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The Role Played by Large Firms in Generating Income Inequality: UK FTSE 100 pay practices in the late twentieth and early twenty-first centuries

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Working paper 31

Updated in May 2020



THE LONDON SCHOOL
OF ECONOMICS AND
POLITICAL SCIENCE ■

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Editorial note and acknowledgements

This work was supported by a grant from The International Inequalities Institute at LSE. We are grateful to participants at the LERA Chicago conference and University of California Irvine seminar series for comments on earlier versions of the paper.

Abstract

We examine the role of large firms in generating income inequality. Specifically, we consider the growth in the use of asset-based rewards for senior executives, combined with continued use of salaries and wages for other employees, and the impact this has on measures of inequality within firms. Our paper presents data on intra firm inequality from the UK FTSE 100 for the period 2000-2015. It looks at ratios of CEO to average earnings and attempts to explain both the growth in inequality on this measure and the extent of variance between firms. It distinguishes between a period of ‘administered inequality’ up to the early 1980s when intra-firm processes defined differential pay and a subsequent one of “outsourced inequality”, when capital market measures dominate executive pay. In the latter period, intra firm inequality measures are defined by upward movements in capital market measures and the extent of outsourcing of low paid work. We conclude by discussing a number of UK public policy proposals regarding executive pay.

Keywords: CEO compensation; firms; inequality; pay ratios.

JEL Code: D31, J31, M21

1. Introduction

There appears to be a broad consensus that inequality of income within modern firms is greater in the modern era, specifically since the widespread adoption of performance-based pay for senior executives, particularly in the United Kingdom and United States. High executive pay features in many contemporary accounts of the rise in inequality at the end of the twentieth and beginning of the twenty-first centuries. Most notably Thomas Piketty includes inequality of labour income and specifically the rise of the ‘super-manager’ in Anglo-Saxon economies as key contributors to modern-day inequality (Piketty, 2014, pp. 315-335; see also Atkinson, 2015, pp. 107-109). Nobel prize-winning economist Robert Solow wrote ‘it is pretty clear that the class of supermanagers belongs socially and politically with the rentiers’ (Solow, 2014). Lemieux, MacLeod and Parent (2009) provide evidence from the United States in support of this thesis, and Bell and Van Reenen (2013) provide evidence from the United Kingdom. In this paper we focus on the UK. In popular accounts, pay inequality is often described in simple ratio terms, for example CEO pay expressed as a multiple of average, median, or lowest pay within the firm¹. ‘CEO pay’ is generally taken to refer not merely to salary, but to leveraged packages in which major elements might be viewed in economic terms, strictly speaking, as donated assets or capital gains rather than income. Income inequality within firms is also seen as a general phenomenon, even though data exist for the United Kingdom to indicate that these ratios vary across firms and standard industry classification categories. Although there has been wage stagnation in United Kingdom for some periods since the financial crisis, the growth in inequality is often seen primarily to stem from increases in executive compensation, rather than from cuts to nominal or real earnings at the base of the income pyramid.

In this paper, we ask the following question - what have been the changes to the organisational processes that generate inequalities of income within firms, and how do they relate to the increase in intra-firm inequality? Where relevant we use data relating to UK FTSE100 companies to illustrate. Section 2 reviews the literature on changes to the management of large firms; this literature deals with the ‘financialisation’ of the firm (Davis, 2009; Froud et al., 2006), particularly in the United States and United Kingdom, stressing the importance of capital market oversight in determining change to firm structures and processes. It emphasises, in particular, moves away from organisational towards market influences on employment practices. Sections 3 and 4 extend this literature by arguing that there are in fact two sets of changes of importance for intra-firm inequality. The first consists of the erosion of administrative solutions to inequality and the second consists of a move to greater reliance on market forces. It is crucial that this involves reliance not only on labour market forces but also capital market forces – the two markets work very differently. Section 5 documents the growth in intra (i.e., within) firm inequality using UK data. These data show that a reliance on capital market measures for executive pay and labour market measures for low pay exacerbates intra-

firm inequality. The section also examines sectoral variance on one measure of intra-firm inequality. Section 6 discusses the implications of our research and Section 7 concludes.

2. Managerial capitalism?

One of the more pervasive ideas in the business strategy literature is Alfred Chandler's concept of 'managerial capitalism' (Chandler, 1962, 1977). Based initially on rather casual empiricism, this came to denote a set of circumstances underpinning the operation of large oligopolistic corporations in which managerial freedom of action was pronounced, in the absence of regulation by either government or capital markets. Chandler was not the first to make the observation. Peter Drucker argued that the managerial corporation was 'the decisive, representative and constitutive institution' of the US social order (Drucker, 1954, p. 22). Wright-Mills (1956) was concerned with the emergence of a managerial 'power elite' in the United States. Later Vogel (1978, p. 58) argued: 'In the US, the professionally managed, oligopolistic, multi-divisional firm literally exists for a generation without the modern equivalent of the state'.

More recently, Davis (2009) saw the traditional US corporation as an institution that fulfilled many functions—dispensing or funding social welfare benefits such as health care, running internal procedural justice systems like internal courts, developing foreign policies about where they do business, and in some cases having their own air fleets. As he remarks: 'some American multi nationals look more like European welfare states than does the US government' (2009, p. 59; see also Anderson, 2017). British business differed in some respects, but not in the basic picture of a set of often vertically integrated corporations run primarily by managerial agents rather than owners, and with their internal processes insulated from direct regulation by government (Channon, 1973).

There is a substantial literature documenting the decline of managerial capitalism, particularly since the liberalisation of financial markets in the 1980s. Much of it relates to the United States. Pfeffer (1997) argues that firms have on average become smaller, more unequal, with much changed employment practices and with much more severe capital market oversight. Davis (2009) argues that US firms are now 'managed by markets', specifically that they are driven by the conception of shareholder value to maximise their market value and minimise their direct ownership of assets. Krippner (2012) shows that United States firms are increasingly reliant for revenue and profits on financial activities such as ownership of common stocks, lending and asset management, whatever specific product markets they inhabit. Froud et al. (2006) extend this analysis to the United Kingdom.

What were the implications for intra firm inequality? Again, the published data come mainly from the United States. Davis and Cobb (2010) argue that there are relationships between the market for corporate control in the firm and inequality. For the United States, they identify three broad periods:

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- 1950s-1970s: the 'high tide' of managerial capitalism where conglomerate mergers increased employment concentration and inequality declined;
 - 1980s: when bust-up takeovers split up these conglomerates and inequality increased slightly;
 - 1990s: when the 'shareholder value' approach dominated, and inequality increased rapidly.

Perhaps paradoxically, managerial independence of action is associated with more limited intra-firm inequality in income, although not necessarily in other forms of inequality. It is interesting to note how these time frames map onto the data on income inequality in Anglo-Saxon countries for the period 1910-2010 provided by Piketty and others (see Cassidy, 2014). This shows a distinct 'U' shape, with the share of the top percentile in total income falling from 1910, the early days of managerial capitalism, to 1970 and rising thereafter, so that by 2010 inequality had almost regained levels not previously seen since the start of the twentieth century.

The death of managerial capitalism in the United State and its replacement by the shareholder value approach in turn implies a lively market for corporate control, divestment of non-essential activity, and alignment of manager and shareholder interests through the use of stock options. In Davis's words: 'the corporation has increasingly become the financially-oriented nexus described by its theorists' (Davis, 2009, p. 63). It is perhaps in analysing what these theorists, primarily in economics and finance, saw as the problems of managerial capitalism that we may find a clue to its relevance for inequality. In its key contributions (Jensen & Meckling, 1976; Jensen, 1998) the essential focus is on share-price underperformance rooted in managerial behaviour. The argument goes back to the work of Williamson (1975, 1985) and it is at core an agency problem. Managers, it goes, act in their own interests not those of shareholders, they are risk averse in under-utilising assets, preferring organisational survival over investor returns, pursuing growth rather than profitability, and over valuing their own competence over market signals. They prioritise predictability and security over maximising returns.

The shift away from managerial capitalism to the financialised firm is associated with major shifts in employment practices, broadly from what Jacoby (2005) has termed an 'organisational' to a 'market' orientation. The former is associated with job security, internal hiring, talent development and full-time employment relationships. As Bidwell, Briscoes, Fernandez-Mateo and Sterling (2013, p. 62) have put it, it was 'an employment system that was closed, inwardly focused and hierarchically governed'. The latter is associated with market-based pay, use of incentives, shorter job tenure, and non-standard employment contracts. Crucially, the former is associated with concerns for internal equity in pay relationships, whereas the latter is associated with greater pay variance within and across jobs (see also Cobb, 2016).

The argument here relates to the mechanisms for control of intra-firm inequality preferred under managerial capitalism. We shall refer to this here under the broad heading of 'Administered Inequality'. This is not to imply that firms had a view about the desirability of specific inequality outcomes; rather that managerial capitalism exhibited a preference for organisational outcomes dominated by intra-organisational processes. Inequality outcomes are included here. We may, at the risk of oversimplification, suggest two sets of administrative processes in the managerial corporation, both of which set limits on inequality outcomes.

3. Administered inequality

The story of administered inequality is essentially a story about internal labour markets. Internal labour markets, whether for manual, white collar or managerial categories of employee are multipurpose devices that develop job-specific skills, rationalise hierarchies and, crucially, provide a legitimisation device for inequality (Dobbin et al., 1993; Doeringer & Piore, 1971). They tend to compress pay disparities (Cobb, 2016, p. 332). They also prioritise the internal coherence of hierarchy over market mechanisms for pay setting. We focus on the two mechanisms for pay setting most common in managerial corporations: collective bargaining and job evaluation. They have often overlapped, but are distinct. Both tend to exert limits on intra firm inequality. Crucially, they both involve the firm in offering some justification for inequality outcomes.

Collective bargaining

In both United States and United Kingdom, union density increased throughout the early part of the era of managerial capitalism. It peaked at just under 30 per cent in United States in the early 1960s, but continued to rise in United Kingdom until 1980, peaking at nearly 55 per cent. In the United Kingdom, although public sector trade union membership density increased rapidly in the 1970s, private sector union membership and collective bargaining coverage was substantial through the post war period to 1980 (Gomez et al., 2010). Unionisation and the emergence of internal labour markets for manual workers tend to be more closely associated in the United States than United Kingdom (Doeringer & Piore, 1971), but in both countries there is evidence to associate collective bargaining with the compression of pay differentials; specifically, unionised workplaces show lower wage dispersion than non-unionised (Freeman & Medoff, 1984; Metcalf et al., 2001). Collective bargaining appears to have compressed differentials not just within bargaining units but between them. Bain, the most influential theorist on the growth of white collar and managerial unionism, saw the extension of unionisation into clerical and managerial occupations as a 'credit' effect on the success of manual trades unionism at protecting real incomes (Bain, 1970). There is more recent evidence, based on US S&P 500 data, indicating that the presence of unionism exerts a downward effect on senior

management pay; i.e. the impact of unions on intra-firm inequality extends well beyond the scope of collective bargaining agreements to embrace both the level and composition of senior management pay (Gomez & Tzoumis, 2006).

In both countries, the period of the rapid break up of managerial capitalism identified by Davis (the 1980s) saw a sustained decline in union density (Gomez et al., 2010). Union density tends to understate collective bargaining coverage but both density and coverage tend to be greater in larger firms (Freeman & Medoff, 1984). Successive survey evidence for the United Kingdom from the Warwick Employment Relations Dataset (WERS) shows that union membership and coverage of collective bargaining fell consistently from the 1980s. Between 1989 and 2014, union density fell overall from 38 per cent to 25 per cent (van Wanrooy et al., 2013). By 2013, collective bargaining coverage in the private sector in the United Kingdom stood at only 16 per cent (Labour Force Survey data). As we show below, pay determination at the base of the organisational pyramid has a very different underlying process in most modern firms.

Job evaluation

Job evaluation is defined by Armstrong and Taylor (2003, p. 4) as:

A systematic process for defining the relative worth or size of jobs within an organization in order to establish internal relativities and provide the basis for designing an equitable grade and pay structure, grading jobs in the structure and managing relativities

Its coverage in the United Kingdom has been substantial, not least because the idea of an equitable measurement of job content and worth has relevance for the implementation of equal pay and equal opportunities legislation (Boxall & Purcell, 2003). Similar legal considerations seem to have been behind the spread of internal labour markets in United States (Dobbin et al., 1993). A key point of job evaluation is that it does not measure the market value of a job incumbent, simply the content and thus the relative worth of the job - it is a measure of the assessed value of inputs.

Historic data on the coverage of job evaluation are patchy. A major trigger to collection of such data was the operation of incomes policy in the 1960s and 1970s. Many instances of incomes policy allowed exemptions from pay constraints where jobs were either seen to be unfairly paid compared to similar ones or where the content of a job was seen to have changed. Job evaluation techniques legitimised such claims to exceptional treatment (Hyman & Brough, 1974; Willman, 1982). A second trigger was the operation of the Equal Pay Act from December 1975. The Act made gender discrimination on pay unlawful under certain circumstances; equal pay was defined by reference to 'similar work' and job evaluation data were admissible, perhaps central, to equal pay claims (Paul & Edwards, 1977).

The National Board for Prices and Incomes, a UK government body concerned with the implementation of incomes policy, estimated very high coverage in 1968 based on a sample survey. Particularly in nationalised firms and oligopolistic industries, the majority of large firms had job evaluation for non-manual employees; statistics for the coal, tobacco and chemical industries show coverage of over 60 per cent. The Board estimated over 30 per cent of managerial jobs were covered nationally (NBPI, 1968). Later government surveys in 1973 and 1974 show job evaluation present in 63 per cent of sampled establishments (cited in Craig, 1977). A further survey by the Institute of Personnel Management in 1976 estimated 79 per cent establishment coverage.

Surveys cited in Armstrong and Taylor (2003, pp. 7-9) show coverage levels of 45-50 per cent in surveyed firms 1995-2002, with many non-covered firms expressing intent to adopt. It is significant that job evaluation was commonly used for executive and managerial posts as well as clerical and blue-collar jobs.

Job evaluation is often based on proprietary packages sold by management consultants. By far the largest of these in the United Kingdom is the Hay guide chart method, which does two things. First, it scores any job in terms of a set number of points. Second, it assigns a financial value to each point - its objective is to establish a uniform value for a Hay point across firms, using a proprietary database. Since a point is worth the same in lower and senior management jobs, this exerts an influence on the relative pay of jobs - it dampens kurtosis at the upper end of the income distribution. A CIPD survey in 1994 found 30 per cent of all job evaluation usage in the United Kingdom was by the Hay method.

A significant case study was the retail banking industry. Dominated by four large banks, the industry adopted the Hay method on the establishment of national collective bargaining in 1967. The scheme covered clerical work and a 'managerial minimum' salary. During the 1970s, the scheme was extended across the managerial hierarchy as incomes policy norms required justification of pay increases (Morris, 1986, and personal communication).

The effect of such a method is to control variance in income, but only within the scope of the scheme. It is thus significant that the Hay scheme often covered very senior management positions, notably in retail banking in the United Kingdom. Where salary is defined for senior managers by this system, and where salary is the major component of total income, then inequality will be constrained by this sort of administrative process. However, where senior managers, for whatever reason, reach escape velocity from such a scheme, or where the outputs of the scheme are only a small proportion of pay, inequality within the management hierarchy will increase.

Let us illustrate with a hypothetical example. Firm A and B are in the same sector and identical in the composition of the workforce. Each has two sets of employees, managerial and manual.

Firm A might, for example, be one of the many formerly state-owned industrial companies which were privatised during the period of the UK Thatcher government of the 1980s. In Firm A, the managerial employees are all covered by a job evaluation scheme and the manual employees all have their pay set by collective bargaining. Inequality in Firm A is entirely administered and the firm may be said to have oversight on the extent of inequality it manufactures. In Firm B, job evaluation schemes do not extend to senior management, who are primarily rewarded by stock options, i.e. by reference to capital market measures. There is no collective bargaining and manual workers' pay is set by reference to the legal minimum wage or movements thereof – i.e. the annual percentage increases in the minimum or living wage are applied to existing pay levels. Other things equal, Firm B will have greater inequality than Firm A except under circumstances where the absolute increases of those on the minimum wage calculus are greater than the capital market returns to those holding stock options; empirically, this has rarely occurred in the last 30 years.

However, there are limiting conditions. Where wage inflation is greater than stock market returns, as for much of the 1970s, then Firm B income inequality will not grow rapidly. Firm A senior management on a job-evaluated salary may be better off than firm B. For the United States for the immediate post war period, Lewellen (1968) identifies widespread use of stock options for executive pay, but nevertheless in the early 1950s production worker pay grew faster than executive compensation. Murphy (2011) makes the generic claim for the United States that under a combination of stagnant stock returns and high marginal taxation such as occurred in the 1970s, firms switch from direct rewards reportable during disclosure to less visible perks such as private jets and country club memberships, or to deferred compensations such as golden parachute exit packages and generous pensions. There is certainly empirical evidence of this during the high tax era of the 1970s when benefits such as company cars and employer provided housing were favourably treated for tax purposes. However, as we shall argue below, where price inflation is relatively low and increases in the value of equities is high, as has been the case since the financial crisis, then the pay mechanisms for Firm B will tend to generate greater dispersions on a number of measures.

What we have seen in the United Kingdom is that the institutional arrangements of Firm A have become much less common, and the institutional arrangements of Firm B more so. We referred above to the arrangements in Firm A as Administered Inequality. Firm B on the other hand may seem to be more market oriented in its pay setting arrangements. However, what the hypothetical example of Firm B illustrates is that it is not sufficient to make this broad contrast in order to understand trends in inequality within the firm. One needs to ask which market, capital or labour, is being relied upon to set pay? In Firm B, the two tails of the income distribution are related to different markets and market indicators. Let us examine each.

4. Outsourced inequality

Two seminal articles have had a profound impact on both academic and practitioner thinking about executive compensation. Agency theory (the locus classicus is Jensen & Meckling, 1976) argued, inter alia, that in order to motivate executives (agents) to carry-out actions and select effort levels that are in the best interests of shareholders (principals), boards of directors, acting on behalf of shareholders, must design incentive contracts which make an agent's compensation contingent on measurable firm performance outcomes. Tournament theory (Lazear & Rosen, 1981) extended the agency model by proposing that principals structure a company's management hierarchy as a rank-order tournament, thus ensuring that the highest-performing agents are selected for the most-senior management positions. Tournament theory postulated that executives compete for places in a company's upper echelons via a sequential elimination tournament. It predicted that compensation is an increasing convex function of an agent's position in the management hierarchy, with increases in remuneration between levels in the hierarchy varying inversely in proportion to the probability of being promoted to the next level. By implication, the compensation of the CEO, ranked highest in the tournament, would typically be substantially more than the compensation of executives at the next highest level (for a more detailed review of agency and tournament theories, see Pepper, 2015).

The popularity of the two theories in academic circles was accompanied by changes in management practice, as an increasing proportion of senior executive pay was delivered in the form of stock options and other types of equity incentive. The pervasiveness of these instruments was not even affected when, in a large-scale empirical study in the United States, Jensen and Murphy (1990) were unable to find a strong connection between CEO pay and performance, noting that CEOs lost only \$3.25 for every \$1,000 loss of firm value, an effective equity stake of just 0.3 per cent. Somewhat perversely, given that agency theory had been advanced as a positive theory (of what is) rather than a normative theory (of what should be) Jensen and Murphy concluded (normatively) that the weak empirical connection between changes in CEO pay and changes in firm value meant that companies should be providing a greater proportion of compensation in the form of stock. That is indeed what subsequently happened. For example, in the United Kingdom the proportion of FTSE 100 CEO pay delivered in the form of stock options or long-term share-based incentive plans (LTIPS) increased from around 13 per cent to 35 per cent between 2000 and 2015 (source: Income Data Services and PricewaterhouseCoopers). The use of LTIPS in the United Kingdom was given further encouragement with the publication of the Greenbury Report in 1995, which recommended the use of long-term performance-based equity incentives to align the interests of shareholders and managers.

Paradoxically, however, senior executives have gradually become disillusioned with share-based incentives. Many executives feel that they fail to meet their main objectives. Various reasons are given. Commonly cited is the complexity of most LTIPs. In a study by Pepper,

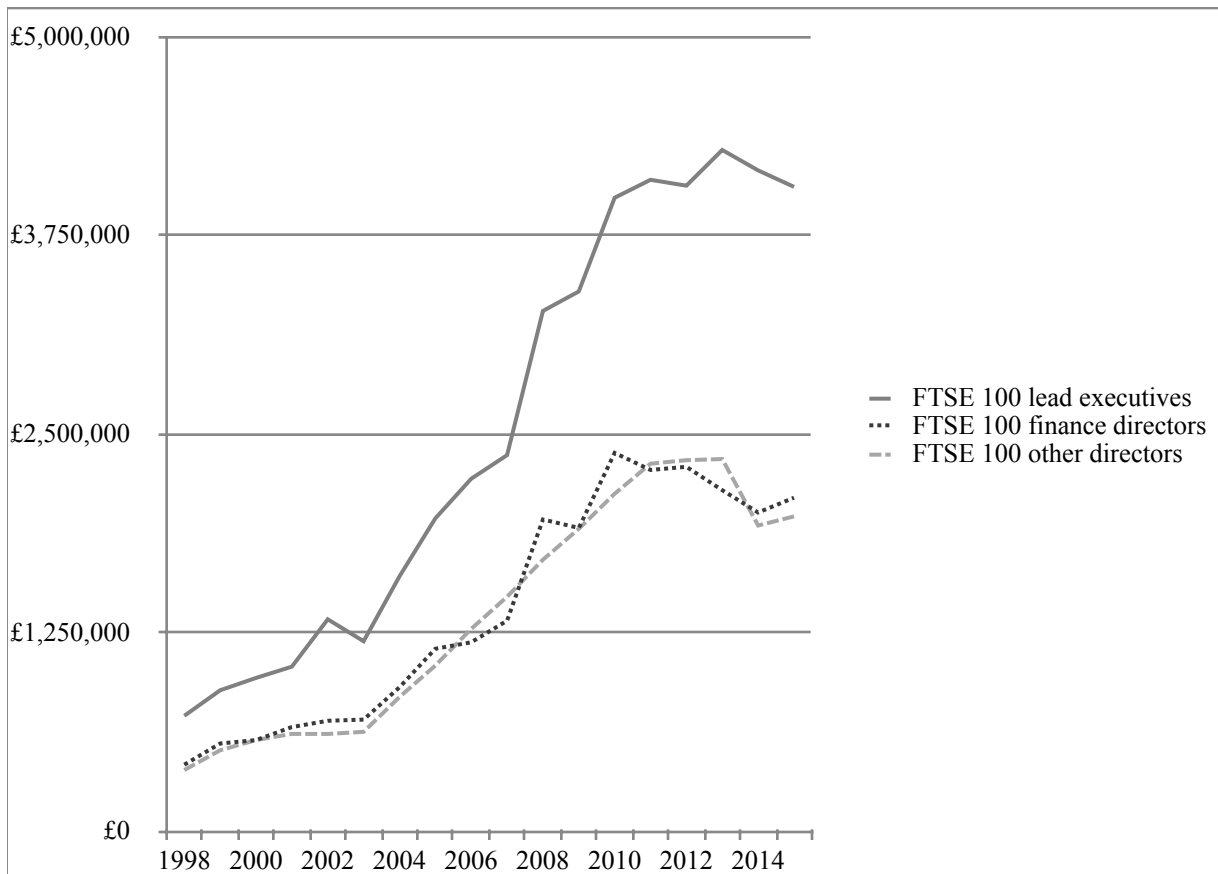
Gore and Crossman (2013) one CEO is quoted as follows:

Deferred share schemes are basically somewhat poorly understood, and pretty arbitrary. In the old days share options were easily understood, but pretty arbitrary. These new schemes are extraordinarily complex... and still pretty arbitrary.

Other participants in the same study comment on risk, ambiguity and time discounting. In another study, Pepper and Gore (2014) found that when it comes to their own finances executives were much more risk averse than financial theory predicts, preferring fixed outcomes to risky, yet potentially more rewarding, alternatives. They also attached a heavy discount to complex incentives. The second study found that executives are very high time discounters, typically marking-down the value of complex long-term incentives at a rate in excess of 30 per cent per year, reducing the perceived face value of a three-year deferred incentive by over 65 per cent. Pepper & Gore conclude that the pervasiveness of shared-based incentives is actually contributing to inflation in executive pay. They conjecture that boards of directors, acting on behalf of shareholders, increase the size of long-term incentive awards to executives to compensate them for the perceived loss of value when compared with less risky, more certain and more immediate forms of reward.

As evidence of these points, we provide data for the period 2000-2015 (see Figure 1), a period what incidentally includes the financial crisis of 2008-2009. In 2000 the median salary of FTSE100 CEOs was £538,000. By 2015 this had risen to £927,000, an annualised growth rate of 3.1 per cent. During the same period FTSE100 CEO median total earnings increased from £962,145 to £4,052,000, an annualised increase of 10.1 per cent (Income Data Services and authors' calculations). The difference between these two rates of growth is largely attributable to the pervasive use of long-term share-based incentives, as well as significant increases in annual bonuses. For the purposes of comparison, during the same period the annualised increase in the retail prices index was 2.8 per cent and the annualised increase in average nominal earnings was 3.0 per cent. (Office for National Statistics). In 2015, the ratio of median total pay of FTSE100 CEOs to UK national average wages was 161:1 (£4,052,000 compared with £25,004). In 2000 the equivalent statistic was 59:1 (£962,145 compared with £16,172).

Figure 1 FTSE 100 senior executives – indicative total earnings 2000-2015



Source: Income Data Services and PwC

In the United Kingdom, from the mid-1980s onwards, senior managers were increasingly being rewarded on capital market measures not evaluation of job inputs. At the same time, given the collapse of collective bargaining, many lower paid workers have had their income increases pegged to statutory measures, i.e. based on changes to the minimum wage. In these circumstances, administrative processes for the firm to regulate intra firm equity gave way to capital market and statutory influences in the tails of the distribution respectively in such a way that the firm may not administratively control inequality within its boundaries.

The key statutory influence on all-employee pay in the United Kingdom is the national minimum wage (NMW), introduced in 1999. Since then, it has been regularly increased at a rate above conventional cost of living indices but just below the growth of GDP. Specifically, since its introduction in 1999, the NMW has increased by 86 per cent, which is greater than the increase in average UK earnings (63 per cent) and both influential measures of inflation (RPI 57 per cent and CPI 39 per cent), but lower than the GDP (95 per cent) (Low Pay Commission, 2016, p. 5). According to the Low Pay Commission (LPC), the coverage and influence of the NMW has gradually increased on a number of measures. The number of employees paid the NMW has increased. However, there is also evidence from survey data

that the impact on those paid above the minimum wage is substantial. Bryson and Luchino (2014) use WERS data on pay settlements in the private sector to analyse this broader influence. They find that 30 per cent of workplaces refer to changes in the NMW in considering the level of annual pay settlement. Large workplaces and those without unions are particularly likely to do so; a larger percentage of private sector employees than workplaces is affected. As a consideration in pay setting, it ranks only behind the financial performance of the firm. They argue that, in the absence of collective bargaining, the NMW steps in. They note that many firms have shifted their annual pay increase date to October, to coincide with the increase in the NMW.

The remit of the LPC which oversees NMW increases, is to assess the affordability to firms of a specific increase. This refers both to the impact on firm performance and also to employment levels. The concern is to avoid setting the NMW at levels that would cause increases in unemployment, particularly amongst vulnerable labour market groups. It surveys employers and employers' associations regularly and these surveys indicate that increases in the NMW tend to increase the 'bite' of the statutory measure. By the term 'bite' they mean the percentage of average or median earnings taken up by the NMW, and there is some evidence that where the NMW increases are higher, differentials among those close to the bottom of the income distribution tend to compress (LPC, 2016, pp. 21-23). The NPW is due to be explicitly targeted at 60 per cent of median earnings by 2020.

Between 2000-2015 the income of FTSE 100 directors, lead or other, increased by over 300 per cent. In the same period the adult NMW has increased by just over 80 per cent. The relative movements of capital market and labour market indices are not the whole story. Executive pay movements during the period appear to be distressingly unaffected by the financial crash – see Figure 1 above - we explain why below. NMW measures have moved above both inflation measures. However, the data indicate the importance of focusing on the different markets in which the pay of different sets of firm employees are set if we wish to understand the growth of intra firm inequality. Executive pay is set by formulae related ultimately to the movement of financial markets. Since pay rises (not necessarily pay levels) are set in many private sector firms by reference to NMW movements for those closer to the bottom of the income pyramid then, to the extent that capital market returns exceed inflation, the pay setting process themselves will tend to increase intra firm income inequality measures over time. The figures on executive pay and low pay respectively from 2000 onwards bear this out.

We have referred to the pattern of income setting processes under managerial capitalism as 'administered inequality'. We refer to this pattern of dual reliance on capital markets on the one hand and the statutory processes of the NMW on the other as 'outsourced inequality'. The firm no longer co-ordinates the pay of the highest and lowest paid workers within its own boundaries. Coordination relies instead on market mechanisms, but the crucial thing is that it

refers to different markets at either end of the income distribution. The production of inequality by the firm does not relate any longer, as it did under managerial capitalism, to a set of intra firm processes - it refers at the tails of the income distribution to different markets. We return to the implications of this in our conclusion. First, however, we need to address the issue of variation in intra-firm inequality measures and to the different operation of the two markets.

5. UK data regarding intra-firm inequality

The United Kingdom is widely regarded in Europe as having led the way when it comes to the disclosure of executive pay. Disclosure of individual directors' pay has been required for over 25 years and is now included in a directors' remuneration report. The Directors' Remuneration Report Regulations 2002 require that every quoted company submits a remuneration report to members at the company's annual general meeting each year. This report gives full details of each director's remuneration and is required to be presented in a way that is clear, transparent and understandable to shareholders. The remuneration report must provide details of base salary, benefits, cash bonuses, long-term incentives and pension contributions for each individual director. Extensive disclosure of participation in employee share plans is also required. Nevertheless, there are a number of problems. First, it is increasingly the case among large UK companies that the CEO and CFO are the only executives who sit on the main board - other board members are typically all non-executive directors. Senior executives sit on an executive committee, management board, or equivalent, to which the directors' remuneration report regulations do not apply. While a few companies voluntarily disclose details of the pay of senior executives who are not main board directors, the majority do not. Second, the remuneration of all employees is generally only disclosed in aggregate, typically (to date) without any information about pay dispersion².

While it has been possible to calculate mean pay and the ratio of mean pay to CEO total remuneration based on public information, median pay has not been provided as a matter of course and more sophisticated measures of pay dispersion are not currently required. This means that a sophisticated evaluation of intra-firm inequality in UK companies is rarely, if ever, possible. In the United States, publication of the ratio of CEO to median pay, which is a somewhat better measure since the latter does not include the former, is required by the Dodd-Frank Act. However, the calculations are complicated and the SEC has issued guidance on the regulations on the pay ratio rule³.

Table 1 compares the ratio of average CEO to average pay for FTSE 100 companies in 2015 broken down by a simple industry measure (Standard Industry Classification). The data exclude pure investment companies; in addition one company, WPP plc, has been excluded because of the distorting effect of the staggeringly high pay of its CEO - £70.4 million in 2015. The variance on multiples is substantial, from under 59 to over 294. This is in some ways

surprising. The variance is likely, we submit, to be driven by both the denominator and the numerator. By 2015, most CEOs of FTSE 100 companies were on substantially leveraged stock-based reward packages, and simple inspection of the industry categories reveal that this variance is unlikely to be explained by variance in the value of such packages. Consider the two sectors of real estate investment (multiple just under 60) with food, beverage and tobacco manufacturing (multiple nearly 300). In manufacturing, employing around 70,000 staff, average staff pay is relatively modest (around £28,000) whereas average CEO pay is very high, compared with the FTSE100 CEO average, at over £7.6 million. (The latter figure is affected by the high pay of one CEO, at Reckitt Benckiser, whose total pay in 2015 was over £23 million; adjusting for this figure, average CEO pay in food, beverage and tobacco manufacturing is around £5.4 million, which is much closer to the FTSE100 CEO average). This is still much higher than CEO pay in real estate investment, average £3.0 million, but average employee pay in that sector is also higher, at just over £52,000. The banking and asset management ratio of 93:1 combines relatively low ratios in investment banking (high average earnings) and high ratios in retail banking (comparatively low average earnings).

Table 1 FTSE 100 pay ratios by SIC code, 2015

Industry group	Number of companies	Average pay ratio	Average staff numbers	Average staff pay	Average CEO pay
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Real estate	4	59	20128	£58,703	£3,019,542
Electricity & water	4	75	14240	£44,942	£3,034,425
Manufacturing – excluding food & beverages	11	77	33784	£50,883	£3,233,318
Oil & gas	4	82	56051	£85,092	£6,736,926
Professional, scientific & technical	6	82	28804	£54,059	£3,636,377
Insurance	8	85	18481	£53,451	£3,968,336
Banking & asset management	11	93	39284	£85,240	£5,581,563
Wholesale & distribution	4	100	22189	£37,398	£3,743,600
Construction	4	113	4118	£61,323	£7,011,053
Telecoms	2	115	178467	£50,457	£5,879,000
Hotel accommodation & food services	3	121	27797	£41,343	£3,005,333
Mining & quarrying	6	133	51066	£52,035	£3,668,395
Pharmaceuticals	4	148	43507	£64,898	£9,543,908
Air & water transportation	4	173	186764	£39,517	£5,156,763
Media & information	3	179	45973	£47,307	£7,890,416
Retail trade	7	189	134131	£19,767	£3,669,451
Manufacturing - food, beverages, & tobacco	8	294	69027	£28,202	£7,653,213

Source: Authors' calculations

The most obvious point to make here is the ease with which firms may manipulate the figures on intra-firm inequality that can be calculated from publicly available data in the UK. There are in fact at least two possibilities. The first is to outsource low paid work. Many of the industries in the top half of the table certainly do so. Those in the bottom half of the table, for example in general retailing, find it harder to do so and contain many employees paid at or close to the NMW. The second is to reduce the executive compensation figures, either those that are paid or those that are published.

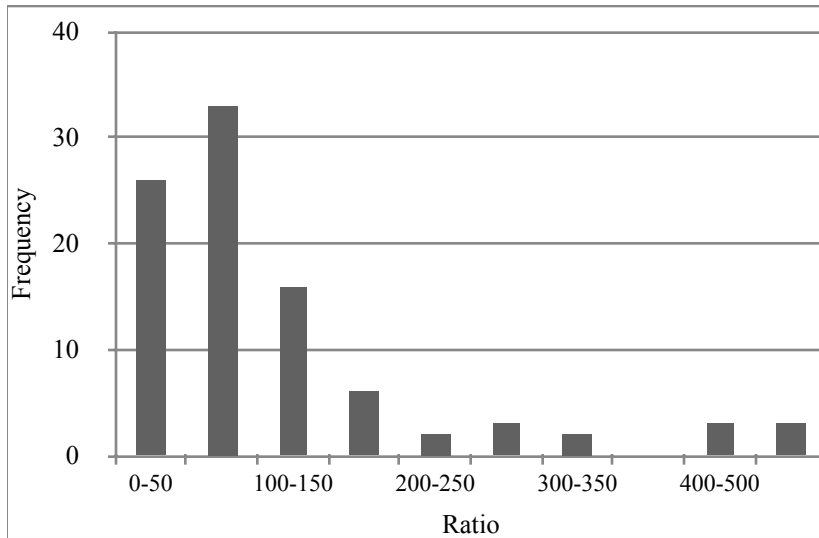
Again consider again a hypothetical example to illustrate this dynamic. In 2015 Firm A and Firm B both paid their CEO £1,000,000. Firm A has average pay at the UK average

(approximately £27,000). Firm B has average pay at the UK minimum wage for a 35-hour week (approximately £12,000). Firm A shows a multiple of CEO to average worker pay of under 40 and Firm B over 80. This may point to the importance of different occupational structures as an influence on intra firm inequality. However, it also indicates the importance of choice of firm boundaries.

Let us take two specific examples of prominent firms in the FTSE 100 in general retailing and financial services respectively in 2015. We adapt the raw data used in Figure 2 in two ways. First, we extract CEO pay from the figure for total pay. Secondly, we extract employers' social security contributions from the total pay bill. Tesco, one of the largest UK retailers has a very wide range of income to judge from the multiple; this was 269 in 2015. It has senior managers on heavily leveraged stock packages (which are 'highly competitive' to judge from the business press). It also employs many people in stores on minimum or living wage, in activities such as shelf stocking and checkout. Barclays is in financial services - its multiple for the same year is lower, at 54. In 2015, average pay at Tesco was £15,369 - the Barclays average was £67,676. CEO pay at Tesco was £4.1 million, that at Barclays £3.7 million. So, much of the difference in the multiple is accounted for by the denominator. Two of the lowest multiples in the FTSE 100 are also financial companies (3i and Admiral Insurance). It should be noted that CEO total remuneration is based on the 'single figure' required by Companies Act 2006. This includes the value of long-term incentives vesting during the year, and is not 'smoothed' in any way.

For the 94 non-investment companies in the FTSE 100, average pay in 2015 stood at £52,233. This is high - it is more than twice United Kingdom average earnings in 2015. It is consistent with the proposition that many firms on the list outsource low-paid activities, and thus they disappear from the calculations possible from public data. Outsourcing non-core activities in this way has become standard operational practice which the capital markets welcome as value-enhancing. Conveniently, of course, it also helps to disguise intra-firm inequality by shifting the legal boundaries of the firm. These UK examples are probably not extreme - it is almost certain that any measure of similar multiples for the Apple or Nike global supply chain would be much broader than one confined to Apple or Nike employees.

Figure 2 FTSE100 CEO to employee average pay ratios, 2015



Source: Authors' calculations

Figure 2 shows the distribution in the ratio of CEO to average pay for the 94 non-investment companies in the FTSE 100 for 2015. The majority of ratios are less than 100:1, but one is greater 1000:1. This is WPP plc, which had a ratio of 1408:1 as a consequence of its very high CEO compensation (£70.4 million) compared with average pay at WPP of £50,024⁴. The second highest multiple is Reckitt Benckiser (824:1) where the CEO was paid £23,190,985 and average earnings were much lower, at £28,150. Average CEO compensation for FTSE 100 companies in 2015 was £5,600,000.

Given that in absolute terms the variance at the top is much greater than at the bottom for these companies, the positive numerator effect on the pay ratio is strong (Pearson correlation significant at .001). However, the denominator effect is also significant (.01). There is also an employment size effect (positive at 0.05). This is also evident in other data sets (Mueller et al., 2015). We suggest that, given the high level of average earnings in FTSE 100 companies (twice the UK average), these companies engage in outsourcing of low paid jobs where possible, and that a substantial part of the variance in pay ratios within the FTSE 100 relates to this.

The final major issue to address using these data concerns the operation of the link between CEO pay and capital market movements. Figure 1 showed the movements in FTSE 100 senior pay from 2000-2015. Lead executives do better in this period than others, but all show consistent increases. This is remarkable in that the period covers two major crashes. The FTSE index was hit by the dot.com crash fallout - its 2000 average was not reached again until 2007. Subsequently the FTSE 100 index was hit by the global financial crash, the effect of which was that the pre-crash high of 2007 was not exceeded until 2013. Over the entire period 2000-2015, the increase in the index is only 0.3 per cent. The increase in FTSE 100 CEO pay

is over 300 per cent. Is it then reasonable to say that executive compensation relates to capital market movements? Other theories, some of them conspiratorial, also exist.

Table 2 CEO pay and upward capital market movements

Year	Index	FTSE100 index				FTSE 100 CEO	
		Year-on-year change	Increases only	Three-year change	Increases only	Total pay	Year-on-year change
2015	6242	- 4.93%	0.00%	5.83%	5.83%	£4,052,000	-2.49%
2014	6566	-2.71%	0.00%	17.84%	17.84%	£4,155,480	-3.00%
2013	6749	14.43%	14.43%	14.39%	14.39%	£4,284,000	5.53%
2012	5898	5.85%	5.85%	8.96%	8.96%	£4,059,334	-0.90%
2011	5572	-5.56%	0.00%	25.67%	25.67%	£4,096,295	2.83%
2010	5900	9.00%	9.00%	-8.63%	0.00%	£3,983,493	17.37%
2009	5413	22.08%	22.08%	-12.99%	0.00%	£3,393,953	3.75%
2008	4434	-31.33%	0.00%	-21.09%	0.00%	£3,271,129	38.38%
2007	6457	3.79%	3.79%	34.13%	34.13%	£2,363,921	6.71%
2006	6221	10.71%	10.71%	38.95%	38.95%	£2,215,346	12.68%
2005	5619	16.72%	16.72%	42.61%	42.61%	£1,966,000	22.79%
2004	4814	7.53%	7.53%	-7.72%	0.00%	£1,601,150	34.21%
2003	4477	13.63%	13.63%	-28.06%	0.00%	£1,193,000	-10.37%
2002	3940	-24.48%	0.00%	-43.15%	0.00%	£1,331,000	28.85%
2001	5217	-16.17%	0.00%	-11.32%	0.00%	£1,033,000	7.36%
2000	6223	-10.20%	0.00%	21.16%	21.16%	£962,145	8.79%
Total percentage change		8.36%	103.74%	76.60%	209.55%		172.49%
Average change per year		0.83%	6.48%	4.42%	12.73%		10.94%

Source: Authors' calculations

Executive equity-based incentives work in a particular way. Their underlying structure is effectively that of an option. Specifically, they do not go negative in value, since under those circumstances the option would not be exercised. Put another way, they are a one-way bet - if the stock price goes up, they increase in value, but they do not reflect falls in the stock price. In Table 2, Column 2 shows the raw index and Column 3 the percentage changes. In Column 4 we register all falls at zero and count only aggregate increases - on this basis, the increase-only change for the FTSE 2000-2015 is 103.7 per cent. This is just under half the CEO pay increase. However, most LTIPs for this set of firms typically work on a three-year cycle. If we calculate the increase only figure for the FTSE 100 on a three-year basis and eliminate falls,

we get a total increase over the period of 209.6 per cent (see Table 2, column 6), which compares with the CEO pay increase of 172.49 per cent. Expressed annually, on the three-year increase only basis, CEO pay goes up 10.94 per cent per annum compared to the index at 12.73 per cent per annum. This is a rather crude calculation, but we would argue it is consistent with the idea that CEO pays increases are linked only to upward movements in capital market indices.

6. Discussion

Where firms account for a very high proportion of total employment in an economy, then intra- and inter-firm inequality become important in explanations of societal inequality. We have limited our focus here to a discussion of intra-firm inequality which, on all measures, has increased in the last few decades. The literature on inequality in the firm has approached this in terms of a move from organisationally focused systems for setting employee income to market-based processes. We have followed this logic a little further. Where firms produce inequality by overseeing a system of income determination that is designed within the firm and insulated from market pressures, we have spoken of ‘administered inequality’. The premise for this is of course that the firm may appropriate rents and then redistribute them according to a system defined by organisational processes internal to the firm, specifically job evaluation and collective bargaining, both of which tend to compress income differentials. We have characterised this circumstance as a feature of managerial capitalism, in which accountability to markets was limited.

There is a substantial literature describing or asserting the end of managerial capitalism and the emergence of more market accountability, visible in a number of ways but specifically for our purposes in the exposure of employment systems more rigorously to market processes. Greater intra-firm inequality is seen to emerge from this. It may well be the case that markets generate more inequality than hierarchies (Kay, 2003). However, our argument, which we have illustrated with UK pay data, is that it is not enough to talk about market influence. One has to ask – which market? A peculiarity of the current system is that different groups of employees are exposed to different sets of market influences.

We have focused primarily on the tails of the intra-firm income distribution in the United Kingdom. In the right tail, incomes are defined in terms of capital market measures. In the left tail, incomes are defined increasingly in terms of statutory mechanisms such as the NMW. There are a variety of linkages to market indices in both cases, but generically executive pay is defined in terms of increases in the price of common stock of the employing firm and lower paid workers are tied to increases in the NMW. Neither of these sets of indices is easily controlled by the firm, hence we have used the term “outsourced inequality” to describe a system in which the firm no longer ‘makes’ inequality but ‘takes’ it. The firm is no longer in control of rent distribution to the same extent as under managerial capitalism.

We spoke of the disintegration of administered inequality processes such as job evaluation and collective bargaining that, we argued, tended to compress income distributions by subjecting them to internal oversight. The question thus arises – what organisational processes have replaced them? Unsurprisingly, the answer is fragmentation and lack of any unified oversight. In the absence of collective bargaining, pay determination for the lower paid in the firm tends to be the responsibility of the human resources department, not normally in the United Kingdom a main Board function, which may find that the anchoring of pay increases in a statutory process legitimises firm decisions. By contrast, the pay of senior executives is set by a firm’s remuneration committee, the primary accountability of which is to shareholders. The two pay-setting mechanisms are not generally co-ordinated. One result is increasing intra-firm inequality, corresponding to the general rise in wealth inequality in the later part of the twentieth century and early part of the twenty first century which has been highlighted by Piketty, Atkinson and others.

However, our argument differs from that of Piketty in terms of the precise processes in operation. Piketty’s argument is that it is impossible to measure the marginal contribution of each ‘super-manager’, as he calls them, to a firm’s total output. Their remuneration is therefore determined by hierarchical superiors or, at the top level, by compensation committees comprising non-executives who are, or were, senior executives in other companies, where they have also been in receipt of very high earnings. In saying this, Piketty is therefore following the ‘managerial power’ hypothesis, the proposition that an elite group of managers in effect determines its own pay on a tacit reciprocal ‘you scratch my back, I’ll scratch yours’ principle, originally advanced by Bebchuk and Fried (2004).

Piketty comments that top pay is determined in the context of a social norm of “meritocratic extremism” which has become prevalent in modern society, led by the United States – the apparent need to designate certain individuals in all forms of life as ‘winners’ and to reward them accordingly. He also points to the decrease in the very high top levels of income tax in the United States and United Kingdom after 1980, which provided an incentive for senior executives to seek higher pay awards, knowing that they would retain a much greater share of their total remuneration.

Our argument is, perhaps paradoxically, that the decline in managerial capitalism, itself a period of almost complete managerial autonomy from investors, has led to an increase in intra firm inequality. Managers have become more subject to capital market oversight, but those senior managers who have their remuneration set to capital measures have benefited both absolutely and relatively to a substantial degree.

Our focus here has been on the firm, and intra-organisational processes, to which there are at least two possible sets of objections. The first is that overall inequality is less affected by intra-

firm issues and more by inter-firm differences in income which relate to inter-firm differences in productivity. There is evidence both from UK and US data to support this (Faggio et al., 2010; Song et al., 2015). No doubt such differences are important, but we would argue that once one considers executive stock options (which Faggio et al., 2010, do not), then the picture changes, because of the extreme movements in executive pay. A further point to make is that if large firms, such as those in the FTSE100 index, outsource low paid and low productivity work, intra-firm processes generate inter-firm pay differences.

The second issue concerns the importance of the intra-firm processes themselves. Autor (2014) has argued that the main factor in explaining the rise in wage inequality has been changes in the return to skills. Mueller et al. (2015) using UK data on job inputs, show both that the skill premium has increased, and that the proportional difference in pay between skill groups grows as firms get larger. They also argue that international differences in wage inequality can be related to different levels of firm growth. The rise in intra firm inequality may thus have happened whether the processes of administered inequality stood or fell. Thus we would argue that the collapse of managerial capitalism is best seen as a precursor to, rather than consequence of, rising intra-firm inequality.

7. Conclusion

We have focused on intra firm financial inequalities, both because they show a pattern of long-term increase and because that increase has become a matter of public and government concern. The specific measure we have chosen is the publicly available one in United Kingdom; the ratio of CEO pay to the average. We have traced the growth in inequality on this measure to changes in the processes of determination of pay; we have described this as a move from administered to outsourced inequality.

The two key characteristics of the latter, more modern, situation are first, that executive pay achieves escape velocity from intra-organisational pay comparisons because it is based on capital market measures and, second, that the option structure of executive pay packages makes this a one way, upward, bet such that executive pay outstrips capital market index measures.

Our research suggests that more needs to be done by government to moderate high pay in the United Kingdom. Public policy interventions might include one or more of the following. First, there should be a reassessment of the most appropriate denominator in pay ratios. From the beginning of 2020 it has become a statutory requirement for UK listed companies with more than 250 employees to disclose in their annual accounts the ratio of the CEO's pay to the median, lower and upper quartile pay of UK employees. Consideration should be given to extending the denominator in the pay ratio calculation to include (a) all 'workers' - this is a broader definition than 'employees' under UK law and includes agency and other casual

workers; and also (b) non-UK employees. The second of these changes would align UK practice with US regulations that require US listed companies to include non-US employees in the determination of the 'median employee' in most circumstances. We further propose that companies should be required to disclose and explain the ratio of CEO pay to UK average nominal earnings as calculated for the relevant year by the Office for National Statistics – this being, of course, an objective, 'non-gameable' measure. Secondly, we suggest that a limit should be placed on the proportion of top pay which can be delivered in, or calculated by reference to, stock prices. A satisfactory degree of incentive alignment can still be achieved if, say, 80 per cent of senior executive pay is delivered in the form of salary and cash bonuses. Executives should also be required to invest some of their salary and bonuses in own-company shares. Thirdly, the government should consider whether large listed companies should be required to test levels of senior executive pay by using systematic job evaluation processes, as was the case in the days of the UK nationalised industries pay review bodies. If measures such as these, and current attempts at private sector self-regulation, continue not to solve the problem of high-pay inflation, then the threat of higher marginal tax rates for the very highly paid continues to be an option for government.

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Notes

¹ There is a separate and equally important question about how best to measure intra-firm inequality and inter-firm variances in inequality. Multiples, as referenced here, are easy to calculate but potentially misleading. More sophisticated measures, for example organisational-level equivalents of Gini coefficients or Atkinson inequality indices, are complex and impossible to calculate based on published information.

- ² It should be noted that new regulations requiring the disclosure of pay ratios in the United Kingdom were introduced in 2018. The new requirements apply to companies reporting on financial years starting on or after 1 January 2019. Quoted companies registered in the United Kingdom with more than 250 UK employees will be required to publish the ratio of their CEO's single figure total remuneration to the median, 25th and 75th percentile total remuneration of their full-time equivalent UK employees.
- ³ Section 953(b) of the Dodd-Frank Wall Street Reform and Consumer Protection Act 2010 (the Dodd-Frank Act) required the SEC to design rules to implement the requirement that a public corporation should disclose the ratio between the total compensation of the CEO and all other employees.
- ⁴ Sir Martin Sorrell, who was CEO from 1986 to 2018, left WPP in 2018. His replacement, Mark Read, was reported to be receiving a pay package of around £7m per annum.