying firm:

$$RP_t = \frac{\bar{r}_t^B}{\bar{r}_t^N} \quad (4)$$

And let EP_t refer to the ratio between total employment in bonus-paying firms and total employment in non bonus-paying firms. We call this the 'employment premium' in favour of bonus-paying firms:

$$EP_t = \frac{E_t^B}{E_t^N} \quad (5)$$

Substituting (2) and (3) into (1) and dividing all terms through by $\frac{1}{\bar{r}_t^N . E_t^N}$ we then obtain the following:

$$B_t = \frac{G_t^B . RP_t . EP_t}{G_t^B . RP_t . EP_t + RP_t . EP_t + 1} \quad (6)$$

We thereby express the share of all bonuses paid out in the economy (B_t) as a function of:

(a) the employment premium in favour of bonus-paying firms (EP_t);
(b) the pay premium in favour of employees in bonus paying firms (RP_t); and
(c) the gearing of bonus pay to base pay within bonus-paying firms (G_t^B).

Appendix B

Table 1: Bonus share and its components, by bonus season, 2000-2010

Part A: High season (December – March)

	Employment premium	Base pay premium	Gearing	Base wage share	Bonus share	Bonus share index (2000=100)
2000	1.07	1.03	17.8%	52.6%	8.6%	100
2001	1.22	1.04	19.4%	55.9%	9.8%	114
2002	1.18	1.06	16.3%	55.5%	8.3%	97
2003	1.16	1.05	16.3%	55.1%	8.2%	96
2004	1.15	1.05	18.6%	54.6%	9.2%	108
2005	1.14	1.06	19.9%	54.7%	9.8%	115
2006	1.13	1.07	23.1%	54.6%	11.2%	131
2007	1.16	1.05	27.3%	55.1%	13.1%	153
2008	1.14	1.05	27.4%	54.6%	13.0%	152
2009	1.14	1.05	17.5%	54.5%	8.7%	102
2010	1.10	1.04	21.6%	53.3%	10.3%	121
2011	1.04	1.05	22.6%	52.0%	10.5%	123
2012	1.03	1.07	20.5%	52.5%	9.7%	113
2013	1.06	1.06	19.1%	52.8%	9.2%	107

Source: Monthly Wages and Salaries Survey

Part B: Low season (April – November)

	Employment premium	Base pay premium	Gearing	Base wage share	Bonus share	Bonus share index (2000=100)
2000	1.12	1.02	7.8%	53.3%	4.0%	100
2001	1.16	1.03	7.5%	54.5%	3.9%	98
2002	1.13	1.03	7.1%	53.7%	3.7%	92
2003	1.10	1.03	7.0%	53.2%	3.6%	90
2004	1.09	1.04	7.6%	53.3%	3.9%	97
2005	1.08	1.05	8.0%	53.2%	4.1%	103
2006	1.09	1.04	9.1%	53.2%	4.6%	116
2007	1.12	1.04	9.8%	53.8%	5.0%	125
2008	1.11	1.05	9.1%	53.8%	4.7%	116
2009	1.06	1.03	8.1%	52.2%	4.0%	101
2010	1.00	1.03	7.7%	50.8%	3.8%	95
2011	1.00	1.05	9.0%	51.1%	4.4%	110
2012	1.02	1.05	9.0%	51.6%	4.4%	111

Source: Monthly Wages and Salaries Survey

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