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 income inequality focus on developments within individual countries, neglecting the role of potential interdependencies that transcend national borders. In this article we argue that the sharp rise in top incomes since the 1980s is a product of specific features of the US political economy, which were subsequently exported to other advanced economies through the global expansion of US-based financial investors. To test the argument, we collected fine-grained micro-level panel data on executive pay and firm ownership structures for a comprehensive sample of UK firms. Employing a difference-in-differences design, we uncover robust evidence that the Americanization of UK firm ownership causes sizable pay increases for high-level managers in those firms. Furthermore, contrary to prominent claims in the political science literature, we find no evidence that the sector-level strength of trade unions is effective at moderating these external pressures.

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

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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. [1] 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,[2] the growing political power of the wealthy,[3] technological change[4] and financialization[5].

But although there is a lively debate about the reasons for rising top incomes in the recent period, we still understand relatively little about the rather large cross-national variations in the extent of the phenomenon. Whilst the US leads the way, with the top percentile taking a spectacular 20 per cent of pre-tax income in 2012, top income shares in the advanced economies of Western Europe are lower, and in most cases, much lower, than in the US.[6] The tendency of capital to accumulate, or the impact of technology, are unlikely to vary enough across these rather similar advanced economies to explain large variations in top income shares. Contrasts in institutions and public policy could plausibly explain these variations, but empirical work on cross-country differences using aggregate measures of inequality has so far

[1] Atkinson, Piketty, and Saez 2010
[2] Piketty 2014
[3] Hacker and Pierson 2010
[4] Brynjolfsson and McAfee 2014
[5] Flaherty 2015
[6] "WID" 2018

produced conflicting results.[7] This is to be expected given the limitations of aggregate national-level data for understanding the mechanisms driving income gains at the micro level.

This paper seeks to move forward our understanding of top income growth in two ways. First of all, it departs from the reliance on aggregate data on top income shares by analyzing individual-level remuneration using fine-grained micro-level data on executive pay and firm ownership structures in a single country case, the United Kingdom. The data we use covers several thousand high-level managers of UK-incorporated firms from 2007 throughout 2014. This data allows us to use econometric specifications that better capture the predictors of variations in rewards for the highly paid executives that populate the top percentile of the income distribution. The United Kingdom is the European country with the highest top income share, and presents a number of important institutional differences with the United States – the focus of most previous research -, making it a useful place to test alternative hypotheses of top income growth.

Second, we exploit the UK case to explore the transnational spread of remuneration practices as a possible explanation of top income growth. Foreign investments are an important source of change in corporate practice and US investors could be expected to export American-style remuneration to the overseas companies where they take ownership stakes. Preliminary analysis shows that levels of US foreign direct investment (FDI) are associated with top income shares in

[7] Scheve and Stasavage 2009; Huber, Huo, and Stephens 2017

Europe.[8] The UK is a major destination of US investments, and also the European country where top incomes have risen highest. By analyzing individual-level remuneration in UK firms over time we are able to estimate the effects of US investment on executive pay. Employing panel data OLS regressions with company-fixed effects as well as a difference-in-differences research design, we find robust evidence that increases in ownership by US-based investors cause sizable pay increases for high-level managers in UK firms. At the same time, in contrast to prominent claims in the political science literature, we find no evidence that the strength of trade unions is an effective mechanism to moderate these external pressures.

The paper proceeds as follows. The next section reviews the relevant literature on inequality and top income shares. Sections three and four assess the scholarship on executive pay in the US and examine the possible channels for diffusion of US practices through foreign investments. Section five presents the data, section six the empirical analyses, and section seven concludes.

Literature review: the politics of inequality in a global economy

Income inequality has been a central topic of concern in political science, but research has traditionally focused on overall inequality, and in particular the gap between the lower and middle income groups, emphasizing the role of electoral

[8] Angeles, Hopkin, and Linsi 2016

institutions, [9] partisan control of government,[10] welfare state arrangements[11] and the strength and coordination of labor representation[12]. The degree of concentration of income and wealth at the top has received less empirical attention by political scientists.

More recently, the pioneering data collection efforts of Anthony Atkinson, Thomas Piketty and their collaborators[13] and the phenomenal success of Piketty's interpretation of this data in his *Capital in the Twenty-First Century*[14] has given rise to a new field of research focusing on the politics of inequalities at the top of the income distribution. 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.[15] However this work lacks any comparative perspective.[16] Another stream of research evaluates the role of institutional arrangements in explaining cross-national variations in top income shares through cross-country regression analyses.[17] But it has produced conflicting findings, highlighting the identification problems inherent in this approach.

In our view, a major shortcoming of this literature consists of its implied conceptualization of nation-states as closed systems. As the literatures on policy

[9] Lijphart 1999; Iversen and Soskice 2006
[10] Cusack 1997; Bartels 2008; Iversen and Soskice 2009
[11] Esping-Andersen 1990
[12] Hall and Soskice 2001; Moene and Wallerstein 2001; Thelen 2014; Martin and Swank 2012
[13] Atkinson and Piketty 2007; Atkinson and Piketty 2010
[14] Piketty 2014
[15] Hacker and Pierson 2010; Gilens 2012
[16] Hopkin and Alexander Shaw 2016
[17] Scheve and Stasavage 2009; Huber, Huo, and Stephens 2017

diffusion and new interdependence have argued,[18] ontological approaches that treat nation-states as independent units face serious limitations in explaining political outcomes in the global economy of the 21st century. While methodological nationalism is a general problem for social science research,[19] it is a particularly severe one in the study of contemporary top income inequality. As in-depth studies of US[20] and UK[21] tax records have confirmed, the 'top one per cent' are predominantly salaried managers and finance professionals. Given that these economic elites move in deeply transnational environments (especially in the 'Anglosphere'), the use of cross-national regression analyses aiming to uncover the dynamics determining the incomes of these social groups has serious limitations.

Our paper looks to address this problem by analyzing top incomes in a single case, and estimating the effects of both the domestic institutional and policy environment, and internationalization. To study the evolution of top incomes in a more fine-grained manner than the existing literature, we collected detailed time-series panel data information on the yearly remuneration of 5,000-8,000 high-level executives working for over 1,000 firms (which together account for close to half of all UK-incorporated firms traded publicly on the London Stock Exchange), covering the time period from 2007 to 2014. Building on Farrell and Newman's[22] concept of *cross-national layering* we investigate to what extent the sharp increases in incomes of British economic elites in recent years have been driven by the internationalization – and in particular the Americanization - of the ownership of London-listed firms. For

[18] Simmons and Elkins 2004; Gilardi 2012; Farrell and Newman 2014
[19] Wimmer and Schiller 2002
[20] Bakija, Cole, and Heim 2012
[21] Brewer, Sibieta, and Wren-Lewis 2009
[22] Farrell and Newman 2014, 347

reasons which we outline below, we conceptualize the Americanization of UK-listed firms as an instantiation of a transnational process "creating opportunity spaces that actors can use … to reshape… domestic institutional bargains"[23]. Empirically, we are interested to establish whether economic elites in Britain were able to appropriate greater economic rents for themselves when ownership by US-based investors in their company grew, and whether their ability to do so was contingent on the configuration of local institutions, especially the strength of labor unions.

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.[24] A small number of studies in the management and finance literature has also investigated the effects of Americanization on CEO compensation in Canada,[25] Norway and Sweden,[26] the United Kingdom,[27] and a cross-national European sample[28]. Our research departs from these studies theoretically by embedding the phenomenon in the political economy literature and at the same time significantly improving upon them empirically in three ways.

First, our sample of close to 20,000 salary points is far more comprehensive than those of previous studies - which ranged between as little as 187[29] and a maximum

[23] Farrell and Newman 2014, 345
[24] Zeitlin and Herrigel 2000; Almond et al. 2006
[25] Sapp 2008; Southam and Sapp 2010
[26] Oxelheim and Randoy 2005
[27] Gerakos, Piotroski, and Srinivasan 2013
[28] Fernandes et al. 2013
[29] Oxelheim and Randoy 2005

of 1,646[30] individual-level observations; it covers not only CEOs but includes remuneration information on several top executives of the same firm; and it covers a consistent time period of 8 years.[31]

Second, a majority of these 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). To study the effect of the exposure to the US economy on executive salaries in the UK, we thus rely on a more exogenous measure of companies' Americanization: the shares of UK companies' ownership stakes in the hand of US-based investors.[32] As the shares of publicly listed companies are traded on open markets, company directors do not exercise control over the buyers/sellers of their equity, making it a better choice to study the effects of Americanization.

Third and most importantly, the much larger size and long time-series of our dataset make it possible to employ panel regression techniques and a difference-in-

[30] Gerakos, Piotroski, and Srinivasan 2013
[31] 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.
[32] Fernandes et al. 2013 is the only other study which has used this information, but with a comparably small sample for only one year.

differences strategy, which enable us to assess the causality of the hypothesized relationships with greater confidence.

The executive pay revolution in the USA

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,[33] 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[34] 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, spiking in the 1990s and early 2000s, when the ratio of the salary of an average large-company CEO compared to the average worker is reported to have grown from 140:1 (in 1991) to 500:1 (in 2003).[35]

As business historians and management scholars have argued, 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.[36] In the view of many financial economists and regulators, managers (the 'agents') had become too powerful and had too much freedom to pursue their own goals rather

[33] Piketty 2014
[34] Frydman and Saks 2010
[35] Bebchuk and Fried 2004, 1
[36] Bebchuk and Fried 2004; Lazonick and O'Sullivan 2000

than those of the owners of the company (the 'principals'). To realign incentives, the proponents of the shareholder value approach - led by activist institutional investors[37] - 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) in order to incentivize managers to act in shareholders' best interests by focusing on increasing firms' market value.

As others have observed,[38] 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 as this was seen as meritocratic and as a 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 visible and thus easier to conceal, removing fears about a potential backlash by shareholders or the public about perceived excesses in managers' pay. By closing off a possible channel of transparency, managers acquired new opportunities to capture a greater share of company revenues.

The increases in executive pay in US companies in the 1980s-2000s are unparalleled in other parts of the world, raising interesting questions about the international dimension of executive pay. One of the first studies comparing

[37] Thomas 2004; Lazonick and O'Sullivan 2000, 14
[38] Thomas 2004; Conyon, Core, and Guay 2011; Fernandes et al. 2013

executive 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.[39]

More recent studies in the field of executive compensation have attempted to explain this international pay gap, arguing that some of it can be accounted for by the larger size of US firms, their better economic performance, a more widespread dilution of corporate ownership, and US executives' greater willingness to bear the risks of undiversified equity-based pay packages.[40] Yet, even if such factors are being taken into account, a sizable 'US premium' remains.[41]

Figure 1 illustrates this phenomenon using our data on executive remuneration, comparing developments in the USA and UK.[42] The graph plots the annual remuneration of the median executive of the median company in the USA (black lines) and UK (grey lines). To improve comparability (the BoardEx data for the UK has better coverage and includes many smaller firms than data for the USA) 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

[39] Conyon and Murphy 2000
[40] Cheffins and Thomas 2004; Conyon, Core, and Guay 2011; Fernandes et al. 2013
[41] Fernandes et al. 2013
[42] The UK is considered to be one of the highest-paying markets other than the US, together with Switzerland, Ireland, Italy, Australia and Canada. See Fernandes et al. 2013, 337;344.

significantly lower at less than $1 million at the beginning of the period but tripled to more than $3 million in 2014, reducing the pay gap faced by UK executives from an eighth to a quarter of their US peers.

<FIGURE 1 ABOUT HERE>

In short, 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 value maxim and an increasing reliance on equity-based pay. But although these developments were primarily the result of political trends in the United States, the effects thereof, we suggest, 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 nature of this diffusion.

The diffusion of pay for performance practices via US investors

Our starting point is the observation that Wall Street remains the core of the global financial system, with US-based investors owning significant shares of corporations around the world.[43] This opens up the possibility that through different forms of diffusion the US model of executive pay could be transferred to non-US companies through a combination of push and pull factors.

[43] 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 Table A5 in the appendix) is the one of US institutional investors owning substantial minority positions ranging between 1 and 20 percent of large listed foreign-incorporated outstanding stock. Although the acquisition of substantial minority positions does not equip US investors with the powers to directly implement the corporate strategies and policies they prefer, it makes them very influential constituents who enjoy direct access to firms' top management and wield an important say at shareholder meetings where independent directors are being elected and key corporate strategies have to be approved.[44]

The process determining the pay packages that top managers receive involves several actors. It is centered around a firm-internal remuneration committee, which is typically constituted of several members of the board of directors. The committee usually seeks the advice of external compensation consultants[45] and agrees on a recommended pay package in cooperation with the firm's HR Department. Depending on national corporate governance laws, the recommendation then normally has to be formally approved at the annual shareholder meeting through an advisory or binding vote.

There is a number of mechanisms in which large shareholders, in both intended and unintended ways, can affect the setting of executive pay. We here differentiate between three sets of factors in which the entry of US investors can lead

[44] Fichtner, Heemskerk, and Garcia-Bernardo 2017, 306
[45] The leading providers are firms such as Towers Perrin, Mercer, Watson Wyatt, Hewitt Associates and New Bridge Street Consultants. See Conyon, Peck, and Sadler 2009, 49

to more generous pay packages in the firms they are investing in: additional skill requirements, increased performance pressure and benchmarking effects.

Extra skill requirements. The internationalization of corporate ownership structures puts a premium on top managers' ability to interact and communicate effectively with investors from different cultural backgrounds. The extra skills that this demands may imply that the pool of potential candidates in a local job market shrinks, allowing potential candidates to ask for higher remuneration.[46] In addition to this potential supply-side effect, companies in need to cooperate with US shareholders are likely to look at recruiting managers with an affinity to US business culture – in other words, individuals who are familiar with US-style remuneration packages.

Increased performance pressures. While the focus on short-term earnings and stock price trends typical of US institutional investors may make them more willing to write generous checks when things go well, they are also known to be less forgiving when they don't. As a recent *Financial Times* investigation into US law firms' London hiring spree reported, executives "who switch to US firms can expect an entrepreneurial, fast-paced and 'sharp-elbowed' culture … 'You have to deliver otherwise you will be out'"[47]. In this sense, top managers' job security may decrease as US investors gain a greater say in their firm, and they may ask to be compensated for the potentially higher risk of dismissal.

[46] Oxelheim and Randoy 2005
[47] Croft 2018

Benchmarking effects. Given the considerable difficulties to objectively estimate an individual manager's 'value added', one of the most common heuristics that compensation consultants use to determine salary recommendations is to compare an executive's pay to his or her peers.[48] The entry of US shareholders can change the composition of relevant peer groups towards highly paid US managers in a number of ways: the Americanization of a non-US firm can legitimize the comparison of managers' performance to that of peers at US firms; it can lead to the hiring of US compensation consultancy firms; or it can bring about the appointment of managers and directors with strong connections to the US business elite whose demands for a US-style pay package can break previous social conventions in a firm.[49]

Accordingly, the baseline hypothesis that we examine in the empirical analysis that follows is that increases in US ownership of UK companies leads to higher salaries for the executives they employ. At the same time, in line with the previous literature in political science, we explore whether this effect is moderated by the configuration of local institutions, particularly the strength of trade unions in the industrial sector in which a firm operates. Although trade unions generally do not play any formal role in executive salary-setting processes, several recent studies have claimed that they nonetheless act as effective barriers on increases in top incomes,[50] with one recent survey of the literature concluding that "the rate of unionization is one of the few variables that is consistently reported to have a meaningful impact on top

[48] Bussin 2016; O'Reilly, Main, and Crystal 1988
[49] O'Reilly, Main, and Crystal 1988
[50] Volscho and Kelly 2012; Flaherty 2015; Duenhaupt 2014; Godechot 2016; Neal 2013; Huber, Huo, and Stephens 2017; Ahlquist 2017

incomes"[51]. The literature relates the apparent success of trade unions in regulating levels of executive pay to several indirect mechanisms, particularly unions' capacity to shame and blame excessive pay at the top and a more equal distribution of profits in unionized firms, which shrinks the pool of profits available to individuals at the top of the hierarchy.

Data

To test our hypotheses, we focus on executive pay in the United Kingdom in the period from 2007 to 2014. The relevant government regulations setting the framework for executive pay in the UK during our time period of observation are the UK Corporate Governance Code and the Directors' Remuneration Report Regulations, both issued in 2002.[52] 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 publically available and 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.[53] BoardEx does not employ an explicit sampling methodology, the collection of data instead being driven by availability and 'client interest'.[54] Information on executive pay at

[51] Hager 2017, 12
[52] Petrin 2015; Bender and Moir 2006
[53] We downloaded the entire database in the summer of 2016.
[54] Personal communication with BoardEx

publically listed firms[55] 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 confirmed the reliability of the information. 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 it is illustrated in Table A3 in the appendix, more than half of all publically 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 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 combined market value of all companies with remuneration data lies well above 90 percent of the value of all UK-incorporated companies listed on the LSE.[56] Thus, although we do not observe executive pay in 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

[55] BoardEx also collects some information on some notable firms that are held privately, but we restrict our analysis to publically listed firms.
[56] 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 somewhat rough approximations.

good and coverage for the UK is nearly complete for companies employing more than 50 employees.[57]

The identification of the owners of publically listed corporations faces two challenges: Firstly, 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.[58] 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,[59] 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. Secondly, investment flows in globalized capital markets are commonly channeled through several jurisdictions and, as a result, ownership relations in the contemporary economy are frequently opaque. A key strength of the Orbis ownership data in this respect is BvD's development of a proprietary method to estimate shareholders' *total* ownership stakes, including both direct and indirect positions. To identify total ownership stakes, BvD leverages their database's uniquely comprehensive archive of over 300 million observed ownership links

[57] Garcia-Bernardo and Takes 2016, 4

[58] 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 publically available on the Edgar system.

[59] Office for National Statistics 2017a

spanning the entire globe, which enable it to track down the beneficial owners of indirect positions as long as all nodes in the ownership chain are included.[60] 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 that unavoidably some ownership positions will be missed or misattributed, and that the sensitivity of results to potential measurement error will have to be evaluated, we consider the ownership data in general to be reliable, especially for stakes held by large institutional owners who are subject to strict legally mandated declaration obligations.

To operationalize US and other foreign ownership of publically 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 Table A4 in the appendix. They indicate that on average about 50 percent of the shares of publically listed UK-incorporated firms are owned by foreign investors,[61] 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, Table A5 in the appendix lists the ten largest shareholders by country of domicile - distinguishing between investors from

[60] Bureau van Dijk 2018

[61] 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 2017a

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.

Empirical analysis

Our econometric strategy unfolds in three steps: First, we run a set of standard OLS regressions to evaluate the association between marginal increases in US and non-US foreign ownership and individual pay packages disbursed to executives at UK-firms, controlling for company- and year-fixed effects as well as measures of individual characteristics and firm performance. Then we move to a difference-in-differences identification strategy to evaluate whether the relationship between US ownership and executive pay can be interpreted causally. The presentation of the difference-in-differences analysis is divided into three parts: methodology, findings and robustness checks. Finally, we zoom in on the role of trade unions and assess whether higher levels of sector-level trade union density are effective at moderating upward pressures on pay.

Evidence from OLS regressions

Before turning to a causal inference framework, we analyze correlations in the dataset to motivate our research design further. In Table 1, we evaluate the correlation between an executive's remuneration (measured as the log of the total pay package in million USD) and the percentage of shares American investors own in the company. We then compare this to the correlation of foreign (but not American) ownership. We use all our sample except companies we only observe once. In the first two columns of the table we concentrate on US investors. In the next two columns we focus on non-American foreign investors, and in the last two columns we introduce both measures simultaneously. We present regressions with a limited set of quasi-exogenous controls (age, gender, and citizenship) and an extended set of covariates capturing the performance of the company (solvency and stock market appreciation) and sector unionisation rates. In the first two columns, we find a positive and strong statistical correlation between the percentage of shares held by US investors and executive pay. Every percentage point increase in US ownership is correlated with a 0.4% increase in pay. In contrast, we find no association between non-US foreign owned shares and pay (columns 3 and 4). When we introduce both ownership measures simultaneously, the percentage of US held shares remain positive, significant at the 1 percent level and in the same size range, while the correlation with non-US foreign ownership is still insignificant. Consistent with our theoretical argument, the results strongly indicate that executive pay increases with higher levels of US ownership, but not with foreign investments from

elsewhere. In what follows we carefully investigate whether the impact of US ownership on executive pay at UK firms can be interpreted as a causal effect.

<TABLE 1 ABOUT HERE>

Causal identification

Methodology

The research design we adopt follows a difference-in-differences strategy, in which we compare changes in remuneration in a "treatment" group to changes in remuneration in a control group. In our case, treated units are companies that receive a substantial investment by US investors. Control units are companies that don't. By focusing on changes over time between the two groups, fixed pre-existing differences between treatment and control units get cancelled out. The key identification assumption of the difference-in-differences model is that in the absence of treatment, the remuneration of control and treatment units would have followed a similar trend. This is often referred to as the parallel trend assumption. While there is no possibility to completely verify whether this assumption is correct, empirical checks can be conducted to assess its plausibility.

An important issue for the research design is how to define the "treatment", i.e. the threshold above which US ownership of a company should be considered to be substantial enough to influence pay-setting procedures. Guided by the official

statistical definition of FDI[62] and US corporate governance laws determining investors' insider/outsider status[63], we opt for 10 percent as the primary threshold that we use in our analyses. At the same time, given that there is a certain level of arbitrariness in this choice, we carefully evaluate all key results for a variety of thresholds ranging from 5 to 15 percent of ownership. Reassuringly, the main results are consistent throughout this range of values.

The richness of our dataset allows us to carry out the analysis either at the company-level or at the level of individual managers. Working with manager-level data makes it possible to include additional individual-level control variables, which can help with precision. On the other hand, since the treatment of interest (American ownership of a British company) varies at the company level, only time varying variables measured at that same level can be potential sources of omitted variable bias. In addition, if it is the case that the composition of treatment and control groups 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), this could bias our analysis. Given these considerations, we have a preference for analysis at the company-level, but we show all key results at the manager-level as well. The findings yield the same conclusion: US investors have a strong and positive effect on the remuneration of UK based executives.

[62] International Monetary Fund 2009, 101
[63] U.S. Securities and Exchange Commission 2018

To address our research question, we take advantage of the panel dimension of the company data and restrict the sample to all companies with at least two years of observations. To implement our difference-in-differences model, we further remove the companies always owned by US investors from the dataset. Our last sample restriction is to drop the companies that are US-owned in the first year for which we observe them.

The baseline regression is of the following form where the unit of observation is the company:

$$Y_{j,t} = \beta_0 + \beta_1 . US_{j,t} + W'_{j,t} . \beta_2 + \mu_j + \delta_t + \nu_{j,t} \qquad (1)$$

where j indicates companies, and t years. $Y_{j,t}$ measures the mean (or median) remuneration of executives (in natural logarithm). μ_j, δ_t, and $\nu_{j,t}$ are respectively company fixed effects, year fixed effects, and the error term. The company fixed effects control for all time invariant company characteristics that may affect remuneration. We work with alternative specifications of the year effect in order to assess the sensitivity of our results to controlling for various time related unobserved potential confounders. In our main regressions, $US_{j,t}$ is a dummy variable switching from 0 to 1 for companies where US investors own at least 10 percent of the company's equity. We also test the robustness of our results to alternative measures of US ownership. $W_{j,t}$ is a vector of company covariates. Given the risk of biasing the results through to the introduction of 'bad controls' and missing observations, we run regressions with and without a set of covariates. $W_{j,t}$ includes a measure of union density defined at the level of nineteen distinct industrial sectors (as shown in

Figure A2 in the appendix). We also add the company's solvency, defined as the ratio of cash inflows divided by liabilities, in order to control for the influence of the financial 'health' of the company. Lastly, we include a dummy for whether the share price of the company has appreciated over the year to flexibly control for the performance of the company on the stock market. The parameter of interest is β_1 capturing the effect of US ownership on remuneration. Identification relies on the assumption that in the absence of US investment, executive remuneration in companies owned by American investors would have evolved in a similar fashion as in companies that they did not acquire. Standard errors are clustered at the company level. Descriptive statistics can be found in Appendix Table A6.

When we run the analysis at the individual level, the regression model changes to

$$y_{i,j,t} = \lambda_0 + \lambda_1 . US_{j,t} + X'_{i,j,t} . \beta_2 + \mu_j + \delta_t + \varepsilon_{i,j,t} \quad (2)$$

where i stands for individual, j for company, and t year. $y_{i,j,t}$ measures the total remuneration of executive directors and is expressed in natural logarithm. $X_{i,j,t}$, μ_j, δ_t, and $\varepsilon_{i,j,t}$ are respectively a vector of covariates, a company fixed effect, a year fixed effect, and the error term. At this level, we also run regressions with both a limited and extended set of covariates. In the 'limited set' we include a director's gender, age, age squared, and a dummy for being a US citizen.[64] In the 'extended set' we add union density, the company's solvency, and a dummy for whether the stock of the company has appreciated. We cluster our standard errors at the company level here as well.

[64] We do not control for managers' level of education as there is very little variation in educational achievements (not surprisingly, all managers in our dataset have completed higher education).

Findings

In Table 2 we present our main results based on company level data. The dependent variable considered is the company-mean remuneration of executive directors (in log). We run specifications with year fixed effects in the first two columns. We add industrial sector linear time trends in the next two columns. This alternative year effect structure allows us to partial out the influence of sector-specific time trends. Columns 5 and 6 include sector times year effects instead. This flexibly allows us to control for economic shocks that are sector-specific. Most result tables are structured in a similar fashion. We find that US ownership has a positive effect on mean executive remuneration. The point estimates are positive and statistically significant at conventional levels in all specifications. The magnitude of the coefficients is also plausible. According to column 6, controlling for the full set of covariates and sector times year fixed effects, the Americanization of ownership of a UK company translates into approximately a 3.06 percent increase in mean executive pay. In Table 3, we focus on median remuneration instead. There we find positive and significant effects as well, and the point estimates are larger, ranging between 11.6 and 13.7 percent. The observed difference in point estimates for median and mean remuneration is consistent with a left-skewed remuneration distribution. Finally, in Table 4 the unit of observation is the individual executive director. The results are in line with the company-level analyses, indicating that the Americanization of UK firms causes an average pay increase of about 9 percent for its executive directors.

<TABLE 2 ABOUT HERE>

<TABLE 3 ABOUT HERE>

<TABLE 4 ABOUT HERE>

Robustness checks

We begin by checking the sensitivity of our main results on executive directors' pay to alternative definitions of US ownership. We run models with company-mean and –median executive director remuneration as the dependent variable and variously define the Americanization treatment using thresholds of 5, 8, 12 and 15 percent ownership. The results are presented graphically in Figures 2 and 3. The full results are included in the appendix (Table A7 for company-means and Table A8 for medians) where we in addition also include models with a very flexible definition of Americanization with a dummy switching to one for any positive value of US ownership.

<FIGURE 2 ABOUT HERE>

<FIGURE 3 ABOUT HERE>

The results show that our previous findings are not sensitive to how we define US ownership. The 8, 12 and 15 percent ownership dummies all have a positive and statistically significant effect on executives' mean and median remuneration, the size of the coefficients are very similar and confidence intervals overlap. The 5 percent ownership dummy is also positive but not statistically significant, which may

indicate that only above this threshold the influence of US owners becomes sufficiently strong to affect levels of pay. On the other end, as threshold levels increase, the definition of ownership becomes more and more restrictive and the control group is increasingly 'contaminated' with firms having fairly large US positions – accordingly, estimates become again more conservative at higher cutoffs.

To further evaluate the robustness of this effect, we perform four additional checks. First, we restrict the sample to a balanced panel dataset where we keep only companies observed every year throughout our 8-year time period. The results are strongly in line with our previous findings (see Table A9 in appendix). Second, to address the possibility that treated and control companies could have been on different trends even in the absence of treatment, we further restrict our sample to only those companies in which the US ownership dummy switches from zero to one at some point over our study period. In this setup, identification is now coming only from variation with respect to the year in which US investors enter these firms, ensuring that we are removing the influence of any unobserved and time-varying factors specific to treated firms. The results, illustrated in Table A10 (company-means) and Table A11 (company-medians) in the appendix, also confirm our finding. Third, having established a positive effect of the entry of US investors on pay, we are interested to assess whether we also find evidence of a reverse relationship: that is, that the *exit* of US investors from a British company *negatively* affects pay. To do so, we exclude companies that never see any US investment and estimate the effect of the US ownership dummy switching from 1 to 0. As it is shown in Table A12 in the appendix, we find clear evidence of a negative effect in line with

our theory. The same result also holds in a balanced sample of firms (Table A13 in appendix), further increasing our confidence in the robustness of the result. Finally, we evaluate the possible objection that our results could be explained by actual improvements in corporate performance brought about by the entry of US investors. In Table A14 in the appendix we look for any evidence that this may be the case by considering annual earnings and profit margins as outcome variables. We cannot find any significant effect of US investors for either of them. We can therefore rule out with reasonable confidence that this particular channel explains our results, bolstering our basic argument that the positive effect of US ownership on executive pay are primarily due to changes in how executives are being remunerated, rather than changes in the performance of corporations *per se*.

The moderating effect of trade unions?

So far, we have established strong and robust evidence that the Americanization of UK firms leads to higher pay for its executives and we are confident that the relationship can be interpreted causally. This provides us with a valuable opportunity to further examine what has so far been the strongest claim forwarded by the political science literature examining cross-national variations in executive pay and top income shares: that the strength of trade unions is an effective mechanism to restrain elites' efforts to appropriate ever greater shares of economic profits for themselves. It is important to point out that the empirical findings upon which this claim is built relies overwhelmingly on cross-country comparisons of

aggregate data (primarily the correlation between national-level average trade union densities and top income shares).[65] Furthermore, in disregard of an important earlier intervention that has elucidated the significant potential for omitted variables to bias such estimates of the 'effects' of trade union density (which likely correlates with several other unobserved factors of theoretical relevance),[66] these studies have not developed a convincing empirical strategy to deal with these issues.

Although our dataset covers only developments in one specific country, it contains much more fine-grained information on top income dynamics; the panel data structure make it possible to better control for unobserved trends; and the reasonably exogenous nature of incoming US investment shocks provide us with an appropriate test case to evaluate whether trade unions are able to restrain these external upward pressures on executive pay, as the previous literature on the topic implies.

To operationalize variations in trade union strength in the UK economy, we rely on the most disaggregated data that we could find in this respect: a dataset from the Office for National Statistics[67] providing annual estimates of trade union membership densities for nineteen distinct industrial sectors (shown in Figure A2 in the appendix), which we were able to match to our dataset.

Empirically, we are interested both in executive pay's association with sector-level trade union density in its own right, as well as the interaction effect between

[65] Volscho and Kelly 2012; Flaherty 2015; Duenhaupt 2014; Godechot 2016; Neal 2013; Huber, Huo, and Stephens 2017
[66] Scheve and Stasavage 2009
[67] Office for National Statistics 2017b

union strength and the US ownership dummy in our difference-in-differences setup. As we reported in TABLES

Table 1, we do find a negative association between trade union density and executive pay in the OLS analysis, but it is substantively small and statistically clearly insignificant – a surprising finding in light of the previous literature on inequality in political science. Turning to the interaction analysis, we first evaluate the association between sector-level trade union density and the likelihood of a UK company to receive a substantial investment from the US. One might argue that American investors select British companies with low unionization rates in the first place. To the extent that it would be the case, it would complicate the conceptual and statistical interpretation of our findings. Yet, although we find a negative relationship between the two variables, it is substantively weak and clearly insignificant (see Table A15 in appendix). We thus proceed and run the difference-in-differences model including an interaction term between sector-level trade union density and US ownership. The results are shown in Table 5. In the first two columns we include only year effects; in the last two we also add sector specific linear time trends. For each model, we run regressions with and without covariates. The baseline union density coefficient is negative across all specifications, but it is imprecisely estimated and insignificant at conventional levels. The uninteracted baseline measure of US ownership remains positive and statistically significant and is of a magnitude comparable to our previous findings. Turning to the interaction term, we find negative but very small and mainly insignificant coefficients. Only in column 2 is the coefficient of the interaction statistically significant, and only at the

10 percent level. In short, the impact of US ownership doesn't seem to depend on sector-level unionization and we have to reject the hypothesis that UK trade unions are able to restrain upwards pressures on executive pay induced by the Americanization of the ownership of UK firms.

<TABLE 5 ABOUT HERE>

Evidently, these sobering findings are based on data from only one country case. Furthermore, the UK represents a case in which trade union powers have been curtailed for decades before the starting period of our empirical analysis. In this sense, it is very well possible that micro-level analyses of remuneration data from countries in which trade unions are still better integrated into domestic political-economic processes would have led us to different conclusions. But we are unable at this point to answer this question with the data we have.

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 two main contributions. First, 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. We use a difference-in-differences specification to show that companies in which US investors take significant positions see substantial increases in executive pay, a finding which is robust to a variety of different specifications. 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 and the finding cannot be explained merely by improvements in company performance.

Second, we use the same dataset to test an alternative hypothesis that is present in the literature, that executive pay is more likely to rise when trade unions are too weak to rein in the excesses of company boards. Using sector-level data on trade union membership we find that for the UK this hypothesis is not confirmed: the hypothesized negative association between trade union membership – both uninteracted and interacted with the US investor variable - and executive pay is weak and insignificant, whilst the US investor variable retains its explanatory power. In short, there is no support for the hypothesis that for any given level of US investment trade union membership in the company's sector has any impact on executive pay, a finding which contradicts the dominant view in the comparative political economy literature.

Taken together these findings suggest that stepping outside the methodological nationalism of much of the existing scholarship on top incomes growth yields valuable insights. In particular transnational capital flows appear more important

than a key national-level factor such as the strength of labour market organizations. Drawing on individual- and company-level data, we avoid some of the pitfalls of existing research based on aggregate level data. However, 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, we plan to use a similar approach in other country cases to test how well our investor theory 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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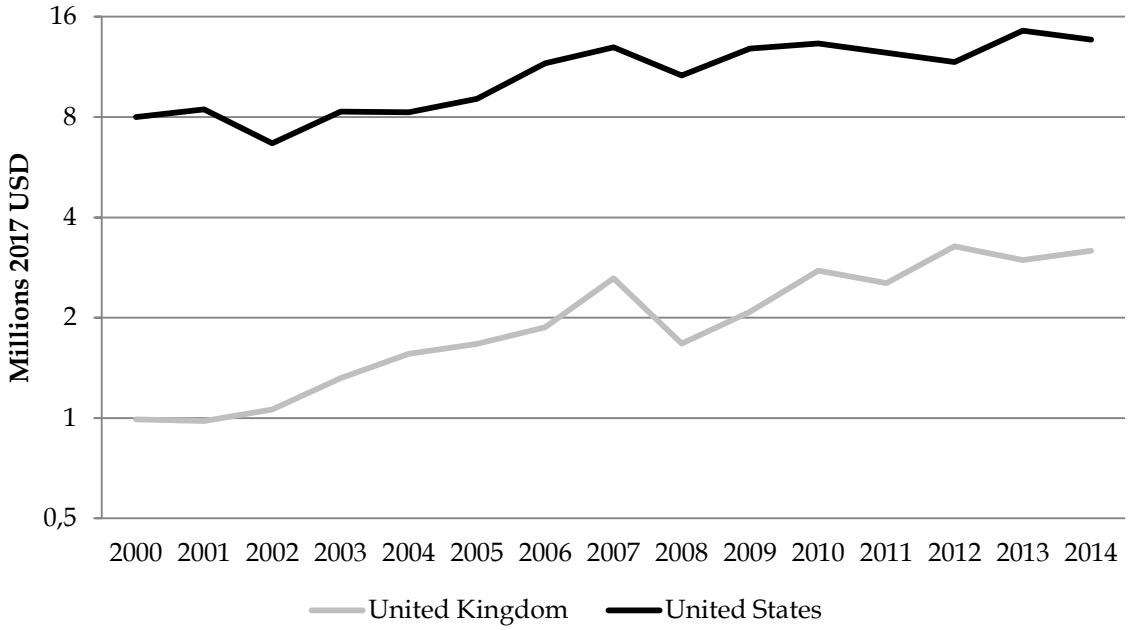
FIGURES

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 Tables A1 and A2 in the appendix.

Figure 2

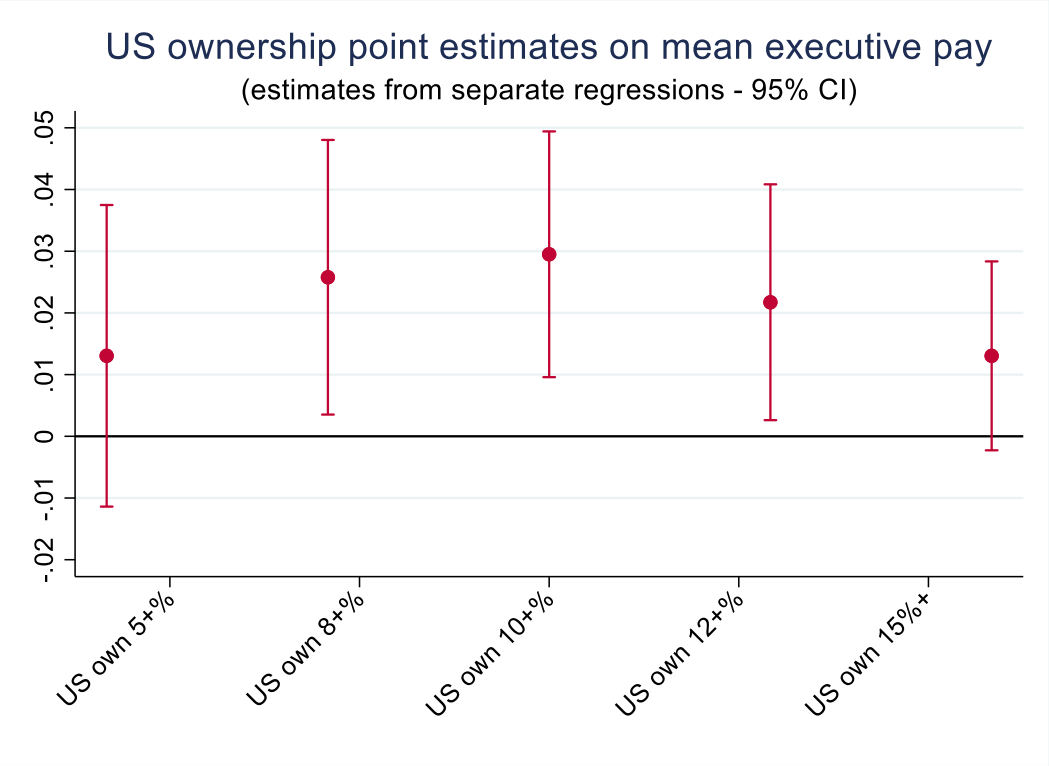
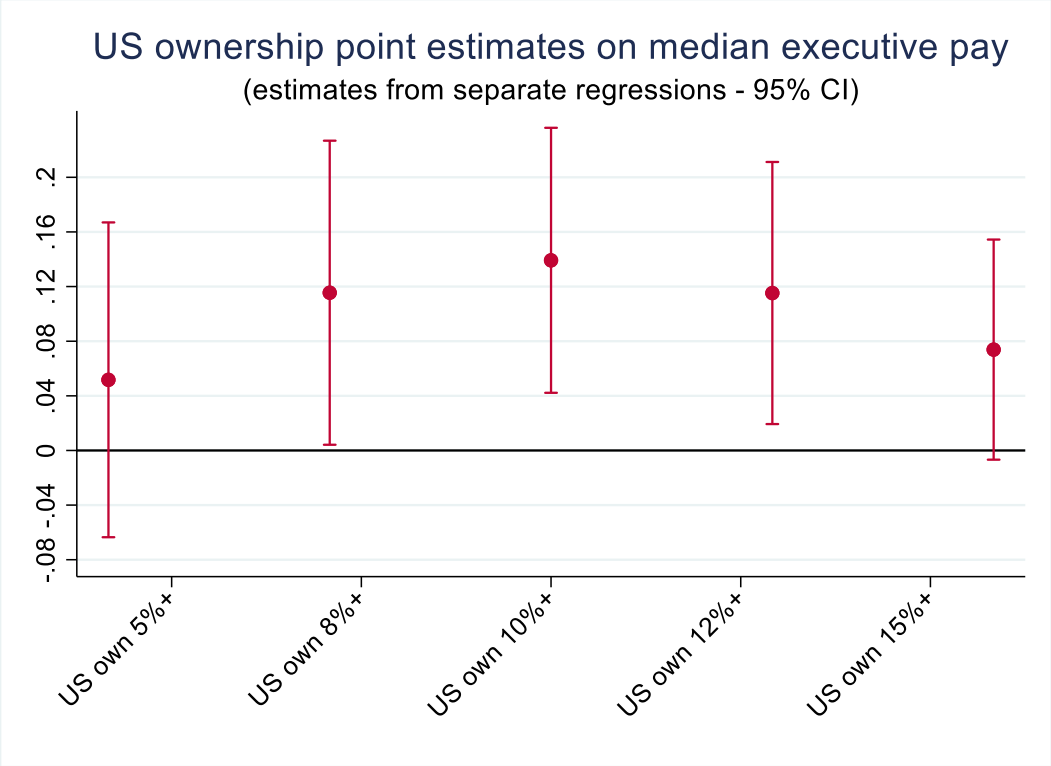

US ownership point estimates on mean executive pay
(estimates from separate regressions - 95% CI)
-.02
-.01
0
.01
.02
.03
.04
.05
US own 5+%
US own 8+%
US own 10+%
US own 12+%
US own 15%+

Figure 3


US ownership point estimates on median executive pay
(estimates from separate regressions - 95% CI)
-.08
-.04
0
.04
.08
.12
.16
.2
US own 5%+
US own 8%+
US own 10%+
US own 12%+
US own 15%+

TABLES

Table 1. OLS regressions - US and non-US foreign investors (individual level)

DEPENDENT VAR.:	(1) log(Rem.)	(2) log(Rem.)	(3) log(Rem.)	(4) log(Rem.)	(5) log(Rem.)	(6) log(Rem.)
US held shares (%)	0.00413***	0.00491***			0.00413***	0.00496***
	(0.00129)	(0.00150)			(0.00129)	(0.00150)
Foreign non-US held shares (%)			0.000618	0.000573	0.000616	0.000653
			(0.000438)	(0.000570)	(0.000436)	(0.000568)
Male	0.152***	0.175***	0.153***	0.176***	0.152***	0.174***
	(0.0484)	(0.0528)	(0.0485)	(0.0529)	(0.0484)	(0.0528)
Age	0.120***	0.126***	0.120***	0.126***	0.120***	0.125***
	(0.0148)	(0.0153)	(0.0149)	(0.0153)	(0.0148)	(0.0153)
Age sq.	-0.00102***	-0.00107***	-0.00102***	-0.00107***	-0.00102***	-0.00107***
	(0.000134)	(0.000138)	(0.000134)	(0.000138)	(0.000134)	(0.000138)
US citizen	0.0835	0.114*	0.0839	0.115*	0.0830	0.114*
	(0.0632)	(0.0688)	(0.0633)	(0.0691)	(0.0632)	(0.0688)
Union density		-0.00758		-0.00640		-0.00746
		(0.00722)		(0.00727)		(0.00722)
Stock price increase		0.178***		0.238***		0.167***
		(0.0373)		(0.0250)		(0.0390)
Solvency		0.00171*		0.00181*		0.00170*
		(0.000956)		(0.000960)		(0.000955)
Observations	17,420	15,049	17,420	15,049	17,420	15,049
R-squared	0.755	0.754	0.755	0.753	0.755	0.754
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 2. Company level - Mean executive director remuneration

DEPENDENT VAR.:	(1) log(Mean Rem.)	(2) log(Mean Rem.)	(3) log(Mean Rem.)	(4) log(Mean Rem.)	(5) log(Mean Rem.)	(6) log(Mean Rem.)
US ownership (>10%)	0.0256**	0.0293***	0.0240**	0.0272***	0.0237*	0.0306***
	(0.0105)	(0.0101)	(0.0110)	(0.0104)	(0.0125)	(0.0118)
Observations	3,092	2,572	3,092	2,572	3,092	2,572
R-squared	0.043	0.054	0.065	0.077	0.118	0.146
Number of Companies	502	397	502	397	502	397
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	No	No
Sector trend	No	No	Yes	Yes	No	No
Sector x Year FE	No	No	No	No	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 3. Company level - Median executive director remuneration

DEPENDENT VAR.:	(1) log(Median Rem.)	(2) log(Median Rem.)	(3) log(Median Rem.)	(4) log(Median Rem.)	(5) log(Median Rem.)	(6) log(Median Rem.)
US ownership (>10%)	0.124**	0.137***	0.118**	0.126**	0.116**	0.136**
	(0.0495)	(0.0493)	(0.0517)	(0.0503)	(0.0574)	(0.0560)
Observations	3,093	2,573	3,093	2,573	3,093	2,573
R-squared	0.057	0.065	0.079	0.091	0.133	0.158
Number of Companies	502	397	502	397	502	397
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	No	No
Sector trend	No	No	Yes	Yes	No	No
Sector x Year FE	No	No	No	No	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4. Individual level - Executive director remuneration

DEPENDENT VAR.:	(1) log(Rem.)	(2) log(Rem.)	(3) log(Rem.)	(4) log(Rem.)	(5) log(Rem.)	(6) log(Rem.)
US ownership (>10%)	0.0916**	0.0860*	0.0875*	0.104**	0.0935**	0.0974**
	(0.0466)	(0.0467)	(0.0478)	(0.0442)	(0.0447)	(0.0470)
Observations	8,713	8,713	8,713	7,203	7,203	7,203
R-squared	0.724	0.727	0.735	0.706	0.710	0.721
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	No	Yes	Yes	No
Sector trend	No	Yes	No	No	Yes	No
Sector x Year FE	No	No	Yes	No	No	Yes
Limited covariates	Yes	Yes	Yes	No	No	No
Extended covariates	No	No	No	Yes	Yes	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 5. Unionisation

DEPENDENT VAR.:	(1) log(Mean Rem.)	(2) log(Mean Rem.)	(3) log(Mean Rem.)	(4) log(Mean Rem.)
Union density	-0.00155	-0.00211	-0.00169	-0.00259
	(0.00228)	(0.00195)	(0.00225)	(0.00203)
US ownership (>10%)	0.0413**	0.0546***	0.0390*	0.0507***
	(0.0200)	(0.0180)	(0.0210)	(0.0181)
Union density x US own. (>10%)	-0.000871	-0.00144*	-0.000807	-0.00133
	(0.000870)	(0.000816)	(0.000915)	(0.000820)
Observations	3,024	2,572	3,024	2,572
R-squared	0.046	0.055	0.069	0.078
Number of Companies	494	397	494	397
Company FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Sector Trend	No	No	Yes	Yes
Covariates	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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 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	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 *no* 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 country of domicile

	2007					2015				
	Name	**Type**	**Nr position s>1%**	**Median position (in %)**	**Largest position (in %)**	**Name**	**Type**	**Nr position s>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
	Brewin 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. Descriptive statistics – individual executive data

Variable	Obs.	Mean	Std. Dev.	Min	Max
Total remuneration (log)	17,453	6.480	1.365	0	11.600
US held shares (%)	17,476	12.824	13.204	0	100
Foreign non-US held shares (%)	17,476	49.167	29.493	0	100
Male	17,476	0.947	0.224	0	1
Age	17,443	56.640	7.879	28	98
Age sq.	17,443	3270.192	918.112	784	9604
US citizen	17,476	0.035	0.184	0	1
Union density	17,278	16.699	7.235	3.5	55.4
Stock price increase	15,442	0.497	0.500	0	1
Solvency	17,165	46.320	26.388	-98.746	100

Note: Data from BoardEx and Bureau van Dijk. See text for more explanations.

Table A7. Company-mean executive director remuneration – alternative ownership definitions

DEPENDENT VAR.:	(1) log(Mean Rem.)	(2) log(Mean Rem.)	(3) log(Mean Rem.)	(4) log(Mean Rem.)	(5) log(Mean Rem.)	(6) log(Mean Rem.)	(7) log(Mean Rem.)	(8) log(Mean Rem.)	(9) log(Mean Rem.)	(10) log(Mean Rem.)
US ownership (>5%)	0.0123	0.0130								
	(0.0128)	(0.0124)								
US ownership (>8%)			0.0223*	0.0258**						
			(0.0117)	(0.0113)						
US ownership (>12%)					0.0191*	0.0217**				
					(0.0102)	(0.00973)				
US ownership (>15%)							0.0155*	0.0130*		
							(0.00819)	(0.00779)		
US ownership (any>0%)									0.0271	0.0194
									(0.0328)	(0.0273)
Observations	2,285	1,839	2,800	2,302	3,433	2,885	3,975	3,400	779	578
R-squared	0.036	0.051	0.041	0.054	0.045	0.056	0.046	0.057	0.049	0.075
Number of Companies	382	293	458	358	551	442	633	520	141	99
Company FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A8. Company-median executive director remuneration – alternative US ownership definition

DEPENDENT VAR.:	(1) log(Median Rem.)	(2) log(Median Rem.)	(3) log(Median Rem.)	(4) log(Median Rem.)	(5) log(Median Rem.)	(6) log(Median Rem.)	(7) log(Median Rem.)	(8) log(Median Rem.)	(9) log(Median Rem.)	(10) log(Median Rem.)
US ownership (>5%)	0.0580	0.0517								
	(0.0582)	(0.0586)								
US ownership (>8%)			0.114**	0.115**						
			(0.0563)	(0.0566)						
US ownership (>12%)					0.102**	0.115**				
					(0.0507)	(0.0488)				
US ownership (>15%)							0.0889**	0.0738*		
							(0.0414)	(0.0410)		
US ownership (any>0%)									0.112	0.0478
									(0.147)	(0.122)
Observations	2,286	1,840	2,801	2,303	3,434	2,886	3,976	3,401	780	579
R-squared	0.046	0.059	0.054	0.064	0.060	0.069	0.063	0.071	0.044	0.076
Number of Companies	382	293	458	358	551	442	633	520	141	99
Company FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A9. Company-mean executive director remuneration – balanced panel of firms

DEPENDENT VAR.:	(1) log(Mean Rem.)	(2) log(Mean Rem.)	(3) log(Mean Rem.)	(4) log(Mean Rem.)	(5) log(Mean Rem.)	(6) log(Mean Rem.)
US ownership (>10%)	0.0283**	0.0306***	0.0270**	0.0296**	0.0280*	0.0330**
	(0.0128)	(0.0117)	(0.0135)	(0.0119)	(0.0150)	(0.0133)
Observations	1,990	1,798	1,990	1,798	1,990	1,798
R-squared	0.036	0.066	0.053	0.091	0.119	0.172
Number of Companies	254	235	254	235	254	235
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Sector trend	No	No	Yes	Yes	No	No
Covariates	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A10. Company-level mean remuneration of executive directors – sample of companies experiencing substantial US investment during study period only

DEPENDENT VAR.:	(1) log(Mean Rem.)	(2) log(Mean Rem.)	(3) log(Mean Rem.)	(4) log(Mean Rem.)	(5) log(Mean Rem.)	(6) log(Mean Rem.)
US ownership (>10%)	0.0286***	0.0281***	0.0280**	0.0268**	0.0335**	0.0319**
	(0.0109)	(0.0101)	(0.0114)	(0.0106)	(0.0141)	(0.0128)
Observations	989	892	989	892	989	892
R-squared	0.068	0.107	0.102	0.131	0.214	0.264
Number of Companies	140	125	140	125	140	125
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	No	No
Sector trend	No	No	Yes	Yes	No	No
Sector x Year FE	No	No	No	No	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A11. Company-level median remuneration of executive directors - sample of companies experiencing substantial US investment during study period only

DEPENDENT VAR.:	(1) log(Median Rem.)	(2) log(Median Rem.)	(3) log(Median Rem.)	(4) log(Median Rem.)	(5) log(Median Rem.)	(6) log(Median Rem.)
US ownership (>10%)	0.123**	0.124**	0.117**	0.114**	0.141**	0.136**
	(0.0525)	(0.0510)	(0.0547)	(0.0529)	(0.0663)	(0.0621)
Observations	989	892	989	892	989	892
R-squared	0.078	0.115	0.107	0.140	0.229	0.286
Number of Companies	140	125	140	125	140	125
Company FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	No	No
Sector trend	No	No	Yes	Yes	No	No
Sector x Year FE	No	No	No	No	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A12. Executive director remuneration and US investors' exit

DEPENDENT VAR.:	(1) log(Mean Rem.)	(2) log(Mean Rem.)	(3) log(Median Rem.)	(4) log(Median Rem.)
US capital exit (<10%)	-0.0232***	-0.0235***	-0.169***	-0.174***
	(0.00812)	(0.00860)	(0.0474)	(0.0501)
Observations	2,840	2,558	2,840	2,558
R-squared	0.054	0.062	0.064	0.074
Number of Companies	425	377	425	377
Company FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A13. Executive director remuneration and US investors' exit – balanced sample of firms

DEPENDENT VAR.:	(1) log(Mean Rem.)	(2) log(Mean Rem.)	(3) log(Median Rem.)	(4) log(Median Rem.)
US capital exit (<10%)	-0.0268***	-0.0269***	-0.188***	-0.192***
	(0.00821)	(0.00836)	(0.0512)	(0.0521)
Observations	2,262	2,129	2,262	2,129
R-squared	0.057	0.065	0.067	0.076
Number of Companies	285	269	285	269
Company FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Covariates	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A14. US investments and firm performance

DEPENDENT VAR.:	(1) Earnings	(2) Earnings	(3) Earnings	(4) Earnings	(5) Profit margin	(6) Profit margin	(7) Profit margin	(8) Profit margin
US ownership (>10%)	-45.79	-50.84	-48.62	-53.53	0.858	0.848	1.213	1.035
	(32.95)	(35.61)	(34.42)	(37.62)	(1.251)	(1.249)	(1.234)	(1.221)
Observations	4,257	3,699	4,257	3,699	3,141	2,740	3,141	2,740
R-squared	0.020	0.030	0.036	0.041	0.005	0.025	0.040	0.065
Number of Companies	657	545	657	545	585	487	585	487
Company FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sector trend	No	No	Yes	Yes	No	No	Yes	Yes
Covariates	No	Yes	No	Yes	No	Yes	No	Yes

Robust standard errors clustered at company level in parentheses.
*** p<0.01, ** p<0.05, * p<0.1

Table A15. Determinants of US ownership

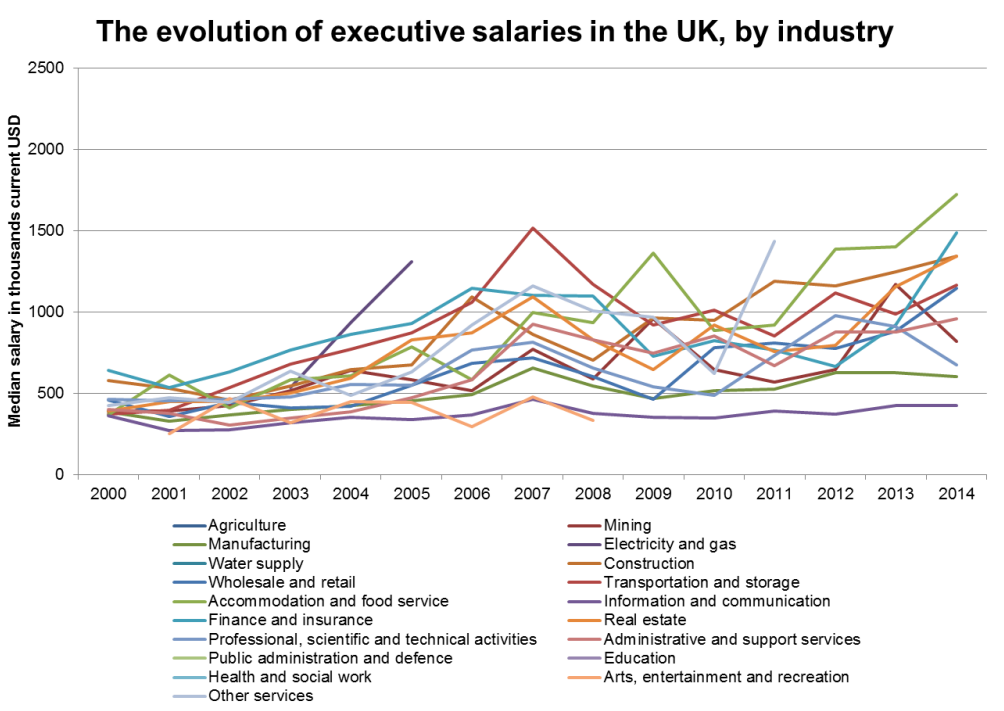
	(1)	(2)	(3)	(4)	(5)
DEPENDENT VAR.:	US own. (>10%)	US own. (>10%)	US own. (>10%)	US own. (>10%)	US own. (>10%)
Union density	-0.00243	-0.00166	-0.00233	-0.00270	-0.000978
	(0.00346)	(0.00354)	(0.00366)	(0.00364)	(0.00537)
Solvency		0.000490	0.000542	0.000529	0.000390
		(0.000340)	(0.000564)	(0.000567)	(0.000697)
ROE/1,000			0.00685	0.0232	-0.0549
			(0.0815)	(0.0848)	(0.107)
Earnings/1,000,000				-0.0127	-0.0121
				(0.0132)	(0.0214)
Profit margin					0.000211
					(0.000306)
Observations	4,220	4,135	4,006	3,997	2,977
R-squared	0.068	0.070	0.071	0.072	0.079
Number of Companies	650	648	638	638	563
Company FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

Robust standard errors in parentheses clustered at company level

*** p<0.01, ** p<0.05, * p<0.1

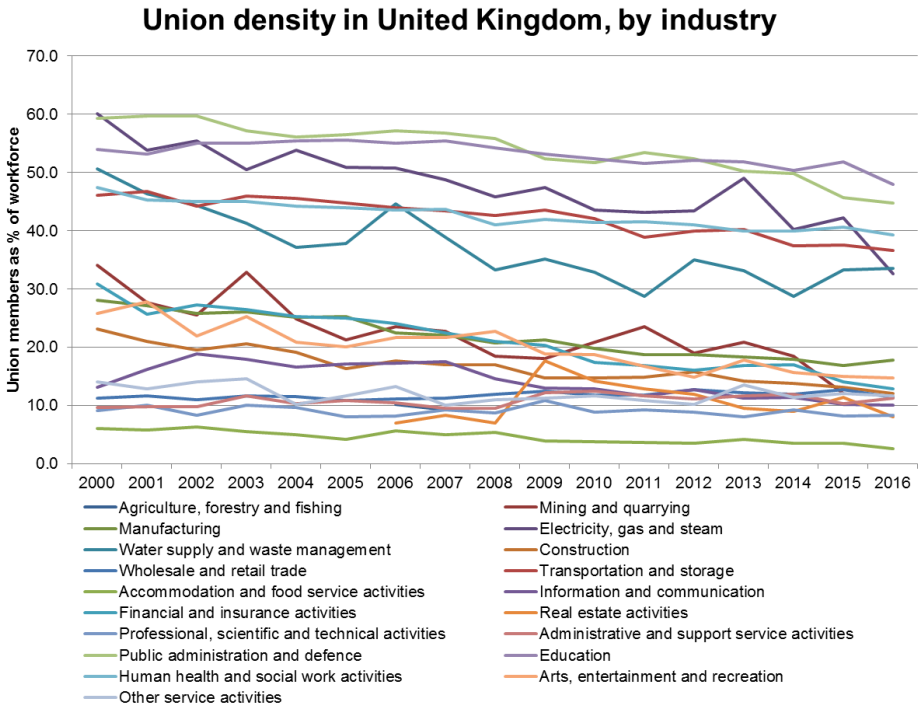
APPENDIX FIGURES

Figure A1



NOTE: The graph shows the *median* salary in each industry. Only values for industry-years with at least 30 observations are shown. SOURCE: BoardEx.

Figure A2



SOURCE: UK Office for National Statistics