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Do US Market Interactions Affect CEO Pay? Evidence from UK Companies

Joseph J. Gerakos
Joseph D. Piotroski
Suraj Srinivasan

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Joseph J. Gerakos
University of Chicago
Booth School of Business
joseph.gerakos@chicagobooth.edu

Joseph D. Piotroski
Stanford University
Graduate School of Business
jpiotros@stanford.edu

Suraj Srinivasan
Harvard Business School
ssrinivasan@hbs.edu

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Abstract

This paper examines the extent that interactions with US markets impact the compensation practices of non-US firms. Using a sample of large UK companies, we find that the total compensation of UK CEOs is positively related to the extent of the firm's interactions with US markets, as captured by the percentage of total sales generated in the US, the presence of prior US acquisition activity, the presence of a US exchange listing, and CEO and director-level US board experience. More importantly, we find that exposure to US product markets is associated with the adoption of US-style compensation arrangements (i.e., incentive-based pay packages). In contrast, we find no such association with exposures to other (non-US) foreign product markets. Together, our evidence is consistent with US market interactions impacting UK compensation practices through two mechanisms: (1) to alleviate internal and external pay disparities arising from the presence of US operations and businesses (proxied by the percent US Sales and prior US acquisitions) and (2) to compensate CEOs for bearing the additional risk and responsibility associated with exposure to foreign securities laws and legal environment (proxied by both US and non-US exchange listings).

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1. Introduction

This paper examines the extent that interactions with US markets impact the executive compensation practices of non-US firms. Prior research documents that US CEOs are more highly paid than their foreign peers (e.g., Abowd and Bognanno, 1995; Conyon and Murphy, 2000; and Fernandes, Ferreira, Matos, and Murphy, 2009). For example, Fernandes et al., (2009) show that, in 2006, US CEOs received total compensation that was on average 170 percent higher than compensation received by CEOs in 26 other countries. These differences can be attributed, in large part, to the fact that US firms rely to a greater extent on long-term, incentive-based compensation. This incentive-based compensation leads to pay packages that are sensitive to firm performance and have the potential for large payouts (e.g., Hall and Liebman, 1998). Despite these differences, recent worldwide evidence points toward increasing levels of CEO pay and toward a greater reliance on incentive compensation (Thomas, 2008; Conyon, Core, and Guay, 2009; Fernandes et al., 2009; Conyon et al., 2010).[1] Using a sample of UK companies, we examine how interactions with the US product, capital, and labor markets lead non-US firms to increase the level of CEO pay and rely to a greater extent on incentive-based compensation.

As discussed by Cheffins (2003), non-US firms have an incentive to structure compensation packages similarly to those used by US firms if they possess US operations, face US-based competitors, are exposed to the US legal and regulatory environment, or employ executives capable of managing a US corporation. The incentive to adopt US-style compensation practices arises because of (1) the need to eliminate internal and external pay disparities arising from US operations and US mergers and acquisitions-related activity, (2) the impact of the US legal regime on

[1] Despite a global movement toward the increased usage of incentive-based pay, economically meaningful differences in compensation packages and pay remain (Conyon, Core, and Guay, 2009; Carter Lynch and Zamora, 2009).

managerial responsibility and risk, and (3) competition in US labor markets to hire and retain global managerial talent.

As discussed by Bebchuk and Roe (1999), local institutional factors can, however, mitigate the influence of these cross-border market forces on local compensation practices. These factors include local governance mechanisms that differ from those used in the United States; stakeholder pressure against high pay levels (e.g., labor unions); pay restrictions under corporate law; cultural and societal norms that limit level of pay; media scrutiny and political outrage against "excessive" pay; and poorly developed capital markets that limit the use of option and equity-based pay. [2,3]

Using data on the compensation practices of 416 publicly traded UK firms over the period 2002 to 2007, we test the proposition that interactions with US markets influence the compensation policies of foreign firms. We focus on UK firms for several reasons. First, the United States and the United Kingdom share a common language, legal traditions, and culture, all of which increase economic activity and labor mobility between the two countries. Second, by focusing on the compensation packages of firms in one country, we hold constant the primitive legal, regulatory, political, cultural, and economic factors that can lead to potential omitted variables in multiple country studies. Third, prior research documents both differences in the compensation packages of US and UK firms, but also finds that UK practices are converging toward US-style arrangements. Lastly, disclosure requirements in the UK have required firms to provide high quality data on executive compensation providing us a reliable time series of such data for our tests.

[2] The compensation practices of US firms are at least partially a solution to agency problems induced by the diffuse ownership structure of most US publicly listed firms. Absent the ability to monitor managers directly, US firms rely on incentive-based pay to align the incentives of managers with those of the shareholders. In contrast, the institutional arrangements in many countries either discourage diffuse share ownership (e.g., weak protection of property rights) or facilitate the direct monitoring of managers (e.g., concentrated ownership; strong firm-bank relations), thereby limiting the demand for the high-powered, incentive-based contracts observed in the United States.

[3] In many countries, provisions in corporate law, tax rules, and "soft law" such as corporate governance codes, can influence pay practices. For example, mandated shareholder voting on pay schemes such as "say on pay" in the United Kingdom allows for greater exercise of shareholder power, which can mitigate higher pay levels.

We measure the extent of the UK firms' interactions with US markets using four variables: the relative importance of US sales to the firm, the level of prior US acquisition activity, the presence of a US exchange listing, and the US board experience of the firm's directors. We also measure analogous variables relating to the firms' non-US foreign market interactions. Each variable captures a distinct channel through which the firm's US and non-US foreign market interactions can influence its compensation practices. To the extent US market interactions create unique compensation-related pressures on foreign firms, compensation practices should display stronger associations with our metrics of US market interactions than with the analogous non-US foreign market interaction variables.

We find that the CEO compensation practices of UK firms relate to their level of US market exposure. First, total compensation and incentive-based pay increase in the firm's exposure to the US product markets and the likely presence of US-based operations, as measured by the relative importance of US sales and prior US acquisition activity. In contrast, non-US foreign sales have only a limited impact on the cash-based compensation of UK CEOs, and neither non-US foreign sales nor non-US foreign acquisitions are associated with observed levels of incentive-based compensation. These results are notable given that non-US foreign sales and non-US foreign acquisition activities are more prevalent than the corresponding US activities for our sample of UK firms. Second, the US board experience of the firm's directors is positively associated with higher levels of cash compensation and greater option usage, which is consistent with foreign board service facilitating the cross-border transmission of corporate governance practices, in this case, US-style options-based packages.[4] Third, executives of UK firms with a US exchange listing receive greater salary-based compensation than firms without a US listing, but we find similar effects for firms with non-US foreign exchange listings.[5]

[4] This director US board service effect, however, is sensitive to the inclusion of measures of US operating activity in our models.
[5] In all cases where we use the label "non-US foreign" we refer to "non-US non-UK" countries.

In additional tests we examine the incremental influence of CEO-level characteristics that are likely to be correlated with greater US and non-US labor market mobility. We find that executives who serve on foreign boards earn higher levels of compensation than their UK peers without foreign board experience. This premium is the same for both US and non-US foreign board service. Moreover, we find no significant associations between UK compensation practices and the executives' education background and nationality after controlling for other firm-level activities and CEO attributes. Overall, these tests imply that CEO characteristics do not appear to drive our cross-sectional results.

Because the incentive to adopt US-style compensation practices is likely to be greatest around the initiation and expansion of US market activities, our final set of tests examines compensation practices around two distinct events, a US acquisition and a US exchange listing. For comparison, we also examine the impact of non-US foreign acquisitions and non-US exchange listings. These analyses confirm our basic findings. First, executives of UK firms engaging in US acquisition activity during our sample period experience an increase in both total compensation and incentive-based pay following the acquisition event but we do not find similar compensation effects around non-US foreign acquisition events. Second, we document a significant increase in salary-based compensation following a US exchange listing, but, consistent with our cross-sectional results, we find a similar effect around non-US foreign listings. Both sets of results are robust to controlling for general compensation trends during our sample period, and to only examining firms without CEO turnover during the event windows.

Our cross-sectional and event-study tests produce consistent and compelling evidence that the existence and initiation of US operations produces a shift in the compensation practices of UK firms toward higher pay and the greater use of incentive-based pay**.** Moreover, we show that global operating activity alone does not lead to greater and more variable pay among UK firms. Taken together, our results are consistent with cross-border transactions and foreign market interactions

influencing home country compensation practices and highlight potential market-based channels through which US-style compensation practices transfer worldwide.

2. Data and Research Design

Our principle research design examines the association between UK compensation practices and proxies for specific US market interactions. The following section outlines our research design choice (i.e., focus on UK firms), sample construction procedures, measures of compensation practices, measures of firm-level and CEO-level US interactions, empirical predictions, and sample descriptive statistics.

2.1 Research design choice: UK firms

We examine compensation practices of UK firms for several reasons. First, the United States and the United Kingdom have a long history of economic interdependencies.[6] Given these economic links, a significant number of UK firms operate in US product markets, possess US-based operations, access US capital markets, and face US legal and regulatory pressures.

Second, the labor market for US and UK executive talent likely spans both countries. Because the United States and the United Kingdom share a common language and legal tradition, and on many dimensions, similar financial and regulatory systems, the costs associated with a US executive living and working in the United Kingdom are lower relative to living and working in another overseas country, and vice versa. These commonalities increase the mobility of executive

[6] These relations are highlighted by the significant amount of trade and investment that occurs between these two countries. In 2007, the United States was the largest export market for UK firms [£57 billion of goods] and the United Kingdom was the largest source of foreign direct investment in the United States [$406.3 billion]. Similarly, in terms of capital market integration, a significant number of domestic firms are listed on the other country's main exchanges.

talent between the two countries, and therefore increase the likelihood that the US labor market shapes the compensation packages of UK-based executives.[7]

Third, despite these strong ties, there exist meaningful differences in executive compensation practices. As documented in Towers Perrin (2001a), Conyon and Murphy (2000) and Conyon, Core, and Guay (2009), UK CEOs consistently earn less than their US counterparts and their compensation contracts include significantly less incentive-based pay. For example, Conyon, Core, and Guay (2009) find that, as of 2003, the average US CEO earns approximately 130 percent more than the average UK CEO. Nevertheless, this difference is significantly lower than the 220 percent premium observed in 1997, suggesting UK compensation packages are trending toward US levels.

Fourth, UK firms are required to disclose information on executive compensation packages. Prior research documents that public UK firms tend to provide high quality financial information (e.g., Ball and Shivakumar, 2005). To that end, we expect that the reported compensation data is of high quality and that disclosure rules consistently applied over time.

Fifth, from a research design perspective, by focusing on one country's compensation practices, we hold constant the impact that country-level legal and financial institutions have on corporate governance practices and the relative quality and quantity of information reported by the sample firms. Similarly, focusing on one country allows us to collect more granular data without concerns about cross-country availability and comparability of each data item.[8]

Finally, many of the institutional arrangements in the United Kingdom, including strong legal systems and investor protections (i.e., contract enforceability), diffuse ownership structures and sophisticated financial markets, are amenable to the use of US-style, performance-based

[7] Consistent with this greater labor mobility, the United Kingdom hosts more US expatriates than any other country outside North America.

[8] A number of prior papers have adopted single country research design while exploring questions relating to comparative governance notably (Kaplan 1994a) and Kaplan (1994b) among others.

compensation arrangements; as such, several of the countervailing forces outlined in Bebchuk and Roe (1999) are likely to be attenuated in the UK setting.

Together, the preceding factors suggest that the UK provides a good sample to test effects of US market interactions on non-US executive compensation practices. Moreover, the failure to document a relation in the UK setting would cast serious doubt on arguments that US market interactions influence the compensation arrangements and governance practices of non-US firms.

2.2 Sample construction

We obtain data on the compensation practices of our sample of publicly-traded UK firms from a dataset provided by Hemscott, a leading provider of financial information on publicly traded UK firms.[9] Their dataset includes detailed information on the compensation arrangements of 445 publicly traded UK firms over the six-year period 2002–2007 (for a total of 1,646 firm-year observations). This dataset also includes detailed information about each CEO's compensation, the composition of the firm's directors, director and executive's stock holdings, and basic financial information. To be included in the final sample, we require each firm to have sufficient accounting, stock price, and governance data to implement our primary empirical tests. Firm-level financial data are from Hemscott, Datastream, and company-level annual reports. Stock price data are from Datastream. Data on US and non-US foreign board experience for the CEO and directors and on CEO's education background were obtained through Boardex and hand-collection from annual reports. These data requirements result in a final sample of 1,543 firm-year observations from 416 unique UK firms over the period 2002–2007.

2.3 Measurement of executive compensation practices

[9] Hemscott is now a part of Morningstar, Inc.

We identify five components of compensation for our UK executives: salary, bonus, benefits-in-kind, option grants, and restricted stock grants. We define *Cash compensation* as the sum of *Salary*, *Benefits-in-kind,* and *Bonus*, *Equity compensation* as the sum of the value of the firm's option grants and restricted stock grants, and *Total compensation* as the sum of C*ash compensation* and *Equity compensation.* We measure the value of compensation relating to option grants and restricted stock grants as the fair market value of the option and restricted stock grants on the grant date. For option grants, we use the Black-Scholes formula assuming a ten year life for the options. We use five year UK government bond yields to approximate the risk-free rate, estimate volatility using daily returns for the period commencing 260 calendar days and ending 111 calendar days prior to the fiscal year end of the grant, and gather dividend yield data from Datastream.[10]

To measure the relative intensity with which a firm uses incentive-based pay, we define the *Equity ratio* as the ratio of *Equity compensation* to *Total compensation*. Given the subjective nature of the assumptions associated with valuing option grants (e.g., time to exercise, vesting period, volatility, potential for re-pricing), we also construct an indicator variable that reflects the use of option-based pay in the firm's compensation arrangements. Specifically, we define the indicator variable *Option grant* to equal one if the executives received an option grant in a given year, and zero otherwise.

2.4 Measurement of the firm's US market interactions and their expected impact on UK compensation

This section outlines several of the potential paths by which firm-level US market interactions can shape compensation practices, and describes the variables we use to measure a UK firm's exposure to specific US and global markets.

[10] As discussed by Carter, Ittner, and Zechman (2009), many UK firms attach absolute or relative performance-vesting conditions to equity grants. Our estimates of the value of restricted stock and option grants may therefore be upwardly biased. All inferences in the paper are robust to alternative assumptions about the risk-free rate and life of the option.

2.4.1 Presence of US operations

To attract and retain high quality managerial talent, non-US firms expanding into or operating in the United States must offer their US-based executives competitive compensation packages. However, if US-based executives receive more compensation than their firm's home country peers, compensation disparities can arise within the organization. To alleviate the adverse incentive, effort, and retention effects arising from internal pay disparities, non-US firms would have to revise their compensation arrangements for home country executives to better align with US practices and levels. A similar alignment effect can arise if a non-US firm acquires a US company and there exist pay inequalities between the acquiring firm's and target firm's executives.[11] Following the acquisition, the non-US firm would have an incentive to adopt US-style compensation arrangements to minimize pay inequalities across the corporation's global business units.

We predict that UK firms with greater US operations are more likely to align their compensation practices with US practices, both in term of the level of pay and their use of incentive-based compensation (i.e., composition of pay). Moreover, we hypothesize that non-US foreign operations will not produce similar compensation effects, because they are less likely to generate the internal pay disparities that create the incentive to adopt US-style arrangements.

To capture the relative importance of foreign operations to our UK firms, we measure the percent of the firm's total sales generated in the US and non-US foreign markets each year, denoted as *US Sales Ratio* and *Non-US Sales Ratio*, respectively. Geographical sales data is obtained yearly from each firm's annual report.[12]

[11] The acquisition of Chrysler by DaimlerBenz AG is an example of such a transaction. The US executives of Chrysler were paid substantially more than their German counterparts at DiamlerBenz. These differences in compensation practices created significant integration issues for the combined firm. See Blasko, Netter, and Sinkey (2000) for further details.

[12] Our sales-based measure assumes that firms with greater levels of US sales have greater levels of US operations and are, therefore, more likely to face pay disparities within the firm. We recognize that our sales measure is an imperfect proxy for the scope of foreign operations that could create pay disparities inside the firm. To the extent that the UK firm does not have physical US operations (i.e., simply exports product to the US market) or has only limited operations (i.e., uses a foreign sales corporation

To capture the relative size of the UK firms' foreign business units acquired through foreign M&A activity, we measure the percent of total assets derived from historical foreign M&A activity. We define the variable *US Acquisition Ratio*$_t$ as the cumulative value of all US acquisitions made by the UK firm between 1985 and year *t*, scaled by the firm's total assets at the end of year *t*. We define a similar variable, *Non-US Acquisition Ratio*$_t$, as the cumulative value of all non-US foreign (i.e., non-US, non-UK) acquisitions made by the UK firm between 1985 and year *t*, scaled by the firm's total assets at the end of year *t*. All acquisition ratios are logarithmically transformed because of skewness in the data. We obtain data on acquisition activity from Thomson's SDC database.[13]

2.4.2 Presence of a US stock exchange listing

Foreign firms that list their shares on US exchanges are required to comply with US securities laws and related regulations, including all provisions of the Sarbanes-Oxley Act and the Foreign Corrupt Practices Act, thereby exposing the firm's executives to potential civil and criminal penalties and to the litigious US legal environment.[14] An extensive literature that examines the "bonding" motivation for companies to list in the US suggests that companies voluntarily subject themselves to the stricter US. regime to bond themselves to higher quality governance and thus signal their better quality to investors (See for example, Coffee (1999); Stulz (1999); Coffee (2002); Doidge et al., 2004a; and Lel and Miller, 2008). Additionally, listing firms need to hire and retain

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for distribution purposes only), our sales variable only captures the scope of product market interactions with the United States and measures the real operations construct with error. An alternative approach for measuring the extent of US and non-US operations would be to identify the percent of the firm's total assets located in the United States and in non-US foreign markets. Unfortunately, asset-based geographical data for UK firms have two limitations: (1) geographical asset data is provided with less frequency and more coarsely than geographic sales data and (2) many UK firms report net assets (assets minus liabilities), not total identifiable assets, in their geographical segment reports. In robustness tests (not tabulated) we find that our results and inferences using *US Sales Ratio* are robust to the use of both an analogously measured US asset ratio variable and an indicator variable denoting firms with more than ten percent of net assets located in the United States.

[13] Ideally, our measurement of cumulative historical foreign acquisition activity would trace back to the start of the firm; however, we are limited by a lack of complete, historical transaction data and transaction values before 1985. To the extent that US and non-US acquisition activity is measured with error, the presence of long-term foreign operations will also be captured by the firm's foreign sales ratios.

[14] Consistent with this greater litigation risk, Seetharaman, Gul, and Lynn (2002) find that UK auditors charge higher fees for when their clients cross-list in the United States, but not when the clients cross-list in non-US markets.

highly skilled executives capable of navigating the reporting and governance requirements associated with a US listing and the nuances of raising capital from US investors. For these reasons, we expect CEOs of UK firms with a US exchange listing to demand compensation commensurate with that of executives at US publicly traded firms.[15]

To measure the presence of a US exchange listing, we define the indicator variable *US Listing* to equal one if the UK firm's equity shares are listed on a US exchange in year t, zero otherwise. An analogous indicator variable, *Non-US Listing*, is set equal to one if the firm's equity shares are listed on a non-US foreign stock exchange at the end of 2007, zero otherwise.[16] We obtain data on US exchange listings from the Bank of New York ADR database. Data on non-US exchange listings is obtained from Datastream.

2.4.3 Interaction with US market for labor and corporate governance practices

As companies become more internationally focused, they may seek foreign executives and directors to serve on their boards. This globalization of the corporate board has the potential to produce two separate effects: (1) to increase the integration of the global labor market for managerial talent and (2) to facilitate the cross-border transmission of corporate governance practices and philosophies. The first effect requires local firms possessing global executive talent to pay US market wages to retain these individuals. The second effect implies that through US board service, local directors gain familiarity with US-style corporate governance mechanisms, such as the use of incentive-based pay, and bring these practices "back home" with them. Alternately, US based directors serving on UK boards can help transmit practices prevalent in the US to UK companies.

[15] Similar reservation wage arguments exist to the extent that exposure to the US product and labor market subjects the non-US executive to additional legal risks and responsibilities, such as product liability and discrimination laws.
[16] Our measure of the presence of non-US foreign stock exchange listings is limited to firm-initiated listing decisions. We exclude listings on exchanges that can be investor initiated or limit the firm's formal external reporting requirements, such as the Frankfurt Stock Exchange's Open (Unregulated) Market.

To gauge a sample firm's exposure to this US labor/governance market factor, we identify whether any of the firm's directors serve on a US board. We predict that UK firms with directors serving on the boards of US public companies are more likely to adopt US-style compensation arrangements, offering their executives higher levels of pay and using a greater mix of incentive-based pay than firms without this board experience characteristic.

We define the indicator variable *US Board Experience* to equal one if any of the UK firm's non-executive directors currently serve as a board member of a publicly-traded US corporation in year t, zero otherwise. An analogous indictor variable, *Non-US Board Experience*, equals one if any of the firm's non-executive directors currently serve as a member of a non-US foreign corporate board in year t, zero otherwise.

2.5 Measurement of CEO's characteristics and their expected impact on UK compensation

In addition to the firm's US market interactions, the characteristics of the firm's CEO, especially nationality, educational background, and foreign board experience, could increase the sensitivity of the executive's compensation packages to US labor market forces. To the extent that our UK executives possess the skills to manage a US corporation, are willing to live and work in the United States, and have credible US employment opportunities, we expect them to demand compensation arrangements commensurate with their US counterparts. We identify three individual characteristics that strengthen the executive's ties to the US labor market: US nationality, US educational background and US board experience.

We define the indicator variable *US Nationality* to equal one if BoardEx identifies their nationality/citizenship as American, zero otherwise. We define the indicator variable *US Education* to equal one if the UK executive received a degree (bachelor's degree or higher) from a US institution, zero otherwise. We define the indicator variable *CEO US Board Experience* to equal one if the UK firm's CEO currently serves as a board member of a publicly-traded US corporation in year

t, zero otherwise. Analogous indictor variables, *CEO Non-US Foreign Nationality*, *CEO Non-US Foreign Education*, and *CEO Non-US Board Experience*, equal one if the executive's nationality/citizenship is neither UK nor US, the executive received a degree from a non-US foreign institution, or the executive currently serves as a member of a non-US foreign board in year t, respectively; zeros otherwise.

2.6 Descriptive statistics

Table 1 presents descriptive statistics for our sample. All variables are defined in the Appendix. In terms of financial attributes (Panel A), firms tend to be both large and profitable, with mean (median) total assets of £16.67 billion (£1.35 billion), mean (median) market capitalizations of £4.89 billion (£1.10 billion), and mean (median) return on assets of 0.09 (0.08). There is, however, considerable variation in firm size and performance across our sample; more than 25 percent of the sample firms have total assets of greater than (less than) £ 4.5 Billion (£ 600 million), and possess a return on assets greater than (less than) 0.13 (0.04). In terms of governance attributes, the mean board size is 9.7 directors, 41.0 percent of the directors are classified as insiders, and executives own, on average, 1.38 percent of outstanding shares. Finally, the mean (median) CEO is 52 (52) years old with a mean (median) tenure of approximately five (four) years.

The sample firms engage in extensive foreign market activity (Panel B). The mean firm generates 42 percent of total revenue from foreign product markets, 54 percent of the firms have engaged in foreign M&A activity, 29 percent have shares listed on a foreign exchange, and 52 percent have a director with foreign board experience. Focusing on US market activities, the average firm generates 15 percent of total revenue from the US market, yet more than half of the firms generate no US revenue. Thirty-eight percent of the firms have engaged in a US acquisition, 26 percent are listed on a US exchange, and 33 percent have a director with US board experience.

The compensation arrangements of our UK firms are heavily tilted toward the use of cash-based compensation, consistent with prior findings (see Panel C). The average CEO earns a total annual compensation package of £1,511,730, split between cash compensation of £921,822 and equity-based compensation of £589,940. The median CEO earns less than one million pounds; median cash and equity-based compensation are £714,000 and £200,000 respectively. These compositional characteristics are also reflected in the mean and median *Equity ratios* of 0.25 and 0.23, respectively.

Table 1, Panel D presents simple univariate comparisons of compensation levels for firms with US and without US market exposure. Total compensation, cash compensation, equity compensation, equity ratios and option grant usage are all significantly higher along our four dimensions of the firm's US market interactions: US sales activity, US acquisitions, US exchange listing, and US board experience of the firm's directors. Similarly, total compensation, cash compensation and equity compensation are all significantly higher for CEOs with individual-level ties to the US labor market: US citizenship, US education and US board experience (Panel D).

Additionally, using an additive index of the firm's US market interactions that ranges from 0 (representing no US market interactions) to 4 (representing a firm with US sales, that made at least one US acquisition, is listed on a US exchange, and has at least one director with US board experience), we observe that mean levels of total compensation, cash compensation, and equity compensation increase monotonically in the index (Panel E). These descriptive statistics do not, however, take into account the possibility that firm's with significant US market interactions are likely to be larger, more complex organizations; as expected, firm size, measured by the logarithm of the market value of equity, also increases monotonically in our additive index of US market

exposure. Similar (albeit weaker) trends are also found when firms are classified on the basis of their CEO's individual characteristics (Panel F).[17]

Finally, consistent with prior findings, we report descriptive evidence that compensation levels are increasing for UK CEOs over the sample period (Panel G). Except for the elevated levels reported for 2002, mean (median) total compensation increased steadily from £1.25 (£0.89) million in 2003 to £1.88 (£1.25) million in 2007.[18] The trend arises mainly from increases in incentive-based pay, both in the form of cash bonuses and equity-based compensation.

Table 2 presents a correlation matrix of firm-level attributes and the compensation practices of our UK firms. This matrix further highlights the important relations between firm characteristics, market interactions, and compensation practices among our sample of firms. First, UK compensation practices are strongly correlated with firm size, board composition, stock ownership, and return volatility. Many of these same firm-level attributes are also correlated with our measures of US market interactions; we therefore control for these firms-level characteristics when we examine the relation between UK compensation practices and US market interactions.

Second, the US activities of UK firms tend to be correlated. For example, the correlation between *US Sales Ratio* and *US Acquisition Ratio* is 0.47, consistent with many firms establishing a US product market presence through merger and acquisition-related activity. Similarly, the correlation between *US Sales Ratio* and *US Listing* is 0.26, consistent with evidence that foreign firms access the US capital market to raise their profile in the US product market (e.g., Pagano, Roell, and Zechner, 2002; Sarkissian and Schill, 2004; Piotroski and Srinivasan, 2008). Lastly, the positive correlation of 0.18 (0.14) between *US Sales Ratio* and *CEO US Education* (*CEO US Board Experience*) highlights the impact of product markets activities on labor market choices; in this case,

[17] Median compensation levels display similar patterns to those reported in Panels D, E and F.

[18] The spike in mean compensation levels in 2002 is influenced by five large option / equity grants (grants greater than £10 million). The Hemscott data is also subject to a potential large-firm bias in the first year (2002) of the database (e.g., mean and median market capitalizations are greater in 2002 than in 2003).

UK firms appear to hire executives with US educational and work experience backgrounds to manage a global business with US operations.

Finally, the compensation practices of UK firms are positively correlated with the level of firm's US market interactions, consistent with the evidence presented in Table 1. However, as discussed earlier, these positive relations could simply reflect executives managing larger, more complex foreign operations receiving greater compensation; as such, all tests examining the relations between UK compensation practices and US market interactions will control for both firm size and the corresponding level of the firm's non-US foreign market interactions. We outline, report, and discuss these tests in the next section.

3. Empirical results

To validate our UK compensation data and establish baseline relations between compensation and firm-level characteristics, we estimate several versions of the following pooled, cross-sectional model:

$$Ln(Compensation_{it}) = \alpha + \sum_{k=1}^{34} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it}$$
$$+ \beta_4 CFO_{it} + \beta_5 Stock\ Return_{it} + \beta_6 Return\ Volatility_{it} + \beta_7 Ln(Tenure_{it}) + \beta_8 Ln(Percent\ Shares\ Held_{it})$$
$$+ \beta_9 Percent\ Inside\ Directors_{it} + \beta_{10} Ln(Board\ Size_{it}) + \varepsilon_{it} \quad (1)$$

In these estimations, the dependent variable captures a specific dimension of each firm's compensation practices.[19] For those estimations examining the amount of *Total Compensation*, *Cash Compensation*, *Salary*, *Bonus* and *Equity Compensation*, the compensation variables are logarithmically transformed to control for the effects of heteroscedasticity in the data. For those estimations using *Equity Compensation* and *Equity Ratio* as the dependent variable, we estimate the

[19] In these and subsequent analyses, we do not separately analyze benefits-in-kind. For our sample, this form of compensation is economically small (mean = £46,383; median=£23,346) and displays limited variation across firms and over time.

model using a Tobit model specification due to the substantial number of zero observations in the equity compensation data. For those estimations using the indicator variable *Option Grant* as the dependent variable, we estimate the models using a logistic model specification.

In these cross-sectional models, we include several commonly used measures of the determinants of the level and composition of CEO compensation. We include the natural logarithm of total assets because larger firms are expected to hire more able CEOs with higher reservations wages (for a discussion, see Baker and Hall 2004). As discussed by Smith and Watts (1992), firms with greater growth opportunities are likely to hire more able CEOs with higher reservation wages. We therefore include the firm's market to book ratio to proxy for growth opportunities. To control for firm performance, we include firm's annual return on assets and stock return. We include the volatility of the firm's stock returns, because firm risk can lead risk averse CEOs to demand premiums for performance-based pay. We also include annual cash flow in the models, because firms that are experiencing cash flow difficulties can grant higher levels of equity to conserve cash (Core and Guay 1999 and 2001). Finally, as shown by Core, Holthausen, and Larcker (1999), corporate governance is associated with the level of CEO compensation. We therefore include in the cross-section models the natural logarithm of the percent of shares held by the CEO and two measures of the firm's board structure (the percent of inside directors and the natural logarithm of the number of directors on the board). This and later regressions include industry and year fixed effects. All variables are as defined in the Appendix.[20]

We present select coefficients and standard errors (in parentheses) from these baseline estimations in Table 3. Standard errors are clustered at the firm level. Overall, the results from these estimations corroborate basic relations between UK compensation practices and firm characteristics (e.g., firm size, performance) documented in prior research.

[20] To eliminate the effect of outliers in our analysis, we winsorize the following variables at the 1st and 99th percentiles: *Market-to-Book, ROA, CFO, Stock Return, Return Volatility,* and *Percent Shares Held.* All results are robust to winsorizing all variables at the 1st and 99th percentile.

3.1 Influence of UK firm's US and non-US foreign market interactions on total compensation

Our first set of tests examines the influence that the firm's aggregate foreign market interactions have on the compensation practices of UK firms. Expanding equation (1) to include variables that capture the extent of the firm's total foreign sales, foreign acquisition activity, foreign exchange listings, and the foreign board experience of the firm's directors, we estimate several versions of the following pooled, cross-sectional model:

$$Ln(Total\ Compensation_{it}) = \alpha + \sum_{k=1}^{34} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it}$$
$$+ \beta_4 CFO_{it} + \beta_5 Stock\ Return_{it} + \beta_6 Return\ Volatility_{it} + \beta_7 Ln(Tenure_{it}) + \beta_8 Ln(Percent\ Shares\ Held_{it})$$
$$+ \beta_9 Percent\ Inside\ Directors_{it} + \beta_{10} Ln(Board\ Size_{it}) + \beta_{11} Foreign\ Sales\ Ratio_{it}$$
$$+ \beta_{12} Ln(Foreign\ Acquisition\ Ratio_{it}) + \beta_{13} Foreign\ Listing_{it} + \beta_{14} Foreign\ Board\ Experience_{it} + \varepsilon_{it} \quad (2)$$

We present select coefficients and standard errors (in parentheses) from these estimations in Table 4. The first four columns present coefficients from estimations that examine the relation between total compensation and a specific dimension of each firm's foreign market interactions. These estimations reveal that the total compensation received by UK CEOs is significantly positively associated with the firm's level of foreign sales, it's listing on a foreign exchange and having directors with foreign board experience. The last column presents coefficients from an estimation that includes all four foreign market interaction variables; after including all the variables, we continue to observe significant positive relations between total compensation and the firm's foreign sales ratio and foreign listing decision.[21]

[21] Given the positive correlations between these four variables, it is difficult to interpret the ultimate source of these positive relations. As noted in Table 2, foreign acquisition-related activity and foreign exchange listings have correlations of 0.42 and 0.24 with the firm's foreign sales ratio. Therefore, individual relations documented in the first four columns could be the result of a spurious correlation with another of the firm's foreign activities. For instance, firms may list on a foreign exchange prior to making an acquisition to allow for a stock based transaction. The inclusion of all four variables into the model helps control potentially omitted variable, but introduces concerns about multicollinearity. For completeness, we present all five models.

Because US market interactions are hypothesized to have a more significant role in shaping UK compensation arrangements than non-US foreign market interactions, we next split our foreign market variables into our measures of the firm's US and non-US foreign market interactions. Specifically, we expand equation (2) to include variables that capture the extent of the firm's total US and non-US foreign sales, US and non-US foreign acquisition activity, US and non-US foreign exchange listings, and US and non-US foreign board experience, and estimate several versions of the following pooled, cross-sectional model:

$$\begin{aligned} Ln(Total\ Compensation_{it}) = \alpha + \sum_{k=1}^{34} \gamma_k Industry_k + \sum_{t=1}^{4} Year_t + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} \\ + \beta_3 ROA_{it} + \beta_4 CFO_{it} + \beta_5 Stock\ Return_{it} + \beta_6 Return\ Volatility_{it} + \beta_7 Ln(Tenure_{it}) \\ + \beta_8 Ln(Percent\ Shares\ Held_{it}) + \beta_9 Percent\ Inside\ Directors_{it} + \beta_{10} Ln(Board\ Size_{it}) + \beta_{11} US\ Sales\ Ratio_{it} \\ + \beta_{12} Non\text{-}US\ Sales\ Ratio_{it} + \beta_{13} Ln(US\ Acquisition\ Ratio_{it}) + \beta_{14} Ln(Non\text{-}US\ Foreign\ Acquisition\ Rato_{it}) \\ + \beta_{15} US\ Listing_{it} + \beta_{16} Non\text{-}US\ Foreign\ Listing_{it} + \beta_{17} US\ Board\ Experience_{it} \\ + \beta_{18} Non\text{-}US\ Foreign\ Board\ Experience_{it} + \varepsilon_{it} \end{aligned} \quad (3)$$

We present selected coefficients and standard errors (in parentheses) from these estimations in Table 5. These estimations reveal that all four measures of the firm's US market interactions—*US Sales Ratio*, *US Acquisition Ratio*, *US Listing* and *US Board Experience*—have significant individual positive associations with the total compensation of UK CEOs. The last column presents coefficients from an estimation that includes all four market interactions; after controlling for all factors, we continue to observe significant positive relations between total compensation and the firm's US sales ratio and US exchange listing decision, mirroring the aggregate foreign market interaction effects observed in Table 4.

To control for the impact of greater global operations *per se* on compensation practices, the models also include measures of the firm's total non-US foreign activities. Any compensation

premium associated with the scope of global operations should be related to both our US and non-US foreign sales and acquisition variables. After controlling for the firm's US market interactions, only non-US foreign listings display a significant association with UK compensation practices, and the non-US listing coefficients are statistically indistinguishable from the US listing coefficients. None of other measures of the firm's non-US foreign market interactions (sales ratio, acquisition ratio and board experience) display a significant association with compensation practices, and the estimated coefficients on *US Sales Ratio* are significantly larger than the coefficients on *Non-US Foreign Sales Ratio*. The differential sensitivity of UK pay to US market interactions versus analogous non-US foreign market interactions suggests that the positive coefficient on *US Sales Ratio* is not just capturing required compensation premiums for managing a more global or complex business, but reflects the unique compensation pressures that are created by expanding into US product markets. The failure to find an association between UK compensation practices and non-US foreign operating activities, as proxied by sales and acquisition ratios, is especially interesting given that, for our sample firms, non-US foreign operating activities are more prevalent than US operating activities. For these firms, 28 percent of total revenue is derived from non-US foreign sources and 24 percent of the firms engaged in non-US acquisitions; the corresponding percentages for US-related operations are 15 percent and 22 percent respectively.[22]

With respect to economic significance, a one percent increase in US sales is associated with a 0.645 percent increase in total compensation, which translates into a £9,751 increase in compensation when evaluated at the mean level of total compensation for the sample. On a relative basis, our estimations imply that a one percentage point increase in increase in US sales is associated with a 0.599 percent larger increase in total compensation than a corresponding one percent increase in non-US foreign sales. With respect to exchange listings, executives of firms that have cross-listed in the US receive almost 23.6 percent more in total compensation than executives of firms that have not

[22] For our sample, only exchange listings are a more prevalent US, as opposed to non-US, interaction (25 percent vs. 18 percent).

cross-listed onto a foreign exchange, while executives of firms that cross-list in foreign locations other than the US receive 19.0 percent more compensation than the executives of non-cross-listed firms. At the mean level of total compensation for the sample, these effects represent increases of £356,768 and £287,229, respectively.

3.2 Influence of UK firm's US and Non-US market interactions on the components of compensation

To understand the source of the positive relations between specific US market interactions and total UK pay, we re-estimate variations of equation (3) using the different components of pay as our dependent variables. These estimations, presented in Table 6, yield three key findings. First, US-based operations are associated with the use of greater levels of incentive-based pay. Firms with larger *US Sales Ratios* award greater levels of bonus pay and are more likely to grant stock options (Panel A) and firms with greater levels of historical US acquisition activity (larger *US Acquisition Ratios*) are more likely to grant stock options (Panel B) than firms without corresponding US operations. With respect to foreign operations, we find that greater levels of both US and non-US foreign sales activity are associated with greater total cash compensation, consistent with executives receiving a higher reservation wage for managing more complex, global businesses; however, the magnitude of the sensitivity of cash compensation to non-US foreign sales activity is only half of that observed for US sales activities. More importantly, unlike firms with US operations, UK firms with non-US foreign operations use significantly lower levels of bonus and equity-based compensation in the presence of similarly sized non-US foreign operations; coefficients on *US Sales Ratios* (*US Acquisition Ratio*) are significant larger than the corresponding coefficients on *Non-US Foreign Sales Ratios* (*Non-US Foreign Acquisition Ratio*) in the bonus, equity ratio and option grant models (bonus and option grant models).

Second, UK firms listed on a US stock exchange pay their executives larger salaries and cash compensation than their non-listed peers, but unlike firms with US operations, do not increase incentive-based compensation. Moreover, we find a similar increase in cash compensation for other non-US foreign exchange listings and the magnitude of the compensation effects for US listings is statistically indistinguishable from non-US foreign exchange listings. Together, these estimations suggest that a US listing does not create a demand for the use of US-style incentive-based pay; instead, managers receive a higher reservation wage as compensation for bearing the risks and responsibilities associated with a foreign stock exchange listing.

Third, firms with directors serving on US boards offer their executives greater cash compensation and are more likely to use option grants than firms with non-US foreign board serving directors. This pattern is consistent with the cross-country transfer of governance practices, in which UK board members serving in the US "bring home" incentive-based pay arrangements to their UK firms. However, it should be noted that US and non-US board effects, using this composition of pay data, are statistically indistinguishable from each other in these estimations, casting doubt on whether a foreign board service effect is only a US interaction phenomenon.

Taken together, the results in Tables 4 through 6 document that interactions with US product, labor, and securities markets are associated with higher levels of CEO pay in the United Kingdom, but that the form of the incremental pay depends upon the nature of the market interaction. US operations (proxied by US Sales Ratio and US Acquisition Ratio) are associated with a greater use of incentive-based pay, consistent with the firm's need to alleviate the internal and external pay disparities arising across the firm's business groups. US exchange listings are associated with greater levels of salary and cash-based compensation, consistent with the firm's need to compensate the executive for bearing the additional risk and responsibilities associated with a US exchange listing, but not creating a demand for US-style incentive compensation packages. Moreover, the exchange

listing effect appears to be a part of broader, global compensation premia, or higher reservation wages, associated with managing a cross-listed entity.

3.3 Influence of CEO characteristics and US market interactions on UK compensation

To exploit CEO-level heterogeneity in our data, our next set of tests examines the incremental impact that individual CEO characteristics have on the compensation practices of UK firms. Including CEO-level characteristics in our compensation regressions allows us to address the possibility that unobserved CEO-level heterogeneity drives our cross-sectional results. Expanding equation (2) to include variables that capture the CEO's nationality, foreign education background and foreign board experience, we estimate several versions of the following pooled, cross-sectional model:

$$\begin{aligned} Ln(Total\ Compensation_{it}) = \alpha + \sum_{k=1}^{34} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it} \\ + \beta_4 CFO_{it} + \beta_5 Stock\ Return_{it} + \beta_6 Return\ Volatility_{it} + \beta_7 Ln(Tenure_{it}) + \beta_8 Ln(Percent\ Shares\ Held_{it}) \\ + \beta_9 Percent\ Inside\ Directors_{it} + \beta_{10} Ln(Board\ Size_{it}) + \beta_{11} Ln(Foreign\ Sales\ Ratio_{it}) \\ + \beta_{12} Ln(Foreign\ Acquisition\ Ratio_{it}) + \beta_{13} Foreign\ Listing_{it} + \beta_{14} Foreign\ Board\ Experience_{it} \\ + \beta_{15} Foreign\ Nationality_{it} + \beta_{16} Foreign\ Education_{it} + \beta_{17} CEO\ Foreign\ Board\ Experience_{it} + \varepsilon_{it} \quad (4) \end{aligned}$$

We present selected coefficients and standard errors (in parentheses) from these estimations in Table 7, Panel A. These estimations reveal that CEOs currently serving on a foreign corporation's board receive significantly higher compensation than non-serving CEOs. This relation is robust to the inclusion of our measures of the firm's foreign market interactions and executive characteristics. In contrast, foreign nationality and a foreign education do not have a significant impact on the CEO's compensation package.

Because US labor market interactions are hypothesized to have a more significant impact on UK compensation packages than non-US foreign labor market interactions, we split our CEO-level

measures into the executive's US and non-US foreign characteristics. Specifically, we expand equation (3) to include variables that capture the CEO's US and non-US foreign nationality, educational background and board experience, and estimate several versions of the following pooled, cross-sectional model:

$$\begin{aligned} \textit{Ln(Total Compensation}_{it}) = \alpha + \sum_{k=1}^{34} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 \textit{Ln(Assets}_{it}) + \beta_2 \textit{Market-to-Book}_{it} \\ + \beta_3 \textit{ROA}_{it} + \beta_4 \textit{CFO}_{it} + \beta_5 \textit{Stock Return}_{it} + \beta_6 \textit{Return Volatility}_{it} + \beta_7 \textit{Ln(Tenure}_{it}) \\ + \beta_8 \text{Ln}(\textit{Percent Shares Held}_{it}) + \beta_9 \textit{Percent Inside Directors}_{it} + \beta_{10} \textit{Ln(Board Size}_{it}) + \beta_{11} \textit{US SalesRatio}_{it} \\ + \beta_{12} \textit{Non-US Sales Ratio}_{it} + \beta_{13} \textit{Ln(US Acquisition Ratio}_{it}) + \beta_{14} \textit{Ln(Non-US Acquisition Rato}_{it}) \\ + \beta_{15} \textit{US Listing}_{it} + \beta_{16} \textit{Non-US Listing}_{it} + \beta_{17} \textit{US Board Experience}_{it} \\ + \beta_{18} \textit{Non-US Board Experience}_{it} + \beta_{18} \textit{CEO US Nationality}_{it} + \beta_{18} \textit{CEO Non-US Foreign Nationality}_{it} \\ + \beta_{15} \textit{CEO US Education}_{it} + \beta_{16} \textit{CEO Non-US Foreign Education}_{it} + \beta_{15} \textit{CEO US Board Experience}_{it} \\ + \beta_{16} \textit{CEO Non-US Foreign Board Experience}_{it} + \varepsilon_{it} \end{aligned} \quad (5)$$

We present selected coefficients and standard errors (in parentheses) from these estimations in Table 7, Panel B. First, we are unable to document a relation between UK compensation levels and the educational background of the firm's CEO, before or after controlling for other dimensions of US and non-US foreign market exposure. Second, using data on the CEO's nationality, we find that US citizens receive greater compensation than their non-American peers; however, this difference disappears after controlling for other CEO characteristics, similar to the results in Carter, Lynch, and Zamora (2009). Third, CEOs with foreign board experience receive greater compensation than executives lacking this background, both before and after controlling for other CEO characteristics and firm-level market interactions. The increase in compensation arises regardless of whether the board experience was with a US or non-US foreign firm, suggesting that executives concurrently serving on foreign boards are simply more skilled than non-serving executives (and this reputation

results in board invitations), and as such, earn higher pay.[23] Finally, the impact of firm level US market interactions, particularly *US Sales Ratio* and *US Exchange Listing*, continue to influence UK compensation practices after controlling for these individual characteristics

3.4 Influence of social and cultural norms on the relation between UK compensation practices and US market interactions

Social and cultural norms can attenuate incentives to increase pay levels and the reliance on equity compensation among our sample of UK firms. In particular, individuals that bear a personal or reputational cost for earning "excessive" compensation are less likely to accept "Americanized" pay packages. To test these arguments, we identify executives who possess a hereditary UK title (e.g., Duke, Duchesse, Lord, Lady) during our sample period, specifically excluding executives who were "titled" for their business activities (e.g., Sir Richard Branson). Consistent with social and cultural norms influencing average wages, we find that the possession of a hereditary UK title is associated with lower levels compensation for these executives after controlling for firm and executive characteristics (results not tabulated). However, interactions between the possession of a title and US market and non-US market activities are not significant.

4. Event tests: Compensation practices around US market events

The incentive for UK firms to adopt US-style compensation arrangements is expected to be greatest around the initiation, or material expansion, of US activities. If the incentives are sufficiently strong, the initiation of US market activities should produce an observable shift in compensation arrangements around the event. To corroborate the preceding cross-sectional evidence, we examine the trend in executive compensation practices of UK firms around two distinct events: a US M&A

[23] CEO foreign board service is actually a limited phenomenon in our UK data. Only 4 percent (4 percent) of our executives served on the board of a US (non-US foreign) company during our sample period. The board experience results are robust to the inclusion of a control for the executive's concurrent presence on another UK firm's board.

transaction and a US exchange listing. The documentation of a shift in the amount and form of UK compensation practices around specific US market events will sharpen the interpretation of our earlier results and mitigate concerns that the US activity-level variables used in our earlier tests are simply capturing omitted firm and/or managerial characteristics. Moreover, by examining trends around an analogous set of non-US foreign acquisition and listing events, we will be better able to attribute the observed results to the unique compensation-related pressures that US markets create.

4.1 US and non-US acquisition events

The acquisition of a US domiciled firm, especially if material in size relative to the acquiring firm, can introduce strong incentives to align the compensation practices of the acquiring UK firm with those of the target US firm. To test for this acquisition effect, we identify all UK firms in the SDC database that engaged in the acquisition of a US company over our six-year sample period 2002–2007. We also identify the corresponding sample of UK firms that engaged in non-US foreign acquisitions over the same period. To isolate the effect of a significant increase in foreign business activities via an acquisition, we include only those firms that did not engage in a foreign acquisition, as identified by SDC, in the preceding year. We require all event firms to have sufficient accounting and price data to measure a parsimonious set of control variables and sufficient compensation data to measure salary, bonus, cash compensation, equity compensation, and total compensation around the listing event. Because the analysis includes acquiring UK firms not included in the Hemscott database, data for these additional firms was gathered from the respective company's annual reports and Datastream. These criteria result in a final sample of 32 (59) UK firms engaging in a US (non-US foreign) acquisition over our sample period. Descriptive statistics reveal that these events represent a material change in the firm's underlying operations; the size of the average (median) US

acquisition event represented 11.3 percent (4.0 percent) of end of year total assets, while the mean (median) non-US foreign acquisition represented 6.5 percent (2.4 percent) of ending total assets.[24]

For each firm, we measure compensation levels in the year before, during and after the acquisition events. These yearly compensation data are trend-adjusted by removing the corresponding mean compensation level reported for all firms in the Hemscott database for that given calendar year. Using these data, we test for a shift in compensation around the acquisition event using the following multivariate model:

$$Ln(Compensation_{it}) = \alpha + \sum_{i=1}^{j} \gamma_k Executive_i + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it}$$

$$+ \beta_4 Ln(US\ Acquisition\ Ratio)_{it} + \beta_4 Ln(Non\text{-}US\ Foreign\ Acquisition\ Ratio)_{it} + \varepsilon_{it} \qquad (5)$$

In these estimations, the coefficients on $US\ Acquisition\ Ratio_{it}$ and $Non\text{-}US\ Acquisition\ Ratio_{i,t}$ capture the average, incremental increase in compensation around the identified US and UK acquisition event, respectively, after controlling for the executive, key firm-level characteristics (size, growth options and performance) and earlier US and non-US foreign acquisition activity. $Executive_i$ is executive-level fixed effect to capture time-invariant firm and executive-level unobserved heterogeneity.

Consistent with our cross-sectional results, Table 8 documents that the executives of firms engaging in an US acquisition experience a significant increase in total and incentive-based compensation in the year following the acquisition. A similar shift, however, does not exist around non-US acquisition events.[25] The documentation of an increase in both total and incentive-based pay around the US event alone is consistent with UK acquirers attempting to resolve internal pay inequalities following the integration of the US business into the company.

[24] This sample consists of 16 firms that engaged in both a US and non-US foreign acquisition during our sample period. The results of these event tests are robust to the exclusion of these firms from the analysis.
[25] Additionally, the increases in salary, bonus and option grants around US acquisitions are significantly different than the estimated effects for non-US foreign acquisitions.

Finally, because acquisitions can change the responsibilities and required skill sets of the firm's executives, we re-estimate these models after eliminating firms with CEO turnover during the acquisition event windows. In these estimations, we allow the manager to remain constant (and therefore his human capital), and only vary the scope of foreign operations via M&A activity. This criterion reduces the sample to 24 US acquisition events and 45 non-US foreign acquisition events. The preceding results and inferences are robust to this sample of firms (see Panel B).

4.2 US and non-US exchange listing events

Listing equity shares on a US exchange requires foreign firms to comply with the stricter US regulatory and governance environment, thus placing greater personal responsibilities and risk upon the executive. This exposure will result in the manager demanding a higher reservation wage, leading to an increase in the executive's cash compensation, and in particular, salary-based compensation, around a US listing event.

To examine the impact of a US exchange listing on the compensation practices of foreign firms, we identify all publicly-traded UK firms that engaged in the initial listing their shares on a US exchange over the period 1999–2006.[26] We also identify the analogous sample of UK firms that engaged in a non-US foreign exchange listing over the same period. We require all listing firms to have sufficient accounting and price data to measure a parsimonious set of control variables and sufficient compensation data to measure salary, bonus, cash compensation, equity compensation, and total compensation around the listing event. For those listing firms not included in the Hemscott database, data are gathered from the respective company's annual reports and Datastream. These

[26] Our sample includes three firms that previously delisted from a US exchange for performance-related reasons. Because these firms have been absent the US regulatory and legal environment for at least seven years before their new exchange listing, we included this second listing as a new listing decision. The exclusion of these firms from our tests does not change the tenor of our results.

criteria result in a final sample of 54 (8) UK firms engaging in a US (non-US) exchange listing over this period.[27]

For each firm, we measure compensation levels in the year before, during and after the listing event. Cash compensation, salary and bonus amounts are trend-adjusted by removing the corresponding mean compensation level reported for all firms in the Hemscott database for that given calendar year. Equity compensation and total compensation are not trend adjusted due to a lack of equity compensation data in the Hemscott database for the early portion of this event period. Using these data, we test for a shift in compensation around the listing event using the following reduced-form model:

$$Ln(Compensation_{it}) = \alpha + \sum_{i=1}^{j} \gamma_k \text{Executive}_i + \beta_1 Log(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it}$$
$$+ \beta_4 US\ Listing\ Event_{it} + \beta_5 Non\text{-}US\ Foreign\ Listing\ Event_{it} + \varepsilon_{it} \quad (6)$$

In these estimations, *US Listing Event*$_{it}$ and *Non-US Listing Event*$_{it}$ are indicator variables equal to one if year t corresponds to the year after the US and non-US exchange listing, respectively, zero otherwise. These indicator variables are designed to measure the mean, incremental increase in compensation following the listing events, after controlling for the executive and key firm-level characteristics (size, growth options and performance) over the three-year window. *Executive*$_i$ is an executive-level fixed effect to capture time-invariant firm and executive-level unobserved heterogeneity.

These estimations, tabulated in Table 9, confirm our earlier cross-sectional analyses; both US and non-US exchange listings are associated with a significant increase in salary-based compensation following the listing event, and the magnitude of the listing effects are statistically equivalent. Because a foreign exchange listing results in a change in executive responsibilities and required skill

[27] Our sample selection criteria identified an additional 17 firms that engaged in both a US and non-US exchange listing during our sample period. In each case, the two listing events occurred essentially simultaneously (within one month of each other). To avoid the confounding effects associated with simultaneous multiple foreign listings, our event analysis excludes these firms.

sets, we also re-estimate these models after eliminating firms with CEO turnover during the listing event windows (Panel B). The preceding results are robust to the exclusion of firms in which there was a change in CEO around the listing event; in this particular subsample of 56 firms (50 US and 69 non-US exchange), the same executive (and therefore the manager's human capital) is constant, yet the executive appears to be given a higher reservation wage upon exposure to the foreign marketplaces.[28]

This analysis confirms our earlier cross-sectional findings that UK executives receive a higher reservation wage (in the form of additional salary) for bearing the additional legal liability and personal risk associated with their exposure to US and non-US security markets, and that a US listing does not introduce an incentive to adoption US-style compensation arrangements, in terms of the use of lucrative, incentive-based pay. Instead, executives simply earn a salary premium for the additional risk, responsibility and effort associated with an additional exchange listing, regardless of location.

5. Conclusions

We examine how US market interactions relate to the compensation practices of UK firms. We find that total compensation is increasing in four US market interaction proxies: the percentage of total sales generated in the United States, value of prior US acquisition activity, the presence of a US exchange listing, and the US board experience of the firm's directors. Whereas all four US market interaction variables are correlated with greater pay, only US operational activities (US sales and US acquisitions) are associated with pay similar to US-style contracts (i.e., a greater use of incentive-based pay).

Through the joint use of broad cross-sectional and narrow event-window analyses, our paper provides evidence that the presence of US operations is associated with the greater use of US-style

[28] Foreign exchange listing can also be associated with foreign product market decisions, such as increased mergers & acquisition activity or initiation of foreign operations. Estimations including controls for a shift in US and non-US foreign operations (Sales Ratio and Acquisition Ratio) yield similar inferences.

compensation arrangements. These effects are separable from the other US market interactions of both the firm and the executive. The associations are also robust to controls for the scope of the firm's non-US foreign operations and market interactions, as well as firm-level and executive characteristics, such as current firm performance, firm size, and executive age, which have been shown to influence compensation arrangements in other studies.

The documented associations are consistent with arguments that firms with exposure to US labor market competition, in the form of US-based operations and business, have an incentive to adopt US compensation arrangement to alleviate internal and external pay disparities. However, we cannot rule out other mechanisms or paths by which greater US operations can be associated with greater pay and a greater use of incentive-based compensation. For example, UK executives wishing to increase their compensation could undertake US market activities to force the board to adopt US-style compensation arrangements. In that case, the initiation of US operations does not create the incentive *per se*, but instead, serves as the conduit by which UK executives transfer US pay practices to their firm. Similarly, the likelihood of US-based competitors operating in the UK market could be correlated with the extent to which the firm competes in the US product market; the presence of such product market competition in the United Kingdom could increase labor market pressures to adopt US style compensation arrangements for local managerial talent.

These alternative explanations cannot be refuted with our current research design; as such, our ability to assign causality to our documented associations is limited (despite our event tests). We also acknowledge that there likely exist other mechanisms or paths by which local compensation practices can be influenced through cross-border transactions. Nevertheless, our evidence is relevant. Given our research design, a failure to document an association between UK compensation practices and our measures of US market interactions would cast meaningful doubt on compelling arguments that cross-border market interactions influence home country compensation arrangements. Instead, our evidence is generally consistent with these arguments.

Our paper contributes to a short set of current papers that examines the influence of global market interactions on the compensation arrangements of foreign firms. Fernandes et al. (2009) examine the US pay premium across 26 countries using one year of data. Our study complements their results by examining, in greater depth, a sample of firms from one country. Our focus on one country also allows us to use more granular data on the geography of foreign exposure (US versus non-US activity) and the different types of interactions (sales, mergers & acquisitions, listing, director and CEO board experience, nationality and education). Furthermore, unlike their one year of data, our time series data allows us to conduct event studies that control for firm and executive-level unobserved heterogeneity.

In a related study, Carter, Lynch, and Zamora (2009) compare CEO compensation between US firms and a sample of European companies from 2003 through 2007 and find that the pay gap is shrinking over time. Similar to our study, they examine whether pay is higher when the CEO is an American and when the board includes US-based directors. However, their study does not examine the wider range of US product, labor, and capital market interactions included in our study, nor does it exploit time-series changes in firm-level US market exposures.

More generally, there exists considerable research on within country determinants of the level and composition of executive pay; however, there is minimal research on cross-border determinants of compensation (for an exception, see Cunat and Guadalupe, 2009). By providing evidence on how US market interactions affect local pay arrangements in the United Kingdom, we contribute to the literature on the determinants of executive compensation by providing new empirical evidence on the role of product and labor markets in determining executive compensation.

Finally, the paper contributes to the broader literature on the globalization of governance practices by showing how cross-country economic interactions can produce similarities in compensation practices (Bebchuk and Roe, 1999; Hansmann and Kraakman, 2001; Khanna, Palepu, and Srinivasan, 2004). Taken together, our results are consistent with cross-border transactions and

foreign market interactions influencing home country compensation practices, and they provide evidence on potential market-based channels through which US-style compensation practices can transfer worldwide.

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Appendix
Variable Definitions

Variable	Definition	Source
Assets	Total assets in thousands of pounds sterling at the end of year *t*.	Datastream
Ln(Assets)	Natural logarithm of total assets in thousands of pounds sterling at the end of year *t*.	
MVE	Number of shares outstanding in thousands times the firm's share price in pounds sterling at the end of year *t*.	Datastream
Ln(MVE)	Natural logarithm of the number of shares outstanding in thousands times the firm's share price in pounds sterling at the end of year *t*.	Datastream
Market-to-Book	Ratio of the market value of equity to the book value of equity at the end of year *t*.	Datastream
ROA	Ratio of earnings before interest and taxes to total assets for year *t*.	Datastream
CFO	Ratio of cash flow from operations to total assets for year *t*.	Datastream
Stock Return	Annual return including dividends on the firms' common stock for year *t*.	Datastream
Return Volatility	Annualized volatility of daily returns on the firm's common stock for year *t*.	Datastream
Percent Shares Held	Percent of the firm's shares outstanding held by the CEO in the form of unrestricted shares at the end of year *t*.	Hemscott
Ln(Percent Shares Held)	Natural logarithm of one plus the ratio of the firm's shares outstanding held by the CEO in the form of unrestricted shares at the end of year *t* to total shares outstanding at the end of year *t*.	Hemscott
Percent Inside Director	Percentage of directors serving on the board who are insiders in year *t*.	Hemscott
Board Size	Number of directors serving on the board in year *t*.	Hemscott
Ln(Board Size)	Natural logarithm of the number of directors serving on the board in year *t*.	Hemscott
CEO Age	Age of the CEO at the end of year *t*.	Hemscott
CEO Tenure	The number of months that the CEO has been in office at the end of year *t*.	Hemscott
Ln(CEO Tenure)	Natural logarithm of the number of months that the CEO has been in office at the end of year *t*.	Hemscott
Foreign Sales Ratio	Percentage of sales that occur outside of the UK in year *t*.	Annual Reports
US Sales Ratio	Percentage of sales that occur in the US in year *t*.	Annual Reports
Non-US Foreign Sales	Percentage of sales that occur outside the UK but not in the US in year *t*.	Annual Reports
Foreign Acquisitions	Indicator equal to one if the firm engaged in at least one foreign acquisition between 1985 and year *t*.	SDC
US Acquisitions	Indicator equal to one if the firm engaged in at least one US acquisition between 1985 and year *t*.	SDC
Non-US Foreign Acquisitions	Indicator equal to one if the firm engaged in at least one non-US foreign acquisition between 1985 and year *t*.	SDC
Ln(Foreign Acquisition Ratio)	Natural logarithm of one plus the ratio of the cumulative value in pounds sterling of non-UK acquisitions made between 1985 and year *t* to total assets as of year *t*.	SDC
Ln(US Acquisition Ratio)	Natural logarithm of one plus the ratio of the cumulative value in pounds sterling of US acquisitions made between 1985 and year *t* to total assets as of year *t*.	SDC
Ln(Non-US Foreign Acquisition Ratio)	Natural logarithm of one plus ratio of the cumulative value in pounds sterling of acquisitions outside the UK but not in the US made between 1985 and year *t* to total assets as of year *t*.	SDC
Foreign Listing	Indicator equal to one if the firm has a foreign exchange in year *t*, and zero otherwise.	Datastream & BONY/ADR
US Listing	Indicator equal to one if the firm has an exchange listing in the US in year *t*, and zero otherwise.	Datastream & BONY/ADR
Non-US Foreign Listing	Indicator equal to one if the firm has a foreign listing but not in the US in year *t*, and zero otherwise.	Datastream

Appendix (continued)
Variable Definitions

Variable	Definition	Source
Foreign Board Experience	Indicator coded to one if at least one director holds a non-UK board seat in year *t*.	Boardex
US Board Experience	Indicator coded to one if at least one director holds a US board seat in year *t*.	Boardex
Non-US Foreign Board Experience	Indicator coded to one if at least one director holds a non-UK non-US board seat in year *t*.	Boardex
CEO Foreign Education	Indicator equal to one if the CEO received at least one university degree (bachelors, masters, doctorate…) or educational certificate outside of the UK, and zero otherwise.	Boardex & Annual Reports
CEO US Education	Indicator equal to one if the CEO received at least one university degree (bachelors, masters, doctorate…) or educational certificate in the US, and zero otherwise.	Boardex & Annual Reports
CEO Non-US Foreign Education	Indicator equal to one if the CEO received at least one university degree (bachelors, masters, doctorate…) or educational certificate outside of the UK but not in the US, and zero otherwise.	Boardex & Annual Reports
CEO Foreign Board Experience	Indicator coded to one if the CEO holds at least one non-UK board seat in year *t*.	Boardex
CEO US Board Experience	Indicator coded to one if the CEO holds at least one US board seat in year *t*.	Boardex
CEO Non-US Foreign Board Experience	Indicator coded to one if holds at least one non-UK non-US board seat in year *t*.	Boardex
CEO Foreign Nationality	Indicator coded to one if the CEO is not British, and zero otherwise.	Boardex
CEO US Nationality	Indicator coded to one if the CEO is American, and zero otherwise.	Boardex
CEO Non-US Foreign Nationality	Indicator coded to one if the CEO is not British and not American, and zero otherwise.	Boardex
Total Compensation	Total compensation in pounds sterling for the CEO in year *t*. Total cash compensation is computed as the sum of Salary, Bonus, Benefits in Kind, and Equity Compensation.	Hemscott
Ln(Total Compensation)	Natural logarithm of total compensation in pounds sterling for the CEO in year *t*.	Hemscott
Cash Compensation	Total cash compensation in pounds sterling for the CEO in year t. Total cash compensation is computed as the sum of Salary, Bonus and Benefits in Kind.	Hemscott
Ln(Cash Compensation)	Natural logarithm of one plus the total cash compensation in pounds sterling for the CEO in year t.	Hemscott
Salary	Annual salary in pounds sterling for the CEO in year *t*.	Hemscott
Ln(Salary)	Natural logarithm of one plus the annual salary in pounds sterling for the CEO in year *t*.	
Bonus	Annual bonus in pounds sterling for the CEO in year *t*.	Hemscott
Ln(Bonus)	Natural logarithm of one plus the annual bonus in pounds sterling for the CEO in year *t*.	
Equity Compensation	Value of restricted stock and options grants in pounds sterling received by the CEO in year *t*. Restricted stock grant values are calculated as the product of the number of restricted shares and the stock price at grant date. Option grant values are estimated using the Black-Scholes formula.	Hemscott
Ln(Equity Compensation)	Natural logarithm of one plus the equity compensation in pounds sterling for the CEO in year *t*.	Hemscott
Option Grant	Indicator variable equal to one if the CEO received an option grant in year *t*, and zero otherwise.	Hemscott
Equity Ratio	Ratio of Equity Compensation to Total Compensation for year *t*.	Hemscott

Table 1
Descriptive Statistics

This table presents descriptive statistics on our sample of UK firm-years over the period 2002–2007. All variables are defined in the Appendix. N=1,543

Panel A: Firm and CEO Characteristics

	Mean	Std. Dev.	Min	5%	25%	Median	75%	95%	Max
Assets (£ millions)	16,672	78,180	21	179	586	1,348	4,518	49,961	996,023
Ln(Assets)	14.42	1.70	9.94	12.10	13.28	14.11	15.32	17.73	20.72
MVE (£ mill.)	4,895	13,582	33	278	5301	1,099	2,969	21,554	121,883
Ln(MVE)	14.17	1.34	10.40	12.54	13.18	13.91	14.90	16.89	18.62
Market-to-Book	3.24	2.86	0.44	0.61	1.39	2.35	3.93	10.92	12.68
ROA	0.09	0.09	-0.23	-0.01	0.04	0.08	0.13	0.26	0.40
CFO	0.09	0.08	-0.09	-0.01	0.03	0.08	0.13	0.24	0.40
Return	0.08	0.23	-0.49	-0.26	-0.05	0.06	0.19	0.49	0.93
Volatility	0.29	0.14	0.00	0.15	0.20	0.26	0.35	0.54	0.91
Percent Shares Held	1.38	5.27	0.00	0.00	0.01	0.05	0.25	8.48	36.24
Ln(Percent Shares Held)	0.33	0.71	0.00	0.00	0.01	0.05	0.22	2.25	3.62
Percent Inside Director	40.99	12.11	7.69	21.43	33.33	41.67	50.00	60.00	100.00
Board Size	9.68	2.67	3.00	6.00	8.00	9.00	11.00	15.00	21.00
Ln(Board Size)	2.23	0.27	1.10	1.79	2.08	2.20	2.40	2.71	3.04
CEO Age	51.87	6.83	31.00	41.00	47.00	52.00	57.00	62.00	77.00
CEO Tenure (months)	63.98	62.48	1.00	7.00	24.00	46.00	82.00	182.00	480.00
Ln(CEO Tenure)	3.76	0.97	0.69	2.08	3.22	3.85	4.42	5.21	6.18

Table 1 (continued)
Descriptive Statistics

Panel B: Foreign, US and Non-US Foreign Market Interactions

	Mean	Std. Dev.	Min	5%	25%	Median	75%	95%	Max
Foreign Sales Ratio	0.42	0.38	0.00	0.00	0.00	0.39	0.81	1.00	1.00
US Sales Ratio	0.15	0.20	0.00	0.00	0.00	0.00	0.28	0.56	0.99
Non-US Foreign Sales	0.28	0.30	0.00	0.00	0.00	0.17	0.50	0.85	1.00
Foreign Acquisitions	0.54	0.50	0.00	0.00	0.00	1.00	1.00	1.00	1.00
US Acquisitions	0.38	0.49	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Non-US Foreign Acquisitions	0.50	0.50	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Ln(Foreign Acquisition Ratio)	0.13	0.23	0.00	0.00	0.00	0.00	0.16	0.59	1.56
Ln(US Acquisition Ratio)	0.07	0.18	0.00	0.00	0.00	0.00	0.03	0.39	1.55
Ln(Non-US For. Acquis. Ratio)	0.07	0.14	0.00	0.00	0.00	0.00	0.07	0.37	0.96
Foreign Listing	0.29	0.45	0.00	0.00	0.00	0.00	1.00	1.00	1.00
US Listing	0.26	0.44	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Non-US Foreign Listing	0.07	0.25	0.00	0.00	0.00	0.00	0.00	1.00	1.00
Foreign Board Experience	0.52	0.50	0.00	0.00	0.00	1.00	1.00	1.00	1.00
US Board Experience	0.33	0.47	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Non-US For. Board Experience	0.42	0.49	0.00	0.00	0.00	0.00	1.00	1.00	1.00
CEO Foreign Education	0.49	0.50	0.00	0.00	0.00	0.00	1.00	1.00	1.00
CEO US Education	0.45	0.50	0.00	0.00	0.00	0.00	1.00	1.00	1.00
CEO Non-US Foreign Educ.	0.15	0.36	0.00	0.00	0.00	0.00	0.00	1.00	1.00
CEO Foreign Board Experience	0.09	0.28	0.00	0.00	0.00	0.00	0.00	1.00	1.00
CEO US Board Experience	0.04	0.21	0.00	0.00	0.00	0.00	0.00	0.00	1.00
CEO Non-US Foreign Board	0.04	0.21	0.00	0.00	0.00	0.00	0.00	0.00	1.00
CEO Foreign Nationality	0.18	0.38	0.00	0.00	0.00	0.00	0.00	1.00	1.00
CEO US Nationality	0.06	0.23	0.00	0.00	0.00	0.00	0.00	1.00	1.00
CEO Non-US For. Nationality	0.12	0.33	0.00	0.00	0.00	0.00	0.00	1.00	1.00

Table 1 (continued)
Descriptive Statistics

Panel C: Compensation variables (in £s thousand)

	Mean	Std. Dev.	Min	5%	25%	Median	75%	95%	Max
Total Compensation	1,511.73	1,897.92	14.74	321.00	621.00	971.32	1,696.45	4,2833.38	27,021.01
Ln(Total Compensation)	13.86	0.82	9.60	12.68	13.34	13.79	14.34	15.27	17.11
Cash Compensation	921.80	714.55	0.00	269.28	501.00	714.00	1,097.00	2,357.66	7,613.00
Ln(Cash Compensation)	13.46	1.08	0.00	12.50	13.12	13.48	13.91	14.67	15.85
Salary	469.24	237.44	0.00	190.00	315.00	420.00	586.00	888.00	2,761.32
Ln(Salary)	12.88	1.07	0.00	12.15	12.66	12.95	13.28	13.70	14.83
Bonus	406.17	560.43	0.00	0.00	109.20	253.92	480.00	1,424.00	7,127.00
Ln(Bonus)	11.01	4.25	0.00	0.00	11.60	12.44	13.08	14.17	15.78
Equity Compensation	589.94	1,559.98	0.00	0.00	0.00	200.00	594.23	2,143.59	24,924.01
Ln(Equity Compensation)	8.63	6.16	0.00	0.00	0.00	12.21	13.30	14.58	17.03
Option Grant	0.39	0.49	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Equity Ratio	0.25	0.24	0.00	0.00	0.00	0.23	0.42	0.65	1.00

Panel D: Mean compensation levels conditional on US market exposure

	Total Compensation (in £s)	Cash Compensation (in £s)	Equity Compensation (in £s)	Equity Ratio	Option Grants	N
US Sales	1,825,071	1,083,569	741,502	0.271	0.464	756
No US Sales	1,210,738	766,396	444,342	0.228	0.318	787
Difference	614,333***	317,173***	297,160***	0.044***	0.147***	
US Acquisitions	1,928,837	1,124,276	804,561	0.286	0.485	592
No US Acquisitions	1,252,086	795,753	456,333	0.226	0.332	951
Difference	676,751***	328,523***	348,228***	0.060***	0.155***	
US Exchange Listing	2,567,688	1,382,714	1,184,974	0.307	0.454	403
No US Exchange Listing	1,138,444	758,858	379,586	0.228	0.367	1,140
Difference	1,429,244***	623,856***	805,388***	0.079***	0.087***	
US Board Experience	2,229,132	1,289,573	939,559	0.291	0.476	504
No US Board Experience	1,163,736	743,395	420,342	0.229	0.347	1,039
Difference	1,065,395***	546,179***	519,217***	0.062***	0.129***	
CEO US Education	1,736,367	1,033,783	702,584	0.264	0.404	695
CEO No US Education	1,327,629	830,016	497,614	0.237	0.377	848
Difference	408,734***	203,767***	204,971**	0.027**	0.027	
CEO US Board Exper.	3,299,679	1,687,478	1,612,200	0.325	0.464	69
CEO No US Board Exper.	1,428,037	885,954	542,083	0.245	0.386	1,474
Difference	1,511,733***	801,525***	1,070,117***	0.080***	0.078	
CEO US Nationality	2,173,275	1,293,850	879,425	0.280	0.456	90
CEO Non-US Nationality	1,470,757	898,751	572,006	0.247	0.385	1,453
Difference	702,518***	395,098***	307,420*	0.033	0.070	

***, **, * Significantly different from zero at the one percent, five percent, and ten percent level (two-tailed test)

Table 1 (continued)
Descriptive Statistics

Panel E: Mean compensation levels conditional on the breadth of the firm's US market activities

	Total Compensation (in £)	Cash Compensation (in £)	Equity Compensation (in £)	Equity Ratio	Option Grants	Ln(MVE) (in £ thous.)	N
US EXPOSURE = 4	3,007,068	1,535,050	1,472,018	0.369	0.565	15.730	154
US EXPOSURE = 3	2,194,929	1,354,225	840,703	0.271	0.493	15.006	205
US EXPOSURE = 2	1,602,559	957,202	645,357	0.261	0.429	14.188	343
US EXPOSURE = 1	1,119,218	759,907	359,311	0.213	0.343	13.895	338
US EXPOSURE = 0	977,301	642,444	334,857	0.219	0.298	13.520	503

Panel F: Mean compensation levels conditional on the breadth of the CEO's US characteristics

	Total Compensation (in £)	Cash Compensation (in £)	Equity Compensation (in £)	Equity Ratio	Option Grants	Ln(MVE) (in £ thous.)	N
US EXPOSURE = 3	2,819,876	1,702,621	1,117,255	0.317	0.476	15.193	21
US EXPOSURE = 2	2,848,424	1,465,963	1,382,461	0.293	0.488	15.272	80
US EXPOSURE = 1	1,579,473	965,994	613,479	0.260	0.390	14.335	631
US EXPOSURE = 0	1,293,299	813,511	479,788	0.234	0.377	13.904	811

Panel G: Mean and median compensation levels over the sample period

(in £)	2002	2003	2004	2005	2006	2007
Mean Compensation Levels						
Total Compensation	1,655,307	1,254,458	1,394,702	1,400,209	1,726,022	1,884,052
Cash Compensation	772,493	791,910	895,651	941,819	1,050,204	1,135,334
Equity Compensation	882,814	462,547	499,051	458,390	711,819	748,717
Equity Ratio	0.266	0.258	0.222	0.226	0.267	0.283
Option Grants	0.512	0.523	0.423	0.374	0.222	0.250
Ln(MVE)	13.986	13.907	14.068	14.271	14.412	14.438
Median Compensation Levels						
Total Compensation	828,829	897,573	924,769	972,017	1,168,326	1,254,615
Cash Compensation	585,816	671,569	703,818	720,237	818,360	796,000
Equity Compensation	172,136	204,683	146,866	163,405	267,000	368,552
Equity Ratio	0.223	0.245	0.171	0.198	0.298	0.320
Option Grants	1.000	1.000	0.000	0.000	0.000	0.000
Ln(MVE)	13.753	13.625	13.784	13.956	14.083	14.118
N	172	302	317	313	315	124

Table 2
Correlation Matrix

This table presents Pearson correlations for our sample of UK firm-years over the period 2002–2007. All variables are defined in the Appendix. Correlations greater than 0.05 in absolute magnitude are significant at the 5 percent level (two-sided test). N=1,543

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Ln (Assets)	1.00																
2	Market-to-Book	-0.16	1.00															
3	ROA	-0.28	0.30	1.00														
4	CFO	-0.31	0.36	0.64	1.00													
5	Return	-0.09	0.07	0.09	0.05	1.00												
6	Volatility	-0.12	0.00	-0.19	0.03	-0.21	1.00											
7	Ln(CEO Tenure)	-0.10	0.04	0.09	0.06	0.06	-0.11	1.00										
8	Ln(Percent Shares Held)	-0.25	0.06	0.09	0.10	0.10	0.03	0.26	1.00									
9	Percent Inside Director	-0.28	-0.04	0.09	-0.01	0.01	0.00	0.15	0.22	1.00								
10	Ln(Board Size)	0.60	0.00	-0.16	-0.10	-0.09	-0.06	0.00	-0.15	-0.15	1.00							
11	Ln(Total Comp)	0.55	0.05	-0.01	-0.02	-0.01	-0.08	0.04	-0.18	-0.30	0.43	1.00						
12	Ln(Cash Comp)	0.36	0.06	0.06	0.01	0.06	-0.13	0.07	-0.07	-0.18	0.29	0.61	1.00					
13	Ln(Salary)	0.29	0.04	0.03	0.01	0.02	-0.09	0.10	-0.09	-0.13	0.22	0.44	0.85	1.00				
14	Ln(Bonus)	0.21	0.02	0.07	-0.01	0.09	-0.19	0.01	-0.08	-0.11	0.17	0.44	0.45	0.23	1.00			
15	Ln(Equity Comp)	0.22	-0.02	-0.08	-0.10	-0.02	-0.01	-0.05	-0.23	-0.11	0.15	0.50	0.09	0.08	0.11	1.00		
16	Option Grant	0.21	-0.02	-0.09	-0.08	-0.05	0.06	-0.09	-0.20	-0.15	0.13	0.52	-0.09	-0.08	-0.01	0.82	1.00	
17	Equity Ratio	0.07	-0.03	-0.07	0.00	-0.06	0.12	-0.06	-0.14	-0.02	0.08	0.20	-0.01	-0.03	0.01	0.53	0.34	1.00
18	Foreign Sales Ratio	0.02	0.16	0.03	0.20	-0.02	0.20	-0.02	0.01	-0.17	0.15	0.20	0.15	0.12	0.04	0.06	0.06	0.13
19	US Sales Ratio	0.02	0.09	-0.04	0.07	-0.06	0.11	-0.03	-0.03	-0.12	0.09	0.21	0.12	0.10	0.09	0.10	0.11	0.17
20	Non-US Foreign Sales	0.02	0.15	0.07	0.21	0.02	0.19	-0.01	0.03	-0.14	0.14	0.12	0.11	0.08	-0.01	0.01	0.01	0.06
21	Ln(Foreign Acquisition Ratio)	-0.01	0.09	-0.01	0.10	-0.02	0.07	-0.04	-0.05	-0.12	0.08	0.12	0.03	0.02	0.02	0.08	0.09	0.10
22	Ln(US Acquisition Ratio)	-0.03	0.05	-0.05	0.04	-0.03	0.08	-0.03	-0.04	-0.08	0.06	0.07	-0.01	-0.01	0.02	0.07	0.07	0.12
23	Ln(Non-US For. Acquis. Ratio)	0.03	0.09	0.05	0.13	0.00	0.02	-0.04	-0.04	-0.10	0.07	0.11	0.08	0.07	0.01	0.05	0.06	0.01
24	Foreign Listing	0.45	0.04	-0.02	0.06	-0.05	0.01	-0.02	-0.13	-0.20	0.37	0.41	0.28	0.23	0.11	0.11	0.14	0.09
25	US Listing	0.46	0.03	-0.01	0.07	-0.04	-0.01	-0.03	-0.12	-0.21	0.39	0.40	0.27	0.22	0.12	0.11	0.15	0.08
26	Non-US Foreign Listing	0.20	0.06	0.05	0.08	-0.02	0.01	0.01	-0.07	-0.11	0.15	0.21	0.14	0.11	0.08	0.04	0.07	0.01
27	Foreign Board Experience	0.37	0.08	-0.13	-0.01	-0.06	0.08	-0.11	-0.17	-0.31	0.36	0.34	0.22	0.16	0.12	0.14	0.13	0.11
28	US Board Experience	0.37	0.03	-0.12	-0.02	-0.07	0.05	-0.04	-0.13	-0.27	0.37	0.35	0.24	0.18	0.12	0.12	0.12	0.12
29	Non-US For. Board Experience	0.36	0.12	-0.07	0.02	-0.04	0.05	-0.10	-0.18	-0.30	0.33	0.33	0.21	0.17	0.11	0.14	0.13	0.08
30	CEO Foreign Education	0.15	0.02	0.01	0.05	0.00	0.04	-0.12	-0.12	-0.19	0.12	0.11	0.07	0.03	0.08	0.01	0.04	0.02
31	CEO US Education	0.16	0.00	-0.01	0.03	0.00	0.03	-0.11	-0.13	-0.19	0.12	0.13	0.08	0.04	0.08	0.03	0.06	0.03
32	CEO Non-US Foreign Educ.	0.08	0.06	0.03	0.08	-0.01	0.05	-0.10	-0.07	-0.19	0.14	0.08	0.08	0.07	0.05	-0.06	-0.02	-0.03
33	CEO Foreign Board	0.20	0.02	-0.01	0.08	-0.01	-0.01	0.03	-0.04	-0.14	0.21	0.26	0.17	0.12	0.09	0.07	0.11	-0.02
34	CEO US Board	0.14	0.03	0.01	0.04	0.01	-0.01	0.04	0.01	-0.11	0.11	0.20	0.13	0.08	0.10	0.04	0.07	0.03
35	CEO Non-US Foreign Board	0.14	0.00	-0.03	0.07	-0.02	0.00	0.01	-0.07	-0.09	0.19	0.16	0.10	0.08	0.03	0.06	0.08	-0.06
36	CEO Foreign Nationality	0.11	0.04	0.01	0.10	0.00	0.10	-0.14	0.01	-0.19	0.08	0.11	0.10	0.05	-0.01	-0.05	-0.02	0.02
37	CEO US Nationality	0.08	-0.04	-0.05	0.00	0.01	0.05	-0.11	-0.03	-0.10	0.01	0.10	0.07	0.05	0.03	0.01	0.03	0.03
38	CEO Non-US For. Nationality	0.07	0.08	0.04	0.12	-0.01	0.09	-0.08	0.03	-0.15	0.09	0.05	0.06	0.02	-0.03	-0.07	-0.05	0.00

Table 2 (continued)
Correlation Matrix

		18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38
18	Foreign Sales Ratio	1.00																				
19	US Sales Ratio	0.65	1.00																			
20	Non-US Foreign Sales	0.86	0.16	1.00																		
21	Ln(Foreign Acquisition Ratio)	0.38	0.39	0.23	1.00																	
22	Ln(US Acquisition Ratio)	0.28	0.47	0.05	0.82	1.00																
23	Ln(Non-US For. Acquis. Ratio)	0.28	0.07	0.32	0.67	0.12	1.00															
24	Foreign Listing	0.30	0.27	0.21	0.27	0.18	0.23	1.00														
25	US Listing	0.27	0.26	0.17	0.25	0.16	0.22	0.93	1.00													
26	Non-US Foreign Listing	0.22	0.09	0.22	0.17	0.10	0.17	0.42	0.17	1.00												
27	Foreign Board Experience	0.31	0.26	0.23	0.17	0.16	0.09	0.37	0.35	0.18	1.00											
28	US Board Experience	0.26	0.29	0.14	0.17	0.18	0.06	0.42	0.39	0.23	0.67	1.00										
29	Non-US For. Board Experience	0.30	0.18	0.26	0.17	0.13	0.13	0.34	0.32	0.20	0.81	0.38	1.00									
30	CEO Foreign Education	0.26	0.18	0.21	0.08	0.04	0.09	0.19	0.16	0.18	0.13	0.12	0.10	1.00								
31	CEO US Education	0.20	0.18	0.14	0.04	0.01	0.06	0.19	0.17	0.14	0.12	0.14	0.09	0.92	1.00							
32	CEO Non-US Foreign Educ.	0.25	0.06	0.29	0.09	0.07	0.07	0.16	0.11	0.30	0.15	0.15	0.12	0.42	0.21	1.00						
33	CEO Foreign Board	0.16	0.15	0.10	0.02	0.07	-0.05	0.23	0.22	0.25	0.20	0.23	0.15	0.08	0.07	0.19	1.00					
34	CEO US Board	0.10	0.14	0.03	0.00	0.02	-0.02	0.16	0.17	0.13	0.16	0.19	0.08	0.04	0.06	0.11	0.70	1.00				
35	CEO Non-US Foreign Board	0.12	0.07	0.11	0.02	0.07	-0.05	0.16	0.14	0.20	0.13	0.14	0.13	0.07	0.04	0.16	0.70	0.00	1.00			
36	CEO Foreign Nationality	0.36	0.14	0.36	0.13	0.09	0.11	0.26	0.22	0.22	0.19	0.18	0.15	0.30	0.21	0.45	0.22	0.18	0.14	1.00		
37	CEO US Nationality	0.20	0.17	0.15	0.07	0.06	0.04	0.19	0.19	0.03	0.14	0.16	0.08	0.19	0.21	0.11	0.22	0.27	0.03	0.53	1.00	
38	CEO Non-US For. Nationality	0.27	0.05	0.32	0.10	0.06	0.10	0.17	0.12	0.23	0.13	0.10	0.12	0.21	0.10	0.45	0.11	0.02	0.14	0.79	-0.09	1.00

Table 3
Baseline regressions of UK compensation practices

This table presents select coefficients from pooled, cross-sectional estimations of the following model:

$$Compensation_{it} = \alpha + \sum_{k=1}^{n} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it} + \beta_4 CFO_{it} + \beta_5 Stock\ Return_{it}$$
$$+ \beta_6 Return\ Volatility_{it} + \beta_7 Ln(Tenure_{it}) + \beta_8 Ln(Percent\ Shares\ Held_{it}) + \beta_9 Percent\ Inside\ Directors_{it} + \beta_{10} Ln(Board\ Size_{it}) + \varepsilon_{it}$$

Ln(Total Compensation) and all *ln*(*Cash Compensation)* models are estimated using ordinary least squares. *Ln(Equity compensation)* and *Equity Ratio* models are estimated using Tobit. The *Option Grant* model is estimated using logit. All variables are defined in the Appendix. Standard errors (in parentheses) are clustered at the firm level.

		Cash Compensation			Equity Compensation		
Dependent Variable:	Ln(Total Compensation)	Ln(Cash Compensation)	Ln(Salary)	Ln(Bonus)	Ln(Equity Compensation)	Equity Ratio	Option Grant
Intercept	8.260***	7.583***	8.272***	3.925**	-0.699	-0.077	-2.024
	(0.382)	(0.588)	(0.583)	(1.922)	(4.930)	(0.189)	(1.237)
Ln(Assets)	0.333***	0.322***	0.254***	0.543***	0.752***	0.029***	0.117
	(0.023)	(0.027)	(0.035)	(0.129)	(0.290)	(0.011)	(0.078)
Market-to-Book	0.019***	0.021***	0.018**	-0.016	0.030	0.001	-0.012
	(0.007)	(0.008)	(0.007)	(0.050)	(0.105)	(0.004)	(0.030)
ROA	0.612*	1.281*	0.771	4.404**	4.373	0.103	0.311
	(0.321)	(0.742)	(0.724)	(2.195)	(4.446)	(0.168)	(1.170)
CFO	0.790**	0.454	0.144	1.357	-10.277*	-0.394**	1.078
	(0.394)	(0.710)	(0.709)	(2.429)	(5.433)	(0.198)	(1.365)
Stock Return	0.143*	0.383**	0.171	1.831***	-0.089	-0.021	-0.200
	(0.077)	(0.149)	(0.144)	(0.527)	(1.098)	(0.044)	(0.274)
Return Volatility	0.309	0.181	0.031	-3.032**	0.083	0.113	0.971
	(0.206)	(0.321)	(0.298)	(1.212)	(2.426)	(0.093)	(0.614)
Ln(CEO Tenure)	0.091***	0.115***	0.152***	-0.004	0.112	-0.007	-0.064
	(0.025)	(0.030)	(0.029)	(0.128)	(0.288)	(0.011)	(0.074)
Ln(Percent Shares Held)	-0.066	0.000	-0.058*	-0.130	-2.485***	-0.087***	-0.450***
	(0.042)	(0.043)	(0.031)	(0.270)	(0.567)	(0.019)	(0.129)
Percent Inside Directors	-0.009***	-0.006*	-0.004	-0.018	-0.047*	-0.002**	-0.001
	(0.002)	(0.003)	(0.003)	(0.012)	(0.028)	(0.001)	(0.007)
Ln(Board Size)	0.259**	0.311**	0.179	0.773	1.296	0.026	0.394
	(0.117)	(0.142)	(0.157)	(0.707)	(1.498)	(0.054)	(0.355)
Industry Fixed Effects	Included	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included	Included
Adjusted R-Squared	0.449	0.233	0.146	0.118	0.029	0.156	0.104
N	1,543	1,543	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Table 4
Influence of firm-level foreign market interactions on the compensation practices of UK firms

This table presents select coefficients from various pooled, cross-sectional estimations of the following model:

$$\text{Ln}(\textit{Total Compensation}_{it}) = \alpha + \sum_{k=1}^{n} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 \textit{Ln(Assets}_{it}\textit{)} + \beta_2 \textit{Market-to-Book}_{it} + \beta_3 \textit{ROA}_{it} + \beta_4 \textit{CFO}_{it}$$
$$+ \beta_5 \textit{Stock Return}_{it} + \beta_6 \textit{Return Volatility}_{it} + \beta_7 \textit{Ln(Tenure}_{it}\textit{)} + \beta_8 \textit{Ln(Percent Shares Held}_{it}\textit{)} + \beta_9 \textit{Percent Inside Directors}_{it}$$
$$+ \beta_{10} \textit{Ln(Board Size}_{it}\textit{)} + \beta_{11} \textit{Foreign Sales Ratio}_{it} + \beta_{12} \textit{Ln(Foreign Acquisition Ratio)}_{it} + \beta_{13} \textit{Foreign Listing}_{it}$$
$$+ \beta_{14} \textit{Foreign Board Experience}_{it} + \varepsilon_{it}$$

The dependent variable, *Ln(Total Compensation)*, equals natural logarithm of the total annual compensation earned by the CEO of firm *i* in year *t*. All independent variables are defined in the Appendix. All models are estimated using ordinary least squares. Standard errors (in parentheses) are clustered at the firm level.

Foreign Market Interaction:	Sales	Acquisition	Listing	Directors Board Experience	All Market Interactions
Foreign Sales Ratio	0.251***				0.176**
	(0.083)				(0.084)
Ln(Foreign Acquisition Ratio)		0.154			0.006
		(0.096)			(0.091)
Foreign Listing			0.250***		0.208***
			(0.073)		(0.077)
Foreign Board Experience				0.129**	0.075
				(0.053)	(0.054)
Control Variables	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included
Adjusted R-Squared	0.457	0.450	0.461	0.453	0.466
N	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Table 5
Influence of firm-level US and Non-US foreign market interactions on the compensation practices of UK firms

This table presents select coefficients from various pooled, cross-sectional estimations of the following model:

$$\text{Ln}(\textit{Total Compensation}_{it}) = \alpha + \sum_{k=1}^{n} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 \textit{Ln(Assets}_{it}\textit{)} + \beta_2 \textit{Market-to-Book}_{it} + \beta_3 \textit{ROA}_{it} + \beta_4 \textit{CFO}_{it}$$
$$+ \beta_5 \textit{Stock Return}_{it} + \beta_6 \textit{Return Volatility}_{it} + \beta_7 \textit{Ln(Tenure}_{it}\textit{)} + \beta_8 \text{Ln}(\textit{Percent Shares Held}_{it}) + \beta_9 \textit{Percent Inside Directors}_{it}$$
$$+ \beta_{10} \textit{Ln(Board Size}_{it}\textit{)} + \beta_{11} \textit{US Sales Ratio}_{it} + \beta_{12} \textit{Non-US Foreign Sales Ratio}_{it} + \beta_{13} \textit{Ln(US Acquisition Ratio)}_{it}$$
$$+ \beta_{14} \textit{Ln(Non-US Foreign Acquisition Ratio)}_{it} + \beta_{15} \textit{US Listing}_{it} + \beta_{16} \textit{Non-US Foreign Listing}_{it} + \beta_{17} \textit{US Board Experience}_{it}$$
$$+ \beta_{18} \textit{Non-US Foreign Board Experience}_{it} + \varepsilon_{it}$$

The dependent variable, *Ln(Total Compensation)*, equals natural logarithm of the total annual compensation earned by the CEO of firm *i* in year *t*. All independent variables are defined in the Appendix. All models are estimated using ordinary least squares. Standard errors (in parentheses) are clustered at the firm level.

Foreign Market Interaction:	Sales	Acquisition	Listing	Directors Board Experience	All Market Interactions
US Sales Ratio	0.645***				0.570***
	(0.130)				(0.134)
Non-US Foreign Sales Ratio	0.046				0.022
	(0.106)				(0.108)
Ln(US Acquisition Ratio)		0.201*			-0.147
		(0.121)			(0.099)
Ln(Non-US For. Acq. Ratio)		0.060			0.071
		(0.155)			(0.136)
US Listing			0.236***		0.164**
			(0.073)		(0.075)
Non-US Foreign Listing			0.190*		0.145
			(0.107)		(0.111)
US Board Experience				0.145***	0.069
				(0.055)	(0.055)
Non-US For. Board Exper.				0.043	0.015
				(0.049)	(0.050)
p Value US = Non-US	0.001	0.475	0.720	0.176	
Control Variables	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included
Adjusted R-Squared	0.466	0.450	0.461	0.455	0.470
N	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Table 6
Influence of firm-level US and Non-US foreign market interactions on the components of UK executive compensation packages

This table presents select coefficients from various pooled, cross-sectional estimations of the following models:

$$Ln(Compensation)_{it} = \alpha + \sum_{k=1}^{n} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it} + \beta_4 CFO_{it}$$
$$+ \beta_5 Stock\ Return_{it} + \beta_6 Return\ Volatility_{it} + \beta_7 Ln(Tenure_{it}) + \beta_8 \text{Ln}(Percent\ Shares\ Held_{it}) + \beta_9 Percent\ Inside\ Directors_{it}$$
$$+ \beta_{10} Ln(Board\ Size_{it}) + \beta_{11} US\ Activity_{it} + \beta_{12} Non\text{-}US\ Foreign\ Activity_{it} + \varepsilon_{it}$$

US Activity and *Non-US Foreign Activity* equal the specified measure of firm *i*'s US and Non-US foreign market interactions in year *t*. All *Cash Compensation* models are estimated using ordinary least squares. All *Ln(Equity Compensation)* and *Equity Ratio* models are estimated using Tobit. The *Option Grant* model is estimated using logit. All variables are defined in the Appendix. Standard errors (in parentheses) are clustered at the firm-level. P-values on the equality of the *US Activity* and *Non-US Foreign Activity* coefficients are from a t-test (one-sided).

Panel A: Sales

	Cash Compensation			Equity Compensation		
Dependent Variable:	Ln(Cash Comp.)	Ln(Salary)	Ln(Bonus)	Ln(Equity Comp.)	Equity Ratio	Option Grant
US Sales Ratio	0.510***	0.292	1.486**	1.943	0.085	1.443***
	(0.187)	(0.178)	(0.613)	(1.770)	(0.067)	(0.485)
Non-US Foreign Sales	0.255**	0.161	-0.463	0.270	-0.046	0.292
	(0.121)	(0.106)	(0.635)	(1.295)	(0.046)	(0.361)
US = Non-US p-value	0.119	0.250	0.011	0.224	0.057	0.028
Control Variables	Included	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
Adjusted R-Squared	0.241	0.148	0.121	0.029	0.159	0.114
N	1,543	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Panel B: Acquisitions

	Cash Compensation			Equity Compensation		
Dependent Variable:	Ln(Cash Comp.)	Ln(Salary)	Ln(Bonus)	Ln(Equity Comp.)	Equity Ratio	Option Grant
Ln(US Acquisition Ratio)	-0.170	-0.243	0.678	1.523	0.062	1.250***
	(0.436)	(0.395)	(0.675)	(1.428)	(0.068)	(0.442)
Ln(Non-US For. Acq. Ratio)	0.203	0.140	-1.319	0.103	-0.008	-0.901
	(0.177)	(0.272)	(0.937)	(2.387)	(0.083)	(0.607)
US = Non-US p-value	0.241	0.236	0.050	0.304	0.259	0.001
Control Variables	Included	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
Adjusted R-Squared	0.233	0.147	0.119	0.029	0.157	0.112
N	1,543	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Table 6 (continued)
Influence of firm-level US and non-US foreign market interactions on the components of UK executive compensation packages (continued)

Panel C: Exchange Listings

	Cash Compensation			Equity Compensation		
Dependent Variable:	Ln(Cash Comp.)	Ln(Salary)	Ln(Bonus)	Ln(Equity Comp.)	Equity Ratio	Option Grant
US Listing	0.250***	0.156**	0.343	-0.202	0.007	0.105
	(0.070)	(0.073)	(0.352)	(0.842)	(0.031)	(0.232)
Non-US Foreign Listing	0.191**	0.073	0.854	0.253	0.019	-0.252
	(0.093)	(0.078)	(0.571)	(0.967)	(0.040)	(0.329)
US = Non-US p-value	0.299	0.220	0.239	0.735	0.813	0.192
Control Variables	Included	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
Adjusted R-Squared	0.240	0.148	0.120	0.029	0.156	0.105
N	1,543	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Panel D: Directors' Foreign Board Experience

	Cash Compensation			Equity Compensation		
Dependent Variable:	Ln(Cash Comp.)	Ln(Salary)	Ln(Bonus)	Ln(Equity Comp.)	Equity Ratio	Option Grant
US Board Experience	0.167**	0.110	0.356	0.589	0.011	0.373**
	(0.075)	(0.076)	(0.305)	(0.693)	(0.026)	(0.184)
Non-US Foreign Board Exp.	0.033	0.033	0.167	0.421	0.010	0.090
	(0.075)	(0.075)	(0.315)	(0.683)	(0.025)	(0.182)
US = Non-US p-value	0.133	0.268	0.346	0.432	0.486	0.150
Control Variables	Included	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included	Included
Adjusted R-Squared	0.236	0.147	0.119	0.029	0.156	0.108
N	1,543	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Table 7
Influence of CEO-level foreign market characteristics on the compensation practices of UK firms

Panel A presents select coefficients from various pooled, cross-sectional estimations of the following model:

$$\text{Ln}(\textit{Total Compensation}_{it}) = \alpha + \sum_{k=1}^{n} \gamma_k \text{Industry}_k + \sum_{t=1}^{4} \text{Year}_t + \beta_1 \textit{Ln(Assets}_{it}\textit{)} + \beta_2 \textit{Market-to-Book}_{it} + \beta_3 \textit{ROA}_{it} + \beta_4 \textit{CFO}_{it} + \beta_5 \textit{Stock Return}_{it} + \beta_6 \textit{Return Volatility}_{it} + \beta_7 \textit{Ln(Tenure}_{it}\textit{)} + \beta_8 \textit{Ln(Percent Shares Held}_{it}\textit{)} + \beta_9 \textit{Percent Inside Directors}_{it} + \beta_{10} \textit{Ln(Board Size}_{it}\textit{)} + \beta_{11} \textit{Foreign Sales Ratio}_{it} + \beta_{12} \textit{Ln(Foreign Acquisition Ratio)}_{it} + \beta_{13} \textit{Foreign Listing}_{it} + \beta_{14} \textit{Foreign Board}_{it} + \beta_{15} \textit{CEO Foreign Nationality}_{it} + \beta_{16} \textit{CEO Foreign Education}_{it} + \beta_{14} \textit{CEO Foreign Board Experience}_{it} + \varepsilon_{it}$$

The dependent variable, *Ln(Total Compensation)*, equals natural logarithm of the total annual compensation earned by the CEO of firm *i* in year *t*. All independent variables are defined in the Appendix. All models are estimated using ordinary least squares. Standard errors (in parentheses) are clustered at the firm level. In panel B, each of the firm's and CEO's foreign market variable is replaced with it's US and non-US foreign market analogue. P-values on the equality of the US and Non-US foreign variables' coefficients are from a t-test (one-sided).

Panel A: CEO's foreign characteristics

Foreign Market Interaction:	CEO Education	CEO Board Experience	CEO Nationality	All CEO Characteristics	All Market Interactions
CEO Foreign Education	-0.016			-0.017	-0.040
	(0.050)			(0.050)	(0.050)
CEO Foreign Board Experience		0.289***		0.293***	0.273***
		(0.085)		(0.085)	(0.076)
CEO Foreign Nationality			0.011	-0.016	-0.066
			(0.072)	(0.072)	(0.065)
Foreign Sales Ratio					0.192**
					(0.086)
Ln(Foreign Acquisition Ratio)					0.031
					(0.088)
Foreign Listing					0.205***
					(0.076)
Foreign Board Experience					0.062
					(0.053)
Control Variables	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included
Adjusted R-Squared	0.449	0.458	0.449	0.457	0.473
N	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Table 7 (Continued)
Influence of CEO-level foreign market characteristics on the compensation practices of UK firms (continued)

Panel B: CEO's US and Non-US characteristics

	CEO Education	CEO Board Experience	CEO Nationality	All CEO Characteristics	All Market Interactions
CEO US Education	0.019			0.004	-0.035
	(0.053)			(0.052)	(0.051)
CEO non-US Foreign Education	-0.046			-0.039	-0.035
	(0.075)			(0.075)	(0.075)
CEO US Board Experience		0.241**		0.197*	0.170*
		(0.109)		(0.101)	(0.092)
CEO non-US Foreign Board Exper.		0.298**		0.313***	0.254**
		(0.116)		(0.118)	(0.104)
CEO US Nationality			0.195*	0.156	0.063
			(0.117)	(0.114)	(0.101)
CEO Non-US Foreign Nationality			-0.081	-0.080	-0.085
			(0.078)	(0.082)	(0.078)
US Sales Ratio					0.523***
					(0.133)
Non-US Foreign Sales Ratio					0.052
					(0.109)
Ln(US Acquisition Ratio)					-0.133
					(0.097)
Ln(Non-US For. Acquisition Ratio)					0.124
					(0.140)
US Listing					0.155**
					(0.075)
Non-US Foreign Listing					0.144
					(0.116)
US Board Experience					0.061
					(0.053)
Non-US Foreign Board Experience					0.010
					(0.049)
US = Non-US p-value	0.266	0.718	0.018	-	-
Control Variables	Included	Included	Included	Included	Included
Industry Fixed Effects	Included	Included	Included	Included	Included
Year Fixed Effects	Included	Included	Included	Included	Included
Adjusted R-Squared	0.449	0.457	0.453	0.459	0.477
N	1,543	1,543	1,543	1,543	1,543

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by firm.

Table 8

Compensation practices of UK firms around US and non-US acquisition events

This table presents tests of compensation changes around US and non-US acquisitions by UK firms over the period 2002–2007. The panels present select coefficients from executive-level fixed effects estimations of the following models:

$$Ln(Trend\text{-}Adjusted\ Compensation_{it}) = \alpha + \gamma_i Executive_i + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it} + \beta_4 Ln(US\ Acquisition\ Ratio)_{it} + \beta_5 Ln(Non\text{-}US\ Foreign\ Acquisition\ Ratio)_{it} + \varepsilon_{it}$$

The dependent variable, *Trend-adjusted Compensation*, equals the specified measure of annual compensation earned by the CEO of firm *i* in year *t* less the mean corresponding level of compensation reported in the Hemscott database for year *t*. These tests use the three years of compensation data centered on a UK firm's US or non-US foreign acquisition event (years *t-1* to *t+1*). $Executive_i$ is an executive-level fixed effect to capture unobserved heterogeneity. Panel A presents tests of compensation changes around US acquisition events. *Total Compensation*, *Cash Compensation*, *Salary and Bonus* models are estimated using ordinary least squares. *Ln(Equity Compensation)* and *Equity Ratio* models are estimated using Tobit. *Option Grant* models are estimated using logit. Panel B repeats these estimations using a restricted sample of firms in which there were no CEO turnovers during the three year window. All variables are defined in the Appendix. Standard errors (in parentheses) are clustered at the executive-level. P-values on the equality of the US and Non-US foreign acquisition coefficients are from a t-test (one-sided).

Panel A: All UK firms with a US or non-US foreign acquisition event (2002–2007)

Dependent variable:	Ln(Total)	Ln(Cash)	Ln(Salary)	Ln(Bonus)	Ln(Equity)	Equity Ratio	Option Grant
Intercept	-1.507	-0.831	-0.782	-12.561*	-10.337	-0.089	-1.050
	(1.317)	(0.942)	(0.764)	(7.073)	(6.385)	(0.217)	(0.661)
Ln (Assets)	0.097	0.060	0.058	0.801*	0.655	0.005	0.080**
	(0.091)	(0.064)	(0.050)	(0.469)	(0.397)	(0.013)	(0.037)
Market-to-Book	0.036	-0.003	-0.023	0.077	0.389	0.021**	-0.012
	(0.025)	(0.017)	(0.017)	(0.169)	(0.266)	(0.010)	(0.026)
ROA	0.669	1.528**	1.910*	0.088	-1.482	-0.529*	-0.061
	(0.694)	(0.634)	(1.039)	(4.691)	(9.120)	(0.297)	(0.707)
Ln(US Acquisition Ratio)	0.806**	0.422*	0.200	12.133***	7.604	0.219**	0.670
	(0.344)	(0.231)	(0.178)	(3.056)	(4.942)	(0.106)	(0.535)
Ln(Non-US Acq. Ratio)	0.056	-0.214	-0.392***	-1.894	-0.512	0.070	-0.543
	(0.343)	(0.261)	(0.128)	(2.629)	(3.412)	(0.116)	(0.548)
US = Non-US p-value	0.055	0.025	0.001	0.001	0.104	0.197	0.062
Fixed Effects	Included	Included	Included	Included	Included	Included	Included
N	243	243	243	243	243	243	243

Panel B: UK firms without CEO turnover around US or non-US acquisition event (2002–2007)

	Ln(Total)	Ln(Cash)	Ln(Salary)	Ln(Bonus)	Ln(Equity)	Equity Ratio	Option Grant
Ln(US Acquisition Ratio)	0.937***	0.473**	0.237	12.576***	8.252	0.280***	0.612
	(0.331)	(0.226)	(0.186)	(2.992)	(5.073)	(0.099)	(0.560)
Ln(Non-US Acq. Ratio)	-0.030	-0.250	-0.362***	-4.006	1.044	0.073	-0.322
	(0.311)	(0.288)	(0.117)	(2.535)	(3.054)	(0.069)	(0.484)
US = non-US p-value	0.012	0.021	0.002	0.001	0.132	0.052	0.110
Fixed Effects & Controls	Included	Included	Included	Included	Included	Included	Included
N	178	178	178	178	178	178	178

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by executive.

Table 9
Compensation practices of UK firms around US and non-US listing events

This table presents tests of compensation changes around US and non-US listings of UK firms over the period 1998–2007. The panels present select coefficients from executive-level fixed effects estimations of the following models:

$$Ln(Compensation_{it}) = \alpha + \gamma_i Executive_i + \beta_1 Ln(Assets_{it}) + \beta_2 Market\text{-}to\text{-}Book_{it} + \beta_3 ROA_{it}$$

$$+ \beta_4 US\ Listing\ Event_{it} + \beta_5 Non\text{-}US\ Foreign\ Listing\ Event_{it} + \varepsilon_{it}$$

For *Ln(Cash Compensation)*, *Ln(Salary)*, and *Ln(Bonus)*, the dependent variable equals the specified measure of annual compensation earned by the CEO of firm *i* in year *t* less the mean corresponding level of compensation reported in the Hemscott database for year *t*. Because Hemscott does not provide equity compensation data for the first part of the sample (1998–2002), *Ln(Total Compensation)* and *Equity Ratio* are not trend adjusted. *US Listing Event*$_{it}$ (*Non-US Foreign Listing Event*$_{it}$) equals one if year *t* corresponds to the year after a US (non-US) foreign listing. *Executive*$_i$ is an executive-level fixed effect to capture unobserved heterogeneity. These tests use three years of compensation data centered on the listing event (years *t-1* to *t+1*). *Total Compensation*, *Cash Compensation*, *Salary and Bonus* models are estimated using ordinary least squares. *Ln(Equity Compensation)* and *Equity Ratio* models are estimated using Tobit. *Option Grant* models are estimated using logit. Panel B repeats these tests using a restricted sample of firms in which there were no CEO turnovers during the three year window. All variables are defined in the Appendix. Standard errors (in parentheses) are clustered at the executive-level. P-values on the equality of the US and Non-US foreign listing coefficients are from a t-test (one-sided).

Panel A: All UK firms with a US or non-US foreign listing event (1998–2007)

	Ln(Total)	Ln(Cash)	Ln(Salary)	Ln(Bonus)	Ln(Equity)	Equity Ratio	Option Grant
Intercept	5.204***	-5.211***	-2.915**	-21.310	-46.457**	-2.314***	-3.746**
	(1.639)	(1.435)	(1.329)	(16.611)	(17.729)	(0.780)	1.449
Ln (Assets)	0.642***	0.508***	0.317***	1.934	4.201***	0.198***	0.334***
	(0.129)	(0.111)	(0.102)	(1.271)	(1.360)	(0.060)	0.111
Market-to-Book	0.101***	0.058**	0.014	0.449	0.924**	0.038**	0.060*
	(0.030)	(0.029)	(0.028)	(0.273)	(0.400)	(0.018)	0.035
ROA	-0.783	-0.238	-0.217	-1.683	-3.549	-0.279	-0.235
	(0.523)	(0.219)	(0.158)	(3.222)	(3.314)	(0.178)	0.269
US Listing	0.092	0.181***	0.144***	0.101	-0.487	-0.029	-0.102
	(0.059)	(0.056)	(0.039)	(0.709)	(0.746)	(0.032)	0.067
Non-US Listing	-0.126	0.135	0.152**	1.218	-0.446	-0.154*	-0.002
	(0.182)	(0.175)	(0.068)	(1.821)	(2.039)	(0.088)	0.170
Fixed Effects	Included	Included	Included	Included	Included	Included	Included
p Value US = non-US	0.408	0.395	0.908	0.545	0.984	0.138	0.561
N	186	186	186	186	186	186	186

Panel B: UK firms without CEO turnover around US or non-US listing event (1998–2007)

	Ln(Total)	Ln(Cash)	Ln(Salary)	Ln(Bonus)	Ln(Equity)	Equity Ratio	Option Grant
US Listing	0.083	0.180***	0.144***	0.079	-0.573	-0.034	-0.110
	(0.059)	(0.057)	(0.038)	(0.723)	(0.765)	(0.033)	(0.069)
Non-US Listing	-0.114	0.193	0.198**	1.608	-0.243	-0.163	0.013
	(0.201)	(0.198)	(0.076)	(2.012)	(2.208)	(0.098)	(0.184)
Fixed Effects & Controls	Included	Included	Included	Included	Included	Included	Included
p Value US = non-US	0.158	0.475	0.477	0.455	0.879	0.170	0.505
N	168	168	168	168	168	168	168

***,**,* Significantly different than zero at the one, five and ten percent level (two-tailed test), using standard errors clustered by executive.