

# **Exporting the winner-take-all economy: Micro-level evidence on the Impact of US Investors on Executive Pay in the United Kingdom**

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## Abstract

Existing studies of the political determinants of top incomes and inequality tend to focus on developments within individual countries, neglecting the role of potential interdependencies that transcend national borders. This article argues that the sharp rises in top incomes around the world in recent years are in part a product of specific features of the US political economy, which were subsequently exported to other economies through the global expansion of US-based financial investors. To test the argument, we collect fine-grained micro-level data on executive pay and firm ownership structures for a comprehensive sample of publicly listed firms in the United Kingdom (UK). Our analyses uncover robust evidence that the Americanization of UK firm ownership leads to sizable pay increases for high-level managers at those firms. Scrutinizing the causal mechanisms underlying this effect, we find them to be more consistent with changes in executive bargaining power than market-related factors such as skills premia or better corporate performance. The findings have important implications for the literature on the international political economy of inequality.

**Keywords:** Inequality – winner-takes-all – foreign investments – top incomes – corporate governance

**JEL Code:** A1, C1

## Introduction

Income inequality, and the trend towards increasing concentration of income and wealth at the top of the distribution, have become a major cause for concern in both scholarly and public debate. Researchers have documented the growing share taken by the wealthiest households in the United States, with the top one per cent currently capturing as high a share of income as in the 1920s (Atkinson, Piketty, and Saez 2010). The Occupy movement's popularization of the concept of the 'one per cent' in the US has articulated this concern in the public sphere. Research on the causes of this sharp rise in top income shares have invoked factors such as the rising capital

share (Piketty 2014), the growing political power of the wealthy (Hacker and Pierson 2010), technological change (Brynjolfsson and McAfee 2014), the decline of trade unions (Huber, Huo, and Stephens 2017; Hager 2018), and financialization (Flaherty 2015).

The dominant ontology adopted by analyses in this substantial body of research has approached the study of inequality as primarily a national-level phenomenon. This article puts forward a different, complementary perspective. It emphasizes the transnational dimension of these developments. To an important extent, we argue, the dramatic income gains of individuals populating the top one per cent in recent years result from a growing upwards-distribution of corporate profits within large multinational companies. This, we suggest, makes firms as sites of redistributive struggles fruitful units of analysis to better understand the determinants of global trends towards greater inequality.

Empirically, we depart from aggregate data on national-level top income shares. Instead we analyze individual manager-level remuneration using fine-grained micro-level data on executive pay. For reasons of data quality we focus on companies that are publicly listed in the jurisdiction with the most stringent transparency requirements on executive pay outside the USA, the United Kingdom (UK). The data we use covers several thousand high-level managers of UK-incorporated firms from 2007 throughout 2014. This enables us to study in detail the micro-dynamics driving variations in rewards for the highly paid executives that populate the top percentile of the income distribution. In contrast to the emphasis on national-level institutional features in the previous literature, we are particularly interested in examining an alternative potential channel of an explicitly transnational nature: the internationalization – and more specifically the Americanization – of ownership of non-US firms.

Whilst trends towards a growing concentration of incomes have been a widespread phenomenon, nowhere have these developments been more dramatic than in the United States (“WID” 2018). As other studies have shown (Bebchuk and Fried 2004; Bebchuk and Grinstein 2005), these trends in the American economy have to an important extent been driven by a shift from cash-based salaries towards equity-based “pay-for-performance” (P4P) remuneration schemes promoted by advocates of the shareholder value model. Our empirical analyses assess the extent to which the global spread of US-based investors may have contributed to the diffusion of such American-style remuneration practices – and by implication greater income inequality – in the British economy. Our findings provide strong and robust evidence that this has indeed been the case: as US ownership in UK-incorporated firms grows, pay for top executives at those firms goes up significantly.

The fine-grained nature of our data allows us to also evaluate various mechanisms that may lie behind this outcome. We draw a distinction between two sets of

mechanisms: market-related factors, such as changes in the demand and supply of certain skills or the productivity impact of performance-related compensation structures; and a more political explanation revolving around changes in bargaining power within the firm, for example the ability of executives to use new compensation structures to redistribute a larger share of firm resources to themselves. Our results are most consistent with the latter interpretation. In other words, our findings suggest that the entry of US investors enables top executives at UK-based firms to employ strategies that enable them to benchmark themselves to highly-paid US peers, and thereby capture ever larger shares of corporate profits even in the absence of improvements in corporate performance.

Our focus on firms based in only one country poses natural limitations on the external validity of our findings. On the one hand, trade unions and other corporatist arrangements are known to be weak in the UK, and it is possible that they still act as stronger barriers to upwards pressures on executive pay in other environments. On the other hand, our finding that US influence has had a strong impact even in a country featuring a business culture considered similar to the one in the USA could equally suggest that the disruptive potential of American ownership may be even greater elsewhere. In either case, the size and robustness of the effects that we find in the UK case are large enough to make further research on both the impact of US owners as well as the ability of institutions of corporate governance to resist these pressures a seemingly worthwhile undertaking.

The paper proceeds as follows. The next section reviews the relevant literature on inequality and top income shares, elaborates our argument and examines possible channels for diffusion. Section three presents the empirical strategy and data, section four the empirical analyses, and section five concludes.

### **The politics of inequality in a global economy: conceptual framework**

Most political science research on income inequality has focused on the gap between the lower and middle income groups, emphasizing the role of electoral institutions (Lijphart 1999; Iversen and Soskice 2006), partisan control of government (Cusack 1997; Bartels 2008; Iversen and Soskice 2009), welfare state arrangements (Esping-Andersen 1990), and the strength and coordination of labor representation (Hall and Soskice 2001; Moene and Wallerstein 2001; Thelen 2014; Martin and Swank 2012).

But more recently, the pioneering data collection efforts of Anthony Atkinson, Thomas Piketty and their collaborators (Atkinson and Piketty 2007, 2010) and the phenomenal success of Piketty's interpretation of this data in his *Capital in the Twenty-First Century* (Piketty 2014) has given rise to a new field of research focusing on the politics of inequalities at the top of the income distribution (Hopkin

and Lynch 2016; Hager 2018). One influential stream of work in this area explains the concentration of income in the USA as the result of successful ‘organized combat’ by wealthy and corporate interests who use their financial clout to skew policy in their favor (Hacker and Pierson 2010; Gilens 2012). Another stream of research evaluates the role of institutional arrangements in explaining cross-national variations in top income shares through cross-country regression analyses (Scheve and Stasavage 2009; Huber, Huo, and Stephens 2017).

### **From nation-states to firms**

Ontologically, this existing body of research shares a focus on nation-states as key analytical units. Pursuing this line of inquiry, the literature has made important contributions to our understanding of the political drivers of growing income inequality. But a focus on nation-states alone, as seminal literature in IR has highlighted for many other policy issues (Simmons and Elkins 2004; Gilardi 2012; Farrell and Newman 2014; Oatley 2011; Bauerle Danzman, Oatley, and Winecoff 2017), risks overlooking transnational drivers of outcomes of interest.

Furthermore, there are good reasons to think that the transnational is of relevance for the study of top income inequality. As in-depth studies of US (Bakija, Cole, and Heim 2012) and UK (Brewer, Sibieta, and Wren-Lewis 2009) tax records show, the ‘top one per cent’ are predominantly salaried managers and finance professionals – social groups who live in deeply transnational environments (especially in the ‘Anglosphere’). In this sense, the study of income inequality at the top through the use of cross-national country-level regression analyses may face some inherent limitations.

In this article we therefore propose shifting the primary unit of analysis from the national level at the aggregate to the level of firms. This shift is justifiable in particular when we consider that whilst pre-war inequality was fuelled by extreme concentrations of *capital* income, growth in inequality today is overwhelmingly the result of differences in *labor* incomes – the growing gap between stagnating median wages and the “explosion of supermanager salaries” (Piketty, 2014: 334). Redistributive struggles centered on the wage-setting process, which plays out at the level of firms (Avent-Holt and Tomaskovic-Devey 2014), thus arguably play a key role in determining patterns of inequality in the contemporary period. In our analysis we thus conceptualize (multinational) corporations as key sites of redistributive struggles that shape broader trends of inequality in the global economy. The transnational dynamic that we are particularly interested in is whether the Americanization of corporate ownership leads to higher levels of executive pay in non-US firms.

### US capitalism and the revolution in executive pay

The starting point of our analysis is the uncontroversial fact that the United States has been at the forefront of the rise in top incomes amongst the advanced economies. In addition to the aggregate data reported in Piketty (2014), studies have also specifically documented the rise in rewards for top managers in the US. Although the US has long had higher levels of inequality than most of Europe, the income shares of America's high earners have varied over time. As Frydman and Saks (2010) have documented, levels of executive pay in the USA increased only incrementally from the mid-1940s to the 1970s, but then started to grow increasingly rapidly in the 1980s. In the 1990s and early 2000s the ratio of the average salary of the CEO of a large listed American company compared to the average worker reportedly grew from 42:1 (in 1980) to 347:1 (in 2016) (Hargreaves 2019, 7).

As business historians and management scholars have shown, these sharp increases in pay are closely related to the rise of the shareholder value ideology in the 1980s and an associated change in the way in which executives were paid (Bebchuk and Fried 2004; Lazonick and O'Sullivan 2000). In the view of many financial economists and regulators, managers (the 'agents') had become too powerful and enjoyed too much freedom to pursue their own goals rather than those of the owners of the company (the 'principals'). To realign incentives, proponents of the shareholder value approach - led by activist institutional investors who "saw themselves (...) as the shock troops of shareholder primacy" (Buchanan, Chai, and Deakin 2012, 6) - advocated a move towards a greater use of equity-based pay (i.e. to remunerate high-level executives with stock of their own company rather than cash). This was seen as an effective way to assure that managers will act in shareholders' best interests and focus on increasing firms' market value.<sup>1</sup>

As others have suggested (Thomas 2004; Conyon, Core, and Guay 2011; Fernandes et al. 2013), the move towards a pay-for-performance culture in the USA was accompanied by sharp increases in executives' total remuneration for two reasons. First, it legitimized higher pay since it could now be justified as being a meritocratic award and desirable incentive for managers to do the 'right' thing (i.e. increase firm's share price). Even spectacular increases in remuneration could be justified by commensurate improvements in corporate performance and the delivery of high financial returns to shareholders. Second, compared to standard remuneration in cash, the value of equity-based remuneration is less transparent and thus easier to conceal, removing fears about a potential backlash by shareholders or the public about perceived excesses in managers' pay.

The increases in executive pay in US companies in the 1980s-2000s are unparalleled in other parts of the world. One of the first studies comparing executive

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<sup>1</sup> See for instance the *Harvard Business Review* manifesto for P4P by Jensen and Murphy (1990).



pay data internationally found that the pay differential between CEOs in the USA and UK was nearly 200 percent, and even larger in comparison to most other advanced economies (Conyon and Murphy 2000). More recent studies in the field of executive compensation have attempted to explain this international pay gap. According to their findings some of it can be accounted for by the larger size of US firms, their better economic performance, and a more widespread dilution of corporate ownership (Cheffins and Thomas 2004; Conyon, Core, and Guay 2011; Fernandes et al. 2013). Yet, even if such factors are being taken into account, a sizable "US premium" remains (Fernandes et al. 2013).

Figure 1 illustrates this phenomenon using our own data on executive remuneration, comparing developments in the USA and UK.<sup>2</sup> The graph plots the annual remuneration of the median executive of the median company in terms of pay in the USA (black lines) and UK (grey lines). To improve comparability<sup>3</sup> we restrict the sample to very large companies with at least 10,000 employees. Both the pay gap and the increase in total pay over the time period are remarkable: the pay package granted to the median executive in the US in the year 2000 was worth more than \$8 million in inflation-adjusted 2017 USD and – in disregard of the occurrence of two major financial crises in 2001 and 2007 - grew gradually to \$15 million by 2014. In the UK, median pay at similarly large companies was significantly lower at less than \$1 million at the beginning of the period. But it tripled to more than \$3 million in 2014, reducing the pay gap faced by UK executives from an eighth to a (still significant) quarter of their US peers.

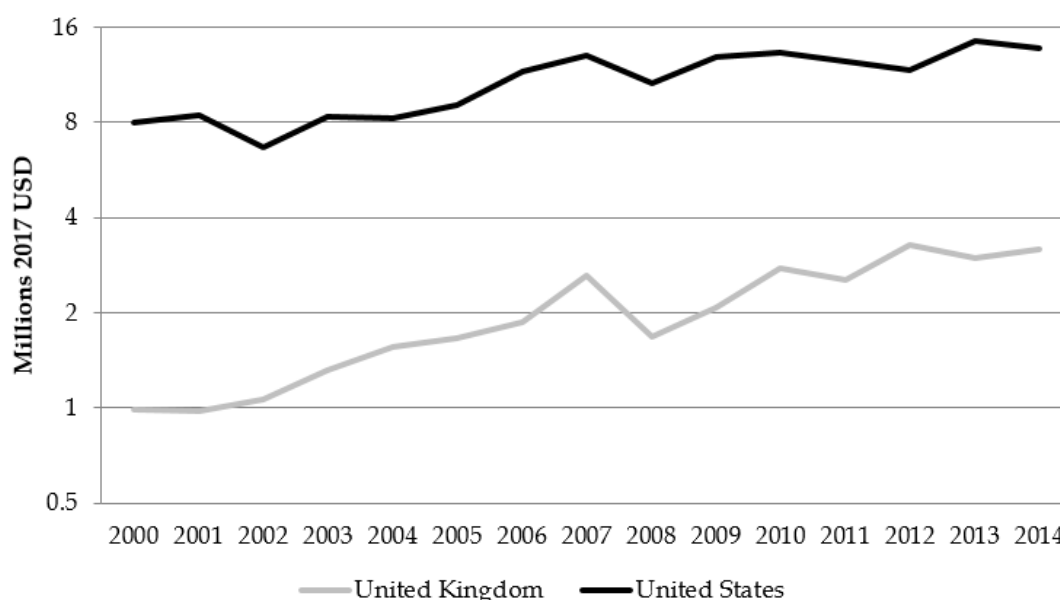
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<sup>2</sup> Note that in global perspective the UK is considered to be one of the highest-paying markets other than the US, together with Switzerland, Ireland, Italy, Australia and Canada (Fernandes et al. 2013, 337;344).

<sup>3</sup> The *BoardEx* data for the UK has better coverage and includes many smaller firms than data for the USA.



**Figure 1. The evolution of executive pay in the United States and United Kingdom, 2000-2014**



SOURCE: Own calculations based on BoardEx data. NOTE: For better readability the y-axis is in logarithmic scale. Lines show the value of the annual salary of the median executive in the median firm in the country-sample. All values are in constant 2017 USD. To improve cross-country comparability, country samples are restricted to very large companies with at least 10,000 employees. Further details on the underlying data is provided in Table A1 and Table A2 in the appendix.

In brief: there are strong indications that executive salaries are exceptionally high in the USA and that their growth was driven, to an important extent, by the rise to prominence of the shareholder primacy maxim and an increasing reliance on P4P and equity-based pay. Arguably these developments were in the first place the result of political trends in the United States. The effects thereof, however, we suggest, may have reverberated far beyond its national borders. Once established in the United States, these remuneration practices could be spread to other parts in the world, through different possible routes, affecting income distributions around the world. The next section assesses some hypotheses about the possible nature of this diffusion.

### Potential mechanisms of diffusion

In the contemporary world economy, Wall Street remains the core of the global financial system and US-based investors own significant shares of corporations around the world (Fichtner 2017; Starrs 2013). While US investors directly control some publicly listed foreign companies in which they own more than 50 percent of corporate shares, the more common picture (illustrated in appendix Table A5) is the one of US institutional investors owning substantial minority positions ranging between 1 and 20 percent of large listed foreign-incorporated outstanding stock. This

does not grant them managerial control over those companies, but it does make them potentially influential stakeholders.

The process determining the pay packages that top managers receive involves several actors (Hargreaves 2019, 10–12): It is centered around a firm-internal remuneration committee, which is typically constituted by several members of the board of directors. The committee usually seeks the advice of external compensation consultants<sup>4</sup> and agrees on a recommended pay package in cooperation with the firm's HR Department. Depending on national corporate governance laws, the recommendation then has to be formally approved at the annual shareholder meeting through an advisory or binding vote.

This setup opens up a variety of potential mechanisms through which larger ownership stakes by US-based investors could translate into upwards pressures on executive pay at non-US firms. We structure them into two distinct types: market mechanisms (such as supply and demand for skills and rewards for productivity), and political mechanisms (such as shifts in bargaining power within the firm).

*Market Mechanisms:* The first type of mechanisms relate to the logic of demand and supply in labour markets for top executives. The internationalization of corporate ownership structures may put a premium on top managers' ability to interact and communicate effectively with investors from different cultural backgrounds. The extra skills that this demands (e.g. cross-cultural communication skills, a MBA degree from an internationally prestigious business school, etc.) may mean that the pool of potential candidates in a local job market shrinks as foreign investors become more prominent as shareholders, allowing qualified candidates to ask for higher remuneration (Oxelheim and Randoy 2005). Foreign investments in a company may also increase the likelihood to appoint external hires with an international reputation. This could lift salary upwards because, as argued by Rakesh Khurana (in Dillon 2009), "with the emphasis on recruiting outside stars, the benchmarking [can] ... become lateral" – that is, it can encourage remuneration committees to compare levels of pay to other top executives at other firms rather than lower-ranking directors of the same company. Growing influence from US investors specifically may equally increase the likelihood to appoint managers from the United States who will expect high levels of US-style pay.

An alternative set of potential market mechanisms relates to US investors' reportedly strong preference for P4P remuneration techniques. Since the profitability of their investments hinge on the stock market performance of target firms, advocates of P4P argue, shareholders should generously reward executives for improvements in performance, but sharply punish them for underperformance (Jensen and Murphy 1990). Survey evidence suggests that these views are particularly widespread

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<sup>4</sup> The leading providers are firms such as *Towers Perrin*, *Mercer*, *Watson Wyatt*, *Hewitt Associates* and *New Bridge Street Consultants* (Conyon, Peck, and Sadler 2009, 49).

among US institutional investors, with a majority of over two-thirds indicating the rigor of performance targets to be the single most important criterion when evaluating levels of pay (Morrow Sodali 2017, 20). To the extent that US investors insist more strongly on P4P than other shareholders, growing US investments may also lead to higher, equity-based pay provided that corporate performance is good.

*Bargaining Power.* The second, more political set of mechanisms relate to the agency of executives themselves and their bargaining power within the firm. As proponents of managerial power theory in particular have pointed out, there are various ways through which executives themselves can influence their own pay. The two most important avenues are for managers to either take advantage of weak monitoring by independent directors on remuneration committees (Bebchuk and Fried 2004), or to influence the selection of peer groups in the latter's benchmarking exercises (DiPrete, Eirich, and Pittinsky 2010; also Godechot 2017). Growing foreign ownership has the potential to facilitate both of these strategies. Domestic shareholders may be better able to monitor the actions of executives than US and other foreign ones. In this sense, agents (i.e. executives) may be able to appropriate greater shares of corporate profits for themselves without encountering resistance by the principals (i.e. shareholders) as ownership stakes pass from domestic to foreign investors. Simultaneously, the internationalization of corporate ownership may also be an opportunity for executives to push for a modification of remuneration committee's all-important benchmarking exercises. As DiPrete et al. (2010, 1684) note, 'aspiration peer groups will generally consist of highly paid peers, and CEOs have an obvious incentive to claim as highly paid a group of "peers" as possible'. In this sense, executives may see growing foreign ownership as an opportunity to argue that their salaries should be benchmarked to the earnings of international, rather than domestic or firm-internal, peers. In view of the sizable US pay premium, this should lead to particularly large effects if executives are able to claim American executives as the appropriate benchmark.

*Observable implications.* Some of these mechanisms, such as the appointment of US citizens or the effects for the remuneration of incumbent as opposed to newly hired managers, we can observe directly in our data. Others entail observational implications that we can evaluate indirectly. To distinguish the relevance of market vs. political mechanisms generally, the relationship between pay and performance is key. Pay increases driven by improvements in corporate performance may point to the former, whilst increases in pay without improvements in performance may be indicative of the latter. To evaluate the relevance of skills-related factors as well as to adjudicate among the two main bargaining mechanisms, a comparison between the effects of US vs. non-US foreign investors and across industrial sectors can be useful. To the extent that key developments are related to skills or a weakening of the influence of domestic investors *per se*, effects should be similar for US and other foreign investments and across industrial sectors. If in contrast the effects are

significantly larger for US than other foreign owners or concentrated in industrial sectors in which levels of pay are particularly high in America (e.g. finance, cf. Lord and Saito 2010) benchmarking mechanisms would seem to be more prominent.

In the sections that follow we examine these alternative hypotheses econometrically.

### **Empirical strategy**

To assess the relationship between foreign ownership and executive pay in the United Kingdom and the mechanisms that may be underlying them, we collect detailed time-series panel data information on the yearly (pre-tax) remuneration of several thousand high-level executives at publicly listed UK-incorporate firms during the time period from 2007 to 2014.

It is worth noting that we are not the first to investigate the effects of the Americanization of European companies. Business historians have provided rich accounts of European firms' adoption (and adaptation) of technologies, organizational structures and managerial practices used by US multinationals in the post-war era (Zeitlin and Herrigel 2000; Almond et al. 2006). A small number of studies in the management and finance literature has also investigated the effects of Americanization on CEO compensation in Canada (Sapp 2008; Southam and Sapp 2010), Norway and Sweden (Oxelheim and Randoy 2005), the United Kingdom (Gerakos, Piotroski, and Srinivasan 2013), and a cross-national European sample (Fernandes et al. 2013). Empirically, our research departs from these studies in three ways.

First, our sample is more comprehensive than those of previous studies, covering a consistent time period of 8 years<sup>5</sup>, and including salary information of several top executives of the same firm (instead of only CEOs). This makes our sample more representative, and at the same time enables us to employ regression modeling techniques (e.g. panel regressions with firm fixed effects), which allow us to assess these relationships in a more rigorous manner.

Second, a majority of the few existing studies operationalized Americanization through variables that measure outcomes of decisions of the executives themselves - e.g. a cross-listing in the US, the appointment of an American national to the board of directors or sales in the US market. This makes it difficult to evaluate whether executives actively seek exposure to US capital markets because they see it as a means to justify a push for larger pay packages (in which case executives' quest for higher pay would cause Americanization), or if it is the exposure to the US itself that enables them to increase their pay (in which case Americanization causes higher pay). In comparison to these proxies, US ownership is further removed from decisions adopted by managers themselves. Since shares of publicly listed

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<sup>5</sup> Gerakos, Piotroski, and Srinivasan (2013) used data from 2002-2007; the main results of all other studies rely on cross-sectional analyses from only one year.

companies are traded on open markets, company directors exercise little influence over the buyers/sellers of their equity. As Gerald Davis (2008, 17) notes, '[m]any corporate executives may only learn ... [who] is their largest shareholder when they find out about it through a securities filing by the fund'. The relative exogeneity of the ownership variable arguably make it better suited to study the effects of Americanization on executive pay.<sup>6</sup>

Finally, we are not only interested in establishing the existence of a relationship between US ownership and executive pay. The richness of our dataset also allows us to more systematically evaluate the relevance of various different possible causal mechanisms theorized in the preceding section.

## Data

Our sample focuses on publicly listed UK-incorporated firms in the period from 2007 to 2014. The relevant British government regulations setting the framework for executive pay during our time period of observation are the UK Corporate Governance Code and the Directors' Remuneration Report Regulations, both issued in 2002 (Petrin 2015; Bender and Moir 2006). The legislation does not impose any cap on levels of pay, but requires publicly listed firms to make detailed information on the remuneration of top executives publicly available. It also subjects remuneration reports to an advisory "say-on-pay" vote at annual shareholder meetings.

Our data on executive pay is from *BoardEx*, a London-based business intelligence firm that collects data on the remuneration, network and career trajectory of over one million high-level executives around the world.<sup>7</sup> *BoardEx* does not employ an explicit sampling methodology, the collection of data being driven by availability and 'client interest'.<sup>8</sup> Information on executive pay at publicly listed firms<sup>9</sup> is collected predominantly from companies' annual reports. The data is widely used for academic research in finance and business studies and our cross-checking of randomly selected data points with original figures in annual reports found the information to be reasonably accurate.

To evaluate the coverage of our data we compared the number of companies with executive remuneration data with the total number of companies listed on the London Stock Exchange (the only remaining UK stock market) in the same year. As illustrated in appendix Table A3, more than half of all publicly listed UK-incorporated firms are included in the *BoardEx* dataset and information on executive pay is available for about 40 percent of the entire population of companies. The mean

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<sup>6</sup> Fernandes et al. (2013) is the only other study which has used this information, but with a comparably small sample for only one year.

<sup>7</sup> We downloaded the entire database in the summer of 2016.

<sup>8</sup> Personal communication with *BoardEx*.

<sup>9</sup> *BoardEx* also collects some information on some notable firms that are held privately, but we restrict our analysis to publicly listed firms.

market capitalization of companies in our dataset is three to four times larger than the average of all LSE-listed firms, suggesting that, unsurprisingly, the data is skewed towards larger firms. The market value of all companies with remuneration data combined lies well above 90 percent of the value of all UK-incorporated companies listed on the LSE.<sup>10</sup> In brief: although we do not observe executive pay for the entire population of firms, we are confident that the data covers a substantial part of relevant companies and captures developments in large publicly listed firms in the United Kingdom in a broadly representative manner.

Data on corporate ownership, the key independent variable for our study, is from Bureau van Dijk's (BvD) *Orbis* database. BvD is one of the largest providers of corporate data. Independent assessments have found the quality of the data to be good and coverage for the UK is nearly complete for companies employing more than 50 employees (Garcia-Bernardo and Takes 2016, 4).

The identification of the owners of publicly listed corporations faces two challenges: First, only relatively large investors whose holdings exceed a certain threshold are legally obliged to declare their ownership stakes. The precise threshold depends on the applicable regulation which varies by type of investor and investee, but generally ranges between 1 and 5 percent of a company's outstanding stock<sup>11</sup>. By implication, available ownership data will be biased towards relatively large investors and positions by small investors will frequently remain unidentified. Given that nearly 90 percent of shares in the UK stock market are held by institutional investors (Office for National Statistics 2017) and that the focus of our theoretical argument is on investors large enough to influence managerial decision-making, this does not constitute a major problem for our research. But it is a limitation that should be borne in mind. Second, investment flows in globalized capital markets are commonly channeled through several jurisdictions. As a result, ownership relations in the contemporary economy are frequently opaque (Linsi and Mügge 2019). A key strength of the *Orbis* ownership data in this respect is BvD's development of a proprietary methodology aimed at estimating shareholders' *total* ownership stakes, including both direct and indirect positions. To identify total ownership stakes, BvD leverages their database's archive of over 300 million observed ownership links, which enable it to track down the beneficial owners of indirect positions as long as all nodes in the ownership chain are included (Bureau van Dijk 2018). Furthermore, ultimate ownership positions can be validated by cross-checking records filed with regulatory agencies on both ends of the ownership chain. Although it remains clear

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<sup>10</sup> Missing data and the volatility of stock prices and exchange rates complicate the comparison of the market cap between datasets, meaning that these estimates are only rough approximations.

<sup>11</sup> According to current UK regulations, any investor interested to acquire a share of 1 percent or more is legally obliged to inform the target company; in cases of 3 percent or more, investors must in addition inform the London Stock Exchange (Marriage 2015). Outward investors domiciled in the USA must simultaneously declare substantial ownership positions to the SEC through 13F and 13D declarations, which are made publicly available on the Edgar system.



that unavoidably some ownership positions will be missed or misattributed, we believe the ownership data to be reliable for stakes held by large institutional owners who are subject to strict legally mandated declaration obligations.

To operationalize US and other foreign ownership of publicly listed UK-incorporated firms we calculate the aggregate value of all positions of ultimate owners domiciled in the USA or any other foreign country as identified in the *Orbis* database. Summary statistics are provided in appendix Table A4. They indicate that on average about 50 percent of the shares of publicly listed UK-incorporated firms are owned by foreign investors,<sup>12</sup> of which approximately a fifth are being held by investors domiciled in the United States.

Who are the investors behind these aggregate figures? To find out, we took an in-depth look at the *Orbis* data to identify the largest shareholders present in the UK stock market. For purposes of illustration, appendix **Error! Reference source not found.** lists the ten largest shareholders by country of domicile - distinguishing between investors from the USA, any foreign country other than USA and domestic investors from the UK - for the years 2007 and 2015. Without exception, they are institutional investors: investment banks (e.g. *Goldman Sachs*, *UBS*, *JP Morgan Chase* or *Société Générale*), mutual and exchange-traded funds (e.g. *Blackrock* or *Vanguard*), insurers (f.e. *Legal and General*, *Prudential* or *Standard Life*) as well as one sovereign wealth fund (*Norges Bank*). Importantly for our analysis, there is no obvious difference in the composition of groups of US and other foreign investors. Both primarily capture large mutual funds.

## Econometric analyses

Our econometric strategy unfolds in three steps. First, we run a set of standard panel fixed-effects regressions with firms as units of observations to evaluate the association between marginal increases in US and non-US foreign ownership and individual pay packages disbursed to executives at UK-incorporated firms. We then exploit the individual-level data to validate these results, address alternative explanations, and explore the relevance of various diffusion mechanisms. Finally, as a robustness check, we confirm our results in a sample restricted to the executive directors for which we have longitudinal information.

## Company-level analysis

We first estimate the relationship between foreign ownership and executive pay at

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<sup>12</sup> This estimate is very similar to the results of a recent study on foreign ownership of the UK stock market commissioned by the ONS. Tracking ultimate owners for a subsample of 200 listed UK companies in 2015, the report indicated levels of foreign ownership to amount to 53.9% (Office for National Statistics 2017).



the company-level. Using our sample<sup>13</sup>, we estimate the following baseline specification:

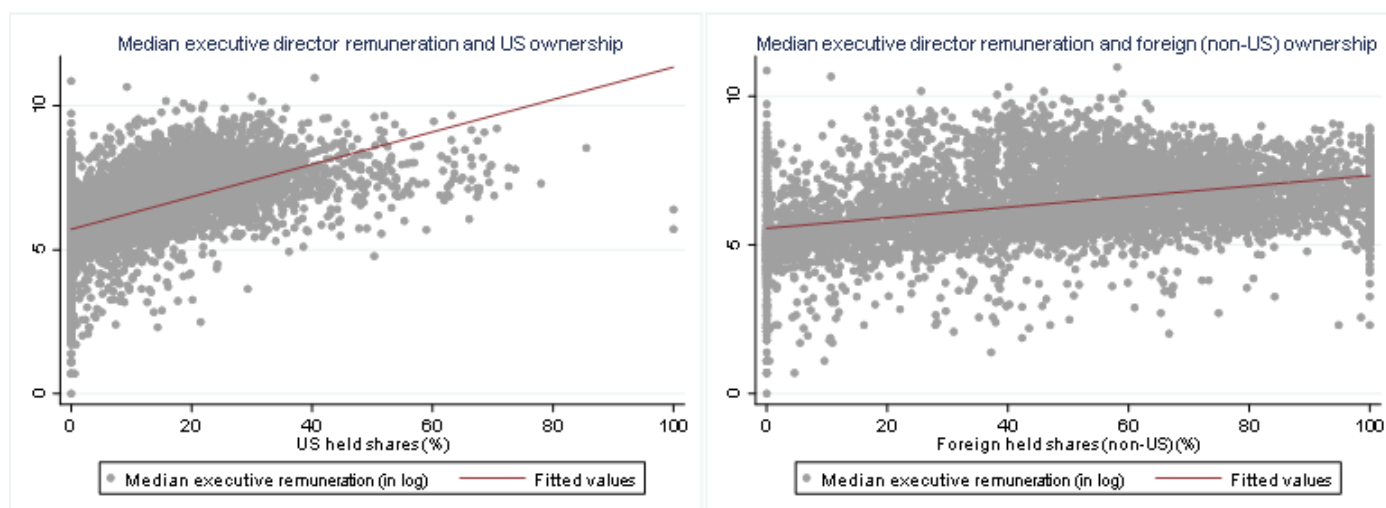
$$Y_{j,t} = \lambda_0 + \lambda_1 \cdot S_{j,t} + W'_{j,t} \lambda_2 + \mu_j + \delta_t + \eta_{s,t} + v_{j,t} \quad (1)$$

where  $j$  indicates companies, and  $t$  years.  $Y_{j,t}$  measures the median remuneration of executives (in log) at a given firm in year  $t$ .  $S_{j,t}$  refers to the percentage of a company's shares that are foreign-owned, and  $\lambda_1$  is the main parameter we are interested in estimating.  $W_{j,t}$  is a vector of company covariates including nominal stock price variation, the solvency ratio, BvD's ownership concentration index proxying for management independence, as well as union density at the level of the industrial sector companies operate in.  $\mu_j$  are company-fixed effects, which absorb the influence of any characteristics that are constant within firms over time, such as internal culture or industrial branch. Year-fixed effects  $\delta_t$  control for macroeconomic shocks affecting all firms simultaneously in a year, and sector-specific linear time trends  $\eta_{s,t}$  capture heterogeneous trends in managerial pay across industrial sectors.  $v_{j,t}$  is the error term. Standard errors are clustered at the company level. Descriptive statistics can be found in appendix Table A6.

The identification assumption one needs to make to interpret our results causally is the absence of any firm-specific shocks that correlate with both pay packages and ownership structures. Company-fixed effects and year effects remove the influence of firm-idiosyncratic factors and over-time developments common to all firms. Sector-trends account for the different trajectories economic sectors might be following. Company time-varying covariates aim at controlling for additional company-specific characteristics that may jointly affect remuneration and ownership. Despite the use of this fairly extensive set of fixed effects and controls, we cannot rule out the possible existence of unobserved factors, which may bias our results. Taking this identification threat into account, we perform numerous robustness checks designed to address some of these potential concerns.

Before turning to our econometric analyses, we examine the bivariate relationship between the log of firm-median executive remuneration and foreign ownership. Figure 2 plots the relationship of pay with US-held shares on the left, and with non-US foreign investor-held shares on the right.

<sup>13</sup> We drop companies we only observe once since we estimate panel fixed effects regressions.

**Figure 2. Foreign ownership and executive remuneration**

The plots indicate a clear positive relationship between US investor presence and executive pay. The relationship appears to be fairly linear, lending support to our baseline specification modelling assumptions. The association between executive remuneration and non-US ownership is also positive, but clearly weaker - a pattern *a priori* more consistent with either benchmarking or performance-related mechanisms at the expense of skill factors or weaker monitoring.

In our regression analyses we probe the robustness of these associations. We first examine the association between firm-median executive pay and total foreign ownership (i.e. US- and non-US foreign-held shares combined). The first three columns in Table 1 model a linear relationship between our variables of interest. The last three a non-linear one, in which we use a dummy variable equal to 1 for companies that have significant foreign investments. Following Davis (2008, 16ff.), as well as international statistical standards that define positions above 10 percent as foreign direct (rather than portfolio) investments (International Monetary Fund 2014), we set the critical threshold at 10 percent. While this threshold is admittedly somewhat arbitrary, the advantage of this setup is that it is on the whole less sensitive to potential measurement errors in the ownership variable. In either case, consistent results across the two models would increase our confidence in the findings.

Moving from left to right, we gradually introduce more covariates in order to assess how the removal of potential sources of confounding variation affects our results. In Column 1, we only include company and year fixed effects. The correlation between foreign ownership and pay is positive and statistically significant. The coefficient

implies that each 10 percentage points increase in foreign ownership is associated with 1.1 percent increase in executive pay. Adding sector linear trends in Column 2 doesn't affect these results much. In Column 3 we also control for company covariates. The coefficient remains positive and the point estimate is barely affected by the introduction of covariates, but it turns insignificant due to increases in the standard errors.<sup>14</sup> In Columns 4 to 6, we report the results for the 10 percent ownership dummy. The coefficients estimated are stable as we introduce controls and suggest that *all else equal*, firms with significant foreign ownership pay their top executive directors approximately 10 percent more than similar domestically owned firms.

**Table 1. The impact of foreign ownership (US and non-US combined) on executive pay (unbalanced panel)**

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Median remuneration executive directors (in log)					
Foreign ownership (%)	0.00108* (0.000568)	0.00109* (0.000573)	0.00104 (0.000675)			
Foreign owned >10%				0.0999** (0.0455)	0.0981** (0.0449)	0.102** (0.0501)
Union density			-0.00877 (0.00725)			-0.00887 (0.00725)
BvD independence			-0.00251 (0.0163)			-0.00180 (0.0161)
Stock price variation			0.00147 (0.0138)			0.00150 (0.0136)
Solvency ratio			0.00138 (0.00100)			0.00143 (0.000996)
Observations	5,941	5,941	4,924	5,941	5,941	4,924
R-squared	0.053	0.068	0.077	0.053	0.069	0.078
# companies	928	928	717	928	928	717
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector trends	No	Yes	Yes	No	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Company fixed effects regressions estimated by least squares.

Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

In Table 2 **Error! Reference source not found.** we separate US investors from other foreign investors. The table is structured in the same fashion as the previous one. In line with our theoretical argument, we find a strongly positive and statistically significant coefficient for the US ownership continuous measure throughout the first three columns. The estimates are significant at the 1 percent level. They indicate a 10 percentage point increase in US ownership to translate into a substantial pay increase for top executives at British firms of approximately 4 percentage points. At

<sup>14</sup> Since we have some missing observations for those controls, we operate with a smaller sample. In addition, some of those variables may be 'bad controls' in the sense that they are possibly affected directly by ownership structures. In consequence, we don't necessarily view our results in Column 3 as our preferred ones.

the same time, the association between continuous *non*-US foreign ownership measure and pay is statistically insignificant once that the US-related component is separated out. It does remain significant in the dummy approach (presented in columns 4 to 6). But the size of the effect and the level of statistical significance are higher for US investors also in these models.

**Table 2. US and non-US foreign ownership (unbalanced panel)**

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Median remuneration executive directors (in log)					
US ownership (%)	0.00438*** (0.00136)	0.00410*** (0.00135)	0.00390*** (0.00140)			
Non-US ownership (%)	0.000336 (0.000535)	0.000381 (0.000544)	0.000187 (0.000658)			
US owned >10%				0.106*** (0.0335)	0.107*** (0.0335)	0.0944*** (0.0346)
Non-US owned >10%				0.0743* (0.0443)	0.0747* (0.0440)	0.0880* (0.0482)
Union density			-0.00944 (0.00722)			-0.00856 (0.00724)
<u>BvD</u> independence			0.00405 (0.0175)			0.000960 (0.0184)
Stock price variation			0.00148 (0.0134)			0.00197 (0.0126)
Solvency ratio			0.00136 (0.000998)			0.00139 (0.000986)
Observations	5,941	5,941	4,924	5,941	5,941	4,924
R-squared	0.055	0.070	0.079	0.056	0.071	0.080
# companies	928	928	717	928	928	717
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector trends	No	Yes	Yes	No	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Company fixed effects regressions estimated by least squares. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

The results presented so far are based on an unbalanced panel of firms. In appendix Table A7 we check our results with a balanced sample of firms for which we have observations in every year. The results are strongly consistent with the previous results. Furthermore, we also evaluate the robustness of our results when we use

the log of the company-mean instead of -median remuneration as the dependent variable. As shown in appendix Table A8, again the results remain consistent.<sup>15</sup>

Next we examine the industry heterogeneity of this relationship. In Table 3 we re-estimate equation 1 but split our sample of firms into five broad economic sectors: financial services and real estate, non-financial services, primary resources related, general industry, and high-tech.<sup>16</sup> For each sector, we present results without covariates in the first step and then add company specific controls. We find that the presence of American investors has a positive effect on median remuneration across all ten columns of the table. But the effects are largest and statistically significant in only two sectors: financial services and high-tech industries - precisely the two sectors that, in the US context, stand out for their exceptionally high levels of pay and use of equity-based pay incentives (cf. Lord and Saito 2010).<sup>17</sup>

Both the difference in effects between US and non-US investors and these sectoral heterogeneities are not consistent with skills factors and weaker monitoring

**Table 3. The relationship between US ownership and executive pay in various industry branches**

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Median remuneration executive directors (in log)									
Sector:	Financial services		Non-financial services		Primary resources related		General industry		High tech	
US ownership (%)	0.00684*	0.00556*	0.00305	0.00252	0.00220	0.00276	0.00237	0.00306	0.00803*	0.00924**
	(0.00376)	(0.00328)	(0.00202)	(0.00213)	(0.00500)	(0.00529)	(0.00213)	(0.00257)	(0.00425)	(0.00464)
Non-US ownership (%)	-0.000362	-0.00107	0.00180***	0.00198**	-0.00471	-0.00617	0.000370	0.000553	-0.00148	-0.000402
	(0.00142)	(0.00180)	(0.000661)	(0.000817)	(0.00372)	(0.00449)	(0.000806)	(0.000793)	(0.00145)	(0.00167)
Union density		0.00473		-0.00659		-0.0610*		0.0120		-0.00414
		(0.0113)		(0.0112)		(0.0316)		(0.0179)		(0.0478)
BvD independence		0.0385***				0.0566		-0.00301		-0.0649***
		(0.00594)				(0.0398)		(0.00892)		(0.0219)
Stock price variation		0.0203***		-0.0188***				0.00563		
		(0.00219)		(0.00227)				(0.00475)		
Solvency ratio		0.00278		-0.000401		0.000378		0.000933		0.00206
		(0.00265)		(0.00134)		(0.00535)		(0.00234)		(0.00223)
Observations	1,103	943	2,463	2,008	480	405	838	695	1,057	873
R-squared	0.084	0.088	0.053	0.053	0.037	0.062	0.136	0.157	0.056	0.085
# companies	170	134	392	295	75	60	126	102	165	126
Company FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Company fixed effects regressions estimated by least squares. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

<sup>15</sup> The positive estimates are slightly larger for models using the mean, which reflects the greater sensitivity of the mean than the median to extreme value observations.

<sup>16</sup> Appendix **Error! Reference source not found.** shows the industries included in each of these sectors.

<sup>17</sup> Non-US foreign ownership has a negative association with remuneration in the financial services, primary resources, and high-tech sectors. The coefficients aren't statistically significant, however. In contrast, a greater presence of non-American investors seems to have a positive and significant effect on the pay packages of directors employed in the non-financial services sector.

mechanisms, but in line with expectations of either performance-related market or benchmarking-related bargaining mechanisms.

Next we probe the relationship between American ownership and the performance of the firms they invest in. In particular we are interested to know whether a greater influence of US-based investors leads to improvements in corporate performance, which we proxy with the use of three different measures: return on equity (a measure of short-term profitability), the solvency ratio (a measure of financial sustainability), and stock price variation (a measure of volatility and risk). We use simple models without company-covariates, but including sector linear trends. The results are presented in Table 4. On the whole, we do not find any solid evidence indicating that investments by US-based owners lead to improved financial results. The effect of US ownership percentages on solvency ratios is positive and significant at the 10 percent level in column 1, but turns insignificant when we include sector trends (column 2). The effects on return on equity and stock price fluctuations in columns 3 to 6 are insignificant and small throughout. In addition, also non-US foreign investors seem to have no visible effect on the solvency ratio or the stock price of the companies they invest in. Their presence is even negatively correlated with return on equity. In short, against the predictions of performance-related market mechanism, the positive relationship between American ownership and executive pay does not



appear to be mediated by actual improvements in the economic and financial performance of the firms they are investing in.

### Individual manager-level analysis

In addition to the company-level analyses, the richness of our dataset allows us to carry out the analysis also at the level of individual managers. Doing so can

**Table 4. The relationship between American ownership and company performance**

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Solvency ratio		Return on equity		Stock price variation	
US ownership (%)	0.0665* (0.0385)	0.0559 (0.0383)	0.0516 (0.149)	0.0995 (0.153)	-0.0109 (0.00810)	-0.0113 (0.00828)
Non-US ownership (%)	0.0231 (0.0144)	0.0231 (0.0141)	-0.0853* (0.0498)	-0.0858* (0.0497)	-0.00626 (0.00541)	-0.00636 (0.00555)
Observations	5,849	5,849	5,635	5,635	5,267	5,267
R-squared	0.020	0.036	0.008	0.023	0.011	0.012
# companies	925	925	913	913	785	785
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector trends	No	Yes	No	Yes	No	Yes
Covariates	No	No	No	No	No	No

Notes: Robust standard errors in parentheses clustered at company level. Company fixed effects regressions estimated by least squares.

Data sources: [BoardEx](#) and [Bureau van Dijk Orbis](#) databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

contribute primarily two additional leverages to our investigation: it makes it possible to include additional individual-level control variables, which can help with precision. And it offers us opportunities to further explore potential channels of diffusion.

Since the treatment of interest (American ownership of British companies) varies at the company-level, only time-varying variables measured at that same level can be potential sources of omitted variable bias. However, if it is the case that the composition of companies changes as a result of US investors' acquisition of substantial ownership blocs in UK firms (for instance, if the number of directors per company changes as a result of incoming US investors' influence over HR decisions), that would affect the interpretation of our results. Reassuringly, our findings at the level of individual managers strongly confirm the results from the company-level analysis: increases in US ownership have a sizable positive effect on the remuneration of UK-based top executives. In other words, our empirical analysis at the company level doesn't suffer from aggregation issues.



With the switch from the company- to the individual manager-level our baseline specification changes to:

$$Y_{i,j,t} = \beta_0 + \beta_1 \cdot S_{j,t} + X'_{i,j,t} \cdot \beta_2 + \mu_j + \delta_t + \eta_{s,t} + \varepsilon_{i,j,t} \quad (2)$$

where  $i$  denotes individual executive directors,  $j$  indicates companies, and  $t$  years.  $Y_{i,j,t}$  measures the remuneration of executives (in log).  $X_{i,j,t}$  is a vector of individual and company covariates (male dummy, age, age squared, US citizen dummy, solvency ratio, union density, stock price variation, BvD independence) and  $\varepsilon_{i,j,t}$  is the error term. The model includes company- and year-fixed effects as well as sector-specific linear time trends. Standard errors are clustered at the company level. Descriptive statistics can be found in appendix Table A10.

We begin the individual-level analysis by repeating the main empirical exercise from before at the further disaggregated level to test the relationship between foreign and US ownership and executive pay. The results are shown in Table 5 **Error! Reference source not found.** We only include individual-level covariates in columns 1 and 3; individual- as well as company-level controls in 2 and 4. The first two columns show results without, the latter two with sector time trends. Throughout all models we obtain positive and significant coefficients at the 5 percent level. The size of the effect is fairly stable and very close to the company-level estimate. According to our estimates in column 4, each 10 percentage point increase in American ownership is associated with a 3.9 percent increase in pay for top executives. The effect of non-American foreign ownership is also positive, but much smaller and clearly statistically insignificant.

Table 5. Foreign ownership and executive director remuneration: individual manager-level analysis

Dependent variable:	(1)	(2)	(3)	(4)
	Median remuneration executive directors (in log)			
US ownership (%)	0.00370** (0.00160)	0.00439*** (0.00155)	0.00339** (0.00161)	0.00394** (0.00157)
Non-US ownership (%)	0.000480 (0.000525)	0.000587 (0.000583)	0.000543 (0.000529)	0.000531 (0.000590)
Male	0.152*** (0.0478)	0.179*** (0.0536)	0.150*** (0.0476)	0.175*** (0.0534)
Age	0.123*** (0.0144)	0.134*** (0.0144)	0.123*** (0.0147)	0.133*** (0.0146)
Age squared	-0.00104*** (0.000130)	-0.00115*** (0.000130)	-0.00105*** (0.000132)	-0.00114*** (0.000131)
US citizen	0.0865 (0.0631)	0.106 (0.0691)	0.0819 (0.0626)	0.102 (0.0689)
Union density		-0.00675 (0.00754)		-0.00882 (0.00804)
BvD independence		0.0366* (0.0190)		0.0354* (0.0181)
Stock price variation		0.000528 (0.00402)		0.000525 (0.00380)
Solvency ratio		0.00193** (0.000974)		0.00217** (0.000961)
Observations	17,316	14,384	17,316	14,384
R-squared	0.760	0.757	0.761	0.759
Year FE	Yes	Yes	Yes	Yes
Company FE	Yes	Yes	Yes	Yes
Sector trends	No	No	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Individual level regressions with company fixed effects estimated by least squares. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

So far our analyses have focused on total pay as the outcome variable. Our dataset at the individual level in addition also allows us to study the effect of US ownership on the three distinct main components constituting executives' total pay packages: cash salary, bonus, and equity. As we've argued above, to the extent that pay increases in the UK are the result of the adoption of US-style remuneration practices, the impact of growing US ownership should be particularly pronounced for the equity component of managers' pay packages. This is the expectation that we test in the models presented in Table 6. We regress each one of the three remuneration components on both a limited (columns 1, 3 and 5) and extended (columns 2, 4 and 6) set of covariates, controlling for sector trends. The findings strongly confirm our expectations: the effects of US ownership on salary and bonus are positive but insignificant at conventional levels of statistical significance. In contrast, our estimate of the effect on equity pay is large and statistically significant (independent of whether we include company-covariates or not).

**Table 6. The effect of foreign ownership on various pay components (individual-level)**

Dependent variable:	(1) log(Salary)	(2) log(Salary)	(3) log(Bonus)	(4) log(Bonus)	(5) log(Equity)	(6) log(Equity)
US ownership (%)	0.000437 (0.000903)	0.000526 (0.00100)	0.000211 (0.00187)	-0.000225 (0.00206)	0.00689** (0.00309)	0.00581* (0.00331)
Non-US ownership (%)	0.000324 (0.000322)	0.000388 (0.000389)	0.000648 (0.000721)	0.000682 (0.000948)	0.000137 (0.00120)	0.00102 (0.00140)
Male	0.124*** (0.0405)	0.146*** (0.0455)	0.199*** (0.0601)	0.227*** (0.0656)	0.213*** (0.0627)	0.226*** (0.0684)
Age	0.118*** (0.0139)	0.124*** (0.0144)	0.0868*** (0.0213)	0.0911*** (0.0222)	0.100*** (0.0325)	0.104*** (0.0343)
Age squared	-0.000964*** (0.000126)	-0.00101*** (0.000132)	-0.000653*** (0.000189)	-0.000699*** (0.000196)	-0.000852*** (0.000288)	-0.000892*** (0.000303)
US citizen	0.0536 (0.0490)	0.0764 (0.0550)	-0.0177 (0.0613)	0.000889 (0.0669)	0.121* (0.0687)	0.134* (0.0728)
Union density		-0.0114** (0.00469)		-0.000604 (0.01000)		0.0136 (0.0200)
BvD independence		0.00961*** (0.00330)		0.0142 (0.0118)		-0.0113 (0.0224)
Stock price variation		-0.00101*** (0.000352)		-0.00405** (0.00204)		0.0105*** (0.00377)
Solvency ratio		0.000050905 (0.000749)		0.00106 (0.00159)		0.00706*** (0.00259)
Observations	16,990	14,144	10,562	9,119	10,316	8,791
R-squared	0.662	0.655	0.727	0.726	0.717	0.720
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector trends	Yes	Yes	Yes	Yes	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Individual level regressions with company fixed effects estimated by least squares. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Next we leverage the individual-level data to test the hiring of US nationals as a potential mechanism. As discussed, executive directors coming from the USA could plausibly ask for more generous pay packages because they are used to US-style levels of pay, and they may be offered more expensive remuneration deals by companies eager to attract them from the US market. To assess the relevance of this mechanism, we assess the impact of US ownership as a predictor of the probability that a manager has US nationality (coded as a dummy). A positive and significant coefficient on the ownership variable would suggest that American investments bring in US managers. Yet, this isn't what we find. Although positive, US ownership coefficients in Table 7 are very small in magnitude and insignificant. The hiring of American managers thus does not seem to be an important reason for the pay premium associated to US ownership that we observe.

Table 7. Probability of hiring American citizens

	(1)	(2)	(3)	(4)
Dependent variable:	US citizen = [0/1]	US citizen = [0/1]	US citizen = [0/1]	US citizen = [0/1]
Foreign ownership (%)	0.000111 (0.000111)	0.000109 (0.000107)		
US ownership (%)			0.000338 (0.000269)	0.000205 (0.000257)
Non-US ownership (%)			0.0000606 (0.000091)	0.0000748 (0.0000909)
Observations	14,388	14,388	14,388	14,388
R-squared	0.334	0.337	0.334	0.337
Model	LPM	LPM	LPM	LPM
Company FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Company-level covariates	Yes	Yes	Yes	Yes
Sector trends	No	Yes	No	Yes

Notes: Robust standard errors in parentheses clustered at company level. Individual level regressions with company fixed effects estimated by least squares. Linear probability models. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

In addition to the hiring of US nationals we also want to assess whether the US pay premium may be mediated by other selection effects, such as the hiring of new external managers (“outside hires” of any nationality) as a response to growing US ownership. To do so, we run a panel analysis with individual-manager level fixed effects. We first drop all managers that are observed only once in our sample. Then we re-run the baseline model specified in equation 2, but now additionally include director fixed effects  $\theta_{i,j}$ . This design exploits variations in remuneration and exposure to American investors over time experienced by the *same* directors (i.e. those staying at the firm).<sup>18</sup>

The results are shown in Table 8. In column 1 we first present coefficients obtained without covariates. Then we add time-varying company controls<sup>19</sup> (column 2). The first two columns show models without, the latter two with sector linear time trends. Across all models, we find a positive relationship between US ownership and executive pay. The point estimates are imprecisely estimated in Columns 1 and 3. The coefficients in the second and fourth columns, which control for sector trends, are statistically significant at the 5 and 10 percent levels respectively. Interestingly, the effect of non-American ownership is now also positive and significant. But the magnitude of the effect is substantially smaller, with the

<sup>18</sup> While remaining vulnerable to the potential source of omitted variable bias discussed earlier, it also enables us to remove potential director-idiosyncratic confounders.

<sup>19</sup> Note that there isn't enough variation to include director specific variables such as age or education given the panel structure of the dataset.

effect of additional investment from the USA being roughly three times as large as the one of non-US foreign investment. The finding that incumbent managers strongly benefit from foreign and US ownership provides evidence that the relationship is not simply driven by outside hiring. It is more consistent with mechanisms centered on the agency of local managers themselves.

**Table 8. Regressions with individual director fixed-effects**

Dependent variable:	(1) log(Remuneration)	(2) log(Remuneration)	(3) log(Remuneration)	(4) log(Remuneration)
US ownership (%)	0.00287 (0.00183)	0.00386** (0.00176)	0.00233 (0.00182)	0.00308* (0.00174)
Non-US ownership (%)	0.00106* (0.000570)	0.00148** (0.000600)	0.00103* (0.000570)	0.00139** (0.000605)
Union density		-0.00373 (0.00551)		-0.00489 (0.00569)
BvD independence		0.0142 (0.0183)		0.0167 (0.0177)
Stock price variation		0.00124 (0.00155)		0.000517 (0.00155)
Solvency ratio		0.00208* (0.00108)		0.00239** (0.00108)
Observations	16,094	13,537	16,094	13,537
R-squared	0.866	0.864	0.867	0.866
Director FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Sector trends	No	No	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Director fixed effects regressions estimated by least squares. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

## Discussion

Our results show several interesting patterns. Throughout our analyses we have found a statistically significant and substantially large positive effect of US ownership on executive pay at publicly listed UK-incorporated firms. Investments from other non-US foreign investors are also associated with higher pay in some specifications, but both the statistical significance and substantive size of are comparatively smaller. We further found the pay effect of US-investments having been particularly strong in firms in the finance and high-tech industries. These patterns go against the hypothesized mechanisms of extra skill requirements or weaker monitoring due to de-nationalization of firm ownership *per se*.

We also find the US-induced pay premium to be strongly associated with larger shares of salary packages being tied to equity-based pay, but unrelated to corporate performance. Furthermore, we find no indication that US ownership increases the likelihood of appointments of US nationals at UK firms. Instead, we are able to show that incumbent managers benefit strongly from growing US ownership. These patterns highlight changes in *how* executives are being paid to be an important driver of the US pay premium. At the same time, the lack of a clear relationship with performance outcomes indicates that the

mechanism is driven more by changes in within-firm bargaining power than by changes in performance or market conditions.

While the political sensitivity of pay-setting procedures at firms make it difficult to study these processes qualitatively<sup>20</sup>, the patterns in the data thus allow us making some informed guesses about how US investments lead to higher pay. In light of our findings that greater US ownership increases pay (and in particular its performance-related components) of incumbent managers without punishing them for bad outcomes, they appear to be driven not so much by US investors pushing for higher pay, but rather by local managers being able to leverage growing US ownership in order to legitimize higher pay for themselves. A plausible scenario that is consistent with our findings is that local managers take advantage of growing US ownership to push remuneration committees for a re-orientation towards highly paid US executives as the relevant peer group, which their pay shall be benchmarked to. This leads to a situation in which equity-based remuneration increases sharply for UK managers as it gradually catches up to US levels, while simultaneously shielding them from punishments for underperformance.

## Conclusions

The rising share of income taken by the highest earners has become a source of great interest and concern, thanks to the pioneering work by Atkinson, Piketty and others. But the aggregate data reported in the World Incomes Database cannot be easily used to rigorously pinpoint the causes of rising top income shares. In this paper we have attempted to shed light on one of the main causes of this form of inequality, the dramatic increases in executive remuneration in many advanced nations, drawing on fine-grained individual- and company-level data which allow us to identify the specific causal channels of the emerging winner-take-all economy in the UK.

We make three main contributions. First, we are able to show that adopting a firm-level perspective can yield valuable insights by stressing previously overlooked *trans*-national dimensions of worldwide growing income inequality. Second, we use granular data on the compensation packages of individual top executives in individual companies over several years to test the hypothesis that US investment is a key driver of skewed top income growth. The strength of our results gives us a high degree of confidence that, all else equal, US positions in UK companies bring increased rewards for top executives. Third, while not conclusive, the richness of our dataset also allows us to draw inferences about the dynamics through which US ownership leads to higher pay. Most importantly, the evidence that we assemble suggests that local managers play an important role as agents in these processes. In other words, growing US ownership does not primarily lead to higher pay because US investors push for it, but because – similar to Farrell and Newman's (2014, 347) conceptualization of 'cross-national layering' - it creates opportunity spaces that local managers can exploit to appropriate greater shares of corporate profits for themselves.

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<sup>20</sup> We were unable to find firms willing to share details about their pay-setting procedures with us. Executive pay consultants were equally reluctant to provide information or conduct research interviews.



At the same time, our focus on one country advises some caution in generalizing the findings, since we are unable to control for the effects of national-level variables such as corporate governance regulation, taxation policy, labour market and product market regulation, to name just a few potentially important factors that could affect how US investment feeds through into top income growth in different countries.

Looking forward, future research could fruitfully extend the approach to other country cases to further probe the mechanisms and test how well our argument travels to different institutional and political environments. National institutional arrangements such as those that typically inform studies of economic inequality in the comparative political economy literature may have important effects in cushioning, diverting or perhaps even closing off the US investor channel to higher executive rewards. Due to growing pressures for transparency in executive pay, similar data as the one we used in this paper is slowly becoming available also for other European countries with different patterns of income distribution and different traditions of corporate governance and labour relations. By extending the analysis to more cases we can further advance our understanding of this key feature of contemporary advanced capitalism.



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## Appendix Tables

Table A1. Descriptives salaries United Kingdom

	Full sample			Companies with at least 10,000 employees				
	N firms in sample	Mean number of executive per firm	Pay median executive in median firm	N firms in subsample	Mean of mean number of executives per firm	Pay median executive in median firm	Pay highest paid in median firm	Highest paid executive in country-year sample
2000	644	4.2	406.25	166	5.1	713.5	1,338	25,540
2001	770	4	359.75	175	4.9	726	1,375	35,026
2002	861	3.8	366.5	160	4.6	798.25	1,415	31,479
2003	1,018	3.5	383.75	165	4.3	1,007	1,821	23,997
2004	1,123	3.4	424.5	182	3.9	1,226.75	1,998	53,143
2005	1,106	3.3	458	173	3.8	1,356	2,370	30,233
2006	1,061	3.2	528	166	3.5	1,561.5	2,806.5	42,323
2007	948	3.1	669.5	147	3.4	2,242.5	3,594	42,549
2008	828	3.1	512.5	147	3.3	1,469	2,380	35,030
2009	767	3	498	140	3.3	1,842	3,088	40,608
2010	791	2.9	524.5	134	3	2,472.75	3,188	39,502
2011	746	2.9	569	135	3.1	2,309.5	3,747	23,839
2012	695	2.9	575.5	124	3.1	3,032.5	4,199.5	49,796
2013	665	2.8	717	130	2.8	2,812	3,665	42,073
2014	642	2.7	760	126	2.8	3,057	3,823	41,547

NOTE: All financial values in thousands current USD



Table A2. Descriptives salaries USA

	Full sample			Companies with at least 10,000 employees				
	N firms in sample	Mean number of executives per firm	Pay median executive in median firm	N firms in subsample	Mean of mean number of executives per firm	Pay median executive in median firm	Pay highest paid in median firm	Highest paid executive in country-year sample
2000	780	1.9	4,139	395	1.9	5,758.5	7,956	353,403
2001	926	1.8	3,817	450	1.9	6,247	8,024	140,181
2002	962	1.7	3,032	451	1.8	5,020.5	6,392	77,877
2003	989	1.6	3,525	441	1.7	6,337	7,632	206,700
2004	979	1.5	3,835	433	1.6	6,511	7,725	100,803
2005	923	1.5	4,640	432	1.6	7,379.5	8,808	124,952
2006	788	1.5	6,128	408	1.5	9,671.5	10,719	326,989
2007	672	1.4	7,195	367	1.4	11,073	11,990	184,510
2008	561	1.4	6,961	320	1.4	9,361.5	10,232	107,601
2009	515	1.3	9,351	316	1.3	11,351	12,388	135,164
2010	479	1.3	9,900	312	1.3	11,876	13,316	89,238
2011	476	1.3	9,829	311	1.3	11,354	12,581	406,005
2012	467	1.3	9,526	312	1.3	10,840	12,357	110,115
2013	473	1.3	11,627	314	1.3	13,696	14,422	218,029
2014	455	1.3	11,615	304	1.3	13,129	14,410	180,584
2015	149	1.3	11,744	115	1.4	12,124	13,749	179,024

NOTE: All financial values in thousands current USD

Table A3. Coverage of BoardEx data

Year	Number of UK-incorporate companies listed on LSE	Number of publically listed UK-incorporated companies in BoardEx dataset	Number of companies with information on pay of executive directors	Companies with pay information as % of number of LSE-listed firms	Number of individual executives with pay data	Mean of mean number of executives per company
2007	2,588	1,417	984	38.02	3,100	2.19
2008	2,584	1,306	864	33.43	2,681	2.05
2009	2,179	1,195	797	36.58	2,392	2.00
2010	2,071	1,085	827	39.93	2,439	2.25
2011	2,001	1,023	785	39.23	2,310	2.26
2012	1,659	963	730	44.00	2,111	2.20
2013	1,627	919	698	42.90	1,962	2.14
2014	1,609	885	674	41.89	1,846	2.09

SOURCE: Own calculations based on data retrieved from BoardEx.



Table A4. Levels of U.S. and other foreign ownership of UK-incorporated firms

Year	Company-level average of outstanding shares held by US-based investors (in %)	Company-level average of outstanding shares held by foreign investors based elsewhere than the USA (in %)	Number of companies in our dataset with <i>no</i> US ownership [as % of total number of companies in sample]
2007	9.29	41.86	385 [27.2%]
2008	10.03	44.37	342 [26.2%]
2009	8.85	37.12	444 [37.2%]
2010	10.03	37.06	399 [36.8%]
2011	10.39	39.56	391 [38.2%]
2012	10.68	38.60	369 [38.3%]
2013	10.79	39.53	360 [39.2%]
2014	10.87	41.02	338 [38.2%]

SOURCE: Own calculations based on data retrieved from Bureau van Dijk's Orbis database.

Table A5. The ten largest shareholders in the UK stock market by geographical domicile

	2007					2015				
	Name	Type	Nr positions >1%	Median position (in %)	Largest position (in %)	Name	Type	Nr positions >1%	Median position (in %)	Largest position (in %)
US shareholders	Goldman Sachs	Bank/AAM	429	2.69	82.54	Blackrock	PAM	518	4.02	15.07
	JP Morgan Chase	Bank/AAM	402	2.62	23.68	Vanguard	PAM	268	1.66	10.47
	Merrill Lynch	Bank/AAM	374	3.29	17.88	Affiliated M Group	AAM	242	3.41	17.97
	Fidelity	AAM/insurer	372	4.22	57.37	JP Morgan Chase	Bank/AAM	214	2.18	11.58
	Morgan Stanley	Bank/AAM	259	2.11	22.98	State Street	PAM	202	1.76	6.16
	Blackrock	PAM	223	4.84	23.2	Ameriprise Financial	AAM/insurer	176	3.05	22.28
	State Street	PAM	203	1.52	5.16	Dimensional Fund	AAM	150	1.47	6.68
	Ameriprise Financial	AAM/insurer	175	2.38	16.66	Fidelity	AAM/insurer	148	2.8	15.9
	Northern Trust	AAM/bank	154	1.6	5.19	Franklin Resources	AAM	133	2.47	22.08
	New York Mellon	Bank/AAM	133	2.69	10.33	Capital Group	AAM	122	4.95	20.04
Non-US foreign shareholders	UBS (CH)	Bank/AAM	600	2.53	21.6	Norges Bank (NO)	SWF	319	2.15	9.36
	AXA (FR)	Insurer/AAM	587	3.94	31.25	Toronto Dominion (CA)	Bank/AAM	277	2	14.53
	RBS Holdings (NL)	Bank/AAM	383	3.15	19.79	AXA (FR)	Insurer/AAM	240	3.05	31.51
	Société Générale (FR)	Bank/AAM	369	1.67	11.66	Invesco (BM)	AAM	216	4.16	41.79
	Credit Suisse (CH)	Bank/AAM	322	2.39	18.85	Fidelity (BM)	AAM	187	3.96	31.99
	Deutsche Bank (DE)	Bank/AAM	308	2.12	30.19	UBS (CH)	Bank/AAM	141	1.92	19.32
	Toronto Dominion (CA)	Bank/AAM	295	1.86	17.5	Credit Suisse (CH)	Bank/AAM	102	1.96	12.25
	Ageas SA (BE)	Insurer/AAM	197	2.89	16.58	Bank of Montreal (CA)	Bank/AAM	89	1.66	19.23
	Crédit Agricole (FR)	Bank/AAM	136	2.04	24.05	BT Investment (AU)	AAM	87	3.72	16.55
	Aegon (NL)	Insurer/AAM	127	3.04	17.68	Aegon NV (NL)	Insurer/AAM	89	2.05	6.88
UK shareholders	Barclays	Bank/AAM	1068	3.06	18.32	Legal & General	Insurer/AAM	460	2.69	33.84
	Legal&General	Insurer/AAM	594	4.07	34.7	Barclays	Bank/AAM	399	2.04	12.79
	AVIVA	Insurer/AAM	417	2.31	27.93	Hargreaves Lansdown	AAM	371	2.31	26.73
	Prudential	Insurer/AAM	377	2.73	32	Hargreave Hale	AAM	355	3.23	19.98
	Invesco	AAM	349	2.6	36.87	Schroders	AAM	342	5.06	24.65
	Schroders	AAM	347	4.63	28.22	Henderson Group	AAM	305	2.96	100
	F&C Asset Management	AAM	346	2.8	54.02	Standard Life	AAM/insurer	297	4.05	100
	Standard Life	AAM/insurer	301	3.75	51	Aberdeen AM	AAM	251	1.98	16.97
	Brevin Dolphin	AAM	284	1.96	11.37	Investec	AAM/bank	219	2.52	17.13
	Gartmore	AAM	267	2.77	28.78	Prudential	Insurer/AAM	219	2.92	54.99

NOTE: AAM= active asset manager/ mutual fund; PAM=passive asset manager; SWF=sovereign wealth fund. SOURCE: Own calculations based on data retrieved from Bureau van Dijk's Orbis database.

Table A6. Summary statistics – company level

Variable	Obs.	Mean	Std. Dev.	Min	Max
Median remuneration of executive directors (in log)	5,941	6.411	1.324	0	10.977
Mean remuneration of executive directors (in log)	5,941	6.463	1.330	0	11.159
US ownership (%)	7,202	10.588	12.948	0	100
Non-US ownership (%)	7,202	42.197	30.974	0	100
Union density	7,116	16.868	6.655	3.5	55.4
BvD independence	6,704	3.176	3.124	1	9
Stock price variation	6,459	7.183	47.639	-99.600	438.890
Solvency ratio	7,083	54.395	29.932	-98.746	100
Financial services and real estate	7,202	0.314	0.464	0	1
Non-financial services	7,202	0.346	0.476	0	1
Primary resources related	7,202	0.070	0.254	0	1
Industry	7,202	0.119	0.323	0	1
High tech	7,202	0.151	0.358	0	1

Notes: Company level data. Data sources BoardEx and Bureau van Dijk Orbis databases

Table A7. *Balanced* panel – US ownership and non-US foreign investors

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable:	Median remuneration executive directors (in log)					
US ownership (%)	0.00451*** (0.00151)	0.00387*** (0.00149)	0.00433*** (0.00147)			
Non-US ownership (%)	0.000536 (0.000596)	0.000609 (0.000608)	0.000461 (0.000696)			
US owned >10%				0.109*** (0.0371)	0.105*** (0.0375)	0.110*** (0.0365)
Non-US owned >10%				0.0860 (0.0557)	0.0867 (0.0546)	0.0975* (0.0562)
Union density			-0.0103 (0.00762)			-0.00966 (0.00763)
BvD independence			0.00502 (0.0196)			0.00196 (0.0205)
Stock price variation			0.00183 (0.0133)			0.00216 (0.0123)
Solvency ratio			0.00182 (0.00126)			0.00191 (0.00124)
Observations	4,260	4,260	3,903	4,260	4,260	3,903
R-squared	0.053	0.065	0.082	0.055	0.067	0.084
# companies	540	540	501	540	540	501
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector trends	No	Yes	Yes	No	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Company fixed effects regressions estimated by least squares. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A8. *Mean remuneration of executive directors*

Dependent variable:	(1)	(2)	(3)	(4)	(5)	(6)
	Mean remuneration executive directors (in log)					
US ownership (%)	0.00450*** (0.00138)	0.00429*** (0.00138)	0.00426*** (0.00144)			
Non-US ownership (%)	0.000721 (0.000487)	0.000774 (0.000496)	0.000498 (0.000591)			
US owned >10%				0.115*** (0.0340)	0.116*** (0.0341)	0.112*** (0.0357)
Non-US owned >10%				0.105** (0.0421)	0.107** (0.0419)	0.103** (0.0443)
Union density			-0.00771 (0.00738)			-0.00695 (0.00740)
BvD independence			0.0299* (0.0176)			0.0305 (0.0185)
<u>Stocl</u> price variation			-0.00535 (0.00999)			-0.00659 (0.00924)
Solvency ratio			0.00142 (0.000964)			0.00145 (0.000951)
Observations	5,941	5,941	4,924	5,941	5,941	4,924
R-squared	0.053	0.068	0.075	0.056	0.071	0.077
# companies	928	928	717	928	928	717
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector trends	No	Yes	Yes	No	Yes	Yes

Notes: Robust standard errors in parentheses clustered at company level. Company fixed effects regressions estimated by least squares. Data sources: BoardEx and Bureau van Dijk Orbis databases. Years: 2007-2014. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table A9. Industrial classification scheme

Financial services	Non-financial services	Primary resources related	General industry	High-tech
Banks	Business Services	Forestry & Paper	Beverages	Aerospace & Defence
Insurance	Consumer Services	Mining	Chemicals	Automobiles & Parts
Investment Companies	Food & Drug Retailers	Oil & Gas	Clothing Leisure and Personal Products	Information Technology
Life Assurance	General Retailers	Renewable Energy	Construction & Building Materials	Hardware
Private Equity	Health	Tobacco	Containers & Packaging	Pharmaceuticals and Biotechnology
Real Estate	Leisure & Hotels		Diversified Industrials	Electronic & Electrical Equipment
Speciality & Other Finance	Media & Entertainment Publishing		Electricity	Engineering & Machinery
	Software & Computer Services		Food Producers & Processors	
	Telecommunication Services		Household Products	
	Transport			
	Utilities - Other			

Notes: Authors' own classification based on BoardEx and ORBIS data.

Table A10. Summary statistics for individual manager-level analyses

Variable	Obs	Mean	Std. Dev.	Min	Max
Total remuneration (in log)	17,347	6.452	1.359	0	11.600
Salary (in log)	17,021	5.776	0.885	0	9.018
Bonus (in log)	10,566	5.373	1.337	0	9.500
Equity pay (in log)	10,328	5.998	1.804	0	11.570
US ownership (%)	17,370	12.819	13.137	0	100
Non-US ownership (%)	17,370	49.265	29.226	0	100
Male	17,370	0.947	0.225	0	1
Age	17,339	56.646	7.885	28	98
Age squared	17,339	3270.945	919.257	784	9604
US citizen	17,370	0.035	0.183	0	1
Union density	17,156	16.771	7.255	3.500	55.400
BvD independence	16,367	3.449	3.297	1	9
Stock price variation	15,417	4.760	48.604	-99.910	438.890
Solvency ratio	17,105	46.334	26.514	-98.746	100

Notes: Individual level data. Data sources: BoardEx and Bureau van Dijk Orbis databases.