

## **Executive compensation in Europe: Realized gains from stock-based pay**

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#### **ABSTRACT**

This paper adds to the empirical evidence on the extent to which stock-based pay incentivizes and rewards European corporate executives. It shows that the actual realized gains (that is, take-home compensation) from stock-based pay of CEOs in European publicly-listed firms may be underestimated by the use of “estimated fair value” measures. The paper also documents the heterogeneity among countries in terms of the levels and components of CEO take-home pay. We base our work on a sample of 301 large, publicly-traded companies listed in the S&P Europe 350 index from 11 EU countries: Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden and United Kingdom for the fiscal year 2015. Through analyzing companies’ annual reports, we have hand-collected data on various elements of compensation of the company’s CEO in 2015, including the gains that executives realize from stock-based pay. We document that on average half of the total compensation of the European CEOs in our sample is stock-based, measured by actual realized gains, with large differences among countries. Although in some European countries the majority of total compensation is stock-based, the proportions are still well below those that prevail in the

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United States. A comparison of the realized-gains measure of CEO compensation with the data based on fair value estimates shows that the latter underestimates the relevance of stock-based pay, in the case of some countries dramatically. Our research findings add to the existing research on CEO pay and the link between pay of EU-based corporate executives and the performance of the companies that they manage. Based on our work, we argue that realized gains measures of CEO pay should be the standard for assessing the incentives and rewards of senior corporate executives in Europe. Our research is the first step in building time series of European executive compensation that will be useful for policies concerning corporate governance and economic performance.

**Keywords:** Executive compensation, stock-based pay, stock options, stock awards, estimated fair value, actual realized gains, EU

**JEL Codes:** D22, D31, G35, J33, M41, M52

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## Introduction

The topic of executive compensation is of great interest to politicians, regulators, employees and investors. First, the research on this issue is contributing to the conversation on income inequality. There is a fear that executive-compensation contracts induce CEOs to make resource-allocation decisions designed to increase shareholder value at the expense of other stakeholders, including workers and taxpayers (Lazonick 2014, Lazonick and Hopkins 2017). A view is emerging that in the United States a main cause of rising income inequality is unprecedented wage inequality, beginning around 1980, driven by the spread of extremely high compensation of top managers of large firms (Beal and Astakhova 2017, Lazonick 2018). This view has come to the fore following the work of Piketty (2014, 2003) who talks about "supermanagers" and their "supersalaries." Some argue that current CEO pay practices infringe social norms, with demands for the regulation of CEO compensation (Clifford 2017, Rost and Weibel 2013). The problem is not income inequality *per se* but rather income inequity, i.e., the unexplained or indefensible inequality that emerges when the pay seems to be unconnected to performance—although how to measure “performance” is open to debate (Conroy et al. 2015, Lazonick 2017). As an example, the oil company BP awarded its CEO a 20% pay increase for 2015 in spite of a record annual loss of the company; in response to a shareholder protest, the company then decreased his pay package by 40%, but not prior to 2016 (Cox 2017). Public outrage over perceived excesses in executive pay was known to shape government interventions even before the 2007-2009 financial crisis (Conyon et al. 2013, Hill 2006), let alone after it.

Second, the issue of executive pay is to an important extent connected to the allocation of corporate resources to investments in productive capabilities. Large corporations play a preponderant role in investing in the productive capabilities of the national economies in which they reside as well as in the quality and quantity of employment opportunities available to the labor force. In recent years, there has been a growing debate about whether the remuneration of the CEOs of these large corporations helps or hinders these objectives. In the U.S. context, in which the data available on CEO pay is abundant and easily accessible, agency theorists have been vociferous in advocating the use of stock-based pay, in the forms of stock options and stock awards, to incentivize CEOs and other senior executives to allocate corporate resources in ways that “maximize shareholder value” (Jensen and Murphy 1990, Rappaport 1999). Empirical research addressing the effect of executives’ equity incentives on firm value has so far yielded mixed results. Most studies find a positive correlation between equity incentives and firm value but the pattern is not robust across studies and, more importantly, empirical correlations cannot be interpreted as a proof of an impact, given the difficulties in identifying causality (Edmans, Gabaix, and Jenter 2017).

In opposition to the “shareholder value” view, which assumes that market capitalization or “total shareholder return” (dividends plus stock-price increases) is the appropriate measure of business performance, recent work by Hopkins and Lazonick has argued that U.S.-style stock-based pay leads executives to allocate corporate resources in ways that enable senior corporate executives, hedge-fund managers and Wall Street bankers to extract far more value from corporations than they help to create (Hopkins and Lazonick 2016, Lazonick 2016b).

The actual realized gains of the executives will depend on the vesting-date stock price, thus giving them an incentive to take actions to drive up the stock price, which will affect the way they run companies. Since the 1980s, stock buybacks, as a prime mode of value extraction, have become massive and pervasive in the U.S. corporate economy and an explanation for the increase in these open-market repurchases is the rise of stock-based pay (Lazonick 2014). By creating demand for the company's stock that provides an immediate boost to its stock price, buybacks reward those shareholders who sell their shares, with access to information on the precise timing of buybacks that a company is doing as a critical variable in determining which types of share sellers are best positioned to reap these gains. Senior corporate executives, especially the CEO and CFO, are among the most prominent share sellers who have access to non-public information to time their stock sales to take advantage of buyback activity. Stock-based pay thus gives the executives strong incentives for stock buybacks instead of investing profits in innovation and productive capabilities (Lazonick 2014).

There appears to be a positive correlation between CEO's stock and option holdings and earnings manipulation (Edmans, Gabaix, and Jenter 2017). Furthermore, the relation of stock based pay to productive investment is controversial. In the United States, the level of stock based pay is negatively associated with R&D expenditures and long-term investments (Bhargava, 2013). Recent studies have also used data on the horizon of incentives, quantifying the extent to which CEO compensation promotes short-term decision-making, with adverse effects on firm innovation and performance. Specifically, one study found that the vesting of equity compensation is associated with reductions in the growth rate of R&D and capital expenditure (Edmans, Fang, and Lewellen 2017). Similarly, firms with longer vesting schedules have higher market-to-book ratios, more long-term assets, and more R&D intensity (Gopalan et al. 2014). An interesting angle to this topic is added by strategic management research that examines the impact of CEO pay on the work effort of other employees and thus on firm performance. A study has shown that intrafirm pay disparity triggers feelings of inequity, and hence reduced work motivation, among lower-level employees, leading to negative long-term performance of the firm (Connelly et al. 2016).

The debate and studies on executive pay and its effects on income inequality and firm innovation and performance need to be based on reliable data. Compensation of executives includes salaries, social security contributions, post-employment benefits, non-monetary benefits, bonuses and deferred compensation, as well as stock-based payments. For the U.S. case, Hopkins and Lazonick (2016) have shown that executive compensation has been systematically mismeasured. When it comes to recording stock-based pay, the two bodies that determine how remuneration is being reported for the U.S. listed firms – the Financial Accounting Standards Board (FASB) and the Securities and Exchange Commission (SEC) – promote the use of “fair value” estimates of what stock-based pay might be worth in advance of being realized as distinct from the gains that executives actually realize from stock-based pay. “Fair value” measures of stock-based pay are based on estimates, where grant-date stock prices are used in the estimation model to determine the value of newly vested (but unexercised) stock options and vested stock awards. Almost all reporting on CEO pay in the

United States has used estimated fair value measures that fail to capture changes, often significant, that can take place in the company's stock price from the time the stock options and awards were granted to the time when the options are exercised and the awards vest. After all, the whole point of these stock-based forms of compensation is to incentivize senior executives to take actions to increase the company's stock price and to reward them for doing so. Since fair value underestimates CEO pay when the stock market is booming, actual realized gains should be captured instead since the gains are the taxable remuneration that the CEO actually takes home.

Actual realized gains measure stock-based pay when stock options are exercised and stock awards vest, using the market price of the stock. Hopkins and Lazonick (2016), analyzing the 500 highest-paid corporate executives of U.S. companies from 1992 to 2014, show that a) stock-based pay, in the forms of realized gains from stock options and stock awards, dominates both the size of and the changes over time in the total compensation of the highest-paid senior executives; and b) the fair-value estimates of stock-based pay tend to understate, often substantially, the realized gains from stock-based pay that these executives actually receive, especially (for reasons having to do with the systematic implementation of expensing of stock options on financial statements) since 2003. Since it is the actual realized gains from stock-based pay that are relevant as incentives for the executives, it is the realized-gains measure, and not estimated fair value, that is relevant for analyzing the implications of stock-based executive pay for corporate resource allocation.

Even though the European public is highly interested in the implications of executive pay for resource allocation and economic performance, the debate on CEO pay in Europe is far behind that of the United States because of lack of data. As Edmans et al. (2017) point out in their survey of the literature on executive compensation, there is a need for European research, especially on details of performance-based equity and cash grants and on pay components not reported in compensation tables. As one researcher argues, topics that "require data that aren't easily attainable using the standard machine-readable sources" stay an understudied topic, not only internationally but likewise in the United States (Murphy, in Gibbs 2017, pp. 8). There is also a lack of empirical research generating insights into the processes of value creation and value extraction in European companies in general and the role of executive pay in these processes in particular. We need to understand whether European-style pay incentivizes corporate resource allocation that creates an imbalance between value creation and value extraction. This paper seeks to address this gap. It adds to the empirical evidence on the extent to which European executives are incentivized and rewarded by stock-based pay, hence being susceptible to financialized decision making in corporate resource allocation. We develop a consistent measure of executive pay compensation and its components for a number of European countries, with a focus on equity-based compensation.

The transparency of CEO compensation continues to be problematic in Europe, in spite of several European Commission recommendations addressing its disclosure requirements in listed companies (European Commission 2004, 2009). EC's consultations with stakeholders showed that it is hard to disentangle what executives are actually earning and to judge

whether this remuneration is appropriate; and such important information is difficult to identify amongst all the details included in current directors' remuneration reports (European Commission 2014). Because of these problems of adequate information and its interpretation, assessing remuneration and comparing it between companies, especially across borders, is costly and time consuming (European Commission 2017). Our contribution is twofold. First, this is the first study to provide data on actual realized gains from stock-based pay of CEOs of European largest companies. And second, by using a consistent approach in gathering data for companies from 11 different countries, we sidestep the deficiencies of the existing databases. We thus provide data on the measures of CEO pay and their components that allow us to document heterogeneity in compensation between countries and also between industries.

We base our work on a sample of large, publicly-traded companies listed in the S&P Europe 350 Index from 11 major European countries: Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Spain, Sweden and the United Kingdom. Our sample includes 301 companies from these countries and the data are gathered for the year 2015. Through analyzing annual reports and/or remuneration reports of the companies, we have hand-collected data on various elements of compensation of the company's CEO. Special effort was put into gathering the data relevant to calculate the realized gains from stock-based pay, which is what the existing databases that include in-depth information on executive compensation, like BoardEx and Capital IQ, do not provide. We have also obtained data from Capital IQ, to be able to make a comparison between their CEO compensation calculations and our realized gains measure. In addition, we have hand-collected some qualitative data on CEO compensation, such as performance criteria determining the level of variable pay. Finally, we have also gathered data on employee wages and salaries to calculate the CEO-to-average employee pay ratio of each company and each country.

Collecting the data for only one year presents a limitation to our analysis since executives can time the exercise of options over periods spanning many years, and therefore compensation in a single year is not necessarily representative of the average annual remuneration of a CEO or its year-to-year variance. Our ultimate objective for this project is to gather data on CEO compensation for every company in the S&P Europe 350 for every year from the mid-1990s to the present, and update that database every year as new statistics become available. In this paper, we present the findings from the first stage in that larger project. Armed with the data-collection methodology that we have deployed in our executive-pay research, the results for the year 2015 provide factual information that can serve as a reference point as more years of data are collected.

We document that on average half of the total compensation of the European CEOs in our sample is stock-based, measured by actual realized gains. However, there are large differences between countries, with the largest proportion of stock-based compensation found in companies from the U.K., France and Ireland (60%, 58% and 57%, respectively) and the lowest in Spanish and Italian companies (15% and 14%). The data collected by Matt Hopkins and William Lazonick for the 500 CEOs of S&P 500 companies in 2015 reveal average total compensation of USD19.5 million, or EUR17.0 million, with the actual realized gains from

stock-based pay accounting for 76% of the total. Data that we present in this paper for 301 CEOs of European companies show average total compensation of EUR5.1 million, with 50% from stock-based compensation. Based on these data, European CEOs get paid far less than their U.S. counterparts. Although in some countries, the majority of total compensation is stock-based, the proportions are still well below those that prevail in the United States.

The results show that stock awards are the most prevalent form of share-based pay in Europe. A stock award gives the recipient employee the right to the shares in the award on the date that the award vests. A minimum restriction for an award to vest is that the employee must remain with the company for a certain period of time from the grant date. The award might carry other restrictions such as the need for the company to achieve a certain earnings-per-share (EPS) target in order for the award to vest. The achievement of a performance target may increase the number of shares in the award when it vests. When all restrictions have been met, and the award vests, the employee's realized gains are the market price of the company's stock on the vesting date times the number of shares in the award. Even if the market price on the vesting date is below the market price on the grant date, stock awards provide realized gains to the employee.

Stock options have a relatively unimportant share of total CEO compensation in all European countries in our sample except France and Denmark. An employee stock option gives the recipient the right to acquire a specified number of shares in the company for which he or she works by exercising the option to buy those shares at the stock-market price that prevailed on the date that the option was granted. Once an option vests, the employee can exercise the option, in whole or in part, at any time until the termination date specified in the option grant. The employee will only choose to exercise the grant if the market price is higher than the exercise price. The spread between the exercise price of the shares and their market price on the date that the option is exercised (in whole or in part) constitutes realized gains.

A comparison of the realized gains measure of CEO compensation with data largely based on fair value estimates shows that the latter underestimates the relevance of share-based pay, in the case of some countries dramatically. Our results also show that the CEO-to-average-employee pay ratio is the highest in Irish, French and the U.K. companies while the lowest ratio can be found in Italy and Belgium when their outlier CEO pay companies are excluded from calculations. These are also the same groups of countries with highest and lowest share-based pay in proportion to total pay.

The rest of the paper is structured as follows. In the following section, we discuss the measurement of executive compensation in European countries and present the main elements of the regulatory framework that governs the disclosure of executive pay. Section 2 presents the process of data collection and the sample. The empirical findings are presented in Section 3. Finally, we discuss the implications, along with the limitations of our study.

## 1 Measurement of executive compensation and institutional background

Research on executive pay in Europe usually relies on databases such as BoardEx or Capital IQ when measuring individual CEO compensation (see for example Burns, McTier, and Minnick 2015, Croci, Gonenc, and Ozkan 2012, De Cesari and Ozkan 2015, Fernandes et al. 2013, Conyon et al. 2013, Geiler and Renneboog 2016). Another method that is used are the data handpicked from companies' annual reports (for example Bouras and Gallali 2016, Hüttenbrink et al. 2014, Muslu 2010, Oxelheim and Randøy 2005, Schmid and Wurster 2016, Gupta, Chu, and Ge 2016).<sup>4</sup> In both of these cases, the data on executive compensation are being sourced from the summary compensation tables that the companies provide in their annual reports. These tables detail the different forms of compensation, including equity-based compensation that is usually part of Long-Term Incentive Plans (or LTIPs) for rewarding the executives. Stock-based compensation comes in the form of stock options and stock awards (with the latter including such variations as restricted stock and stock appreciation rights). There is a great variety, sometimes even within the same country, in how this stock-based pay is reported in the corporations' annual reports. Companies usually provide either the fair value measures of stock-based pay that was granted at the beginning of a vesting period, or face values of the granted stock options/awards calculated by using the grant-date stock prices. Fair value measures of stock-based pay are usually used in summary compensation tables, and thus also for the purposes of research and reporting on CEO compensation in Europe, similar to most of the studies done for U.S. companies.

The widespread use of fair value measures for stock options and stock awards is not surprising, given the regulatory requirements. In the case of the United States, it is the Financial Accounting Standards Board that, with the regulatory support of the Securities and Exchange Commission, promotes the reporting of fair value estimates of stock-based compensation expenses (Hopkins and Lazonick 2016). The European counterpart of such an institution is the International Accounting Standards Board that issues international financial reporting standards (IFRS) for public-interest entities. Since 2005, following the "IAS Regulation" (European Commission 2015b), consolidated financial statements of listed EU companies must be prepared in accordance with IFRS as adopted by EU. IAS Regulation was introduced to build an integrated capital market operating effectively, smoothly and efficiently and the use of a single set of international accounting standards aims to enhance comparability of consolidated financial statements (European Commission 2015a). The introduction of IFRS standards has significantly changed the accounting rules for stock-based payments, contributing to an increase in their disclosure (Ferrarini, Moloney, and Ungureanu

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<sup>4</sup> Another line of research on international executive pay relies on data from consultants' reports. One such example is Towers Perrin's Worldwide Remuneration Survey, where the data they offer are consulting company's estimates of a "competitive pay" for a representative CEO in a company with an hypothetical level of annual revenues, based on questionnaires sent to consultants in each country (Conyon et al. 2013, pp. 36). Another example consists of remuneration data provided by a German-based consulting firm Kienbaum, covering 10 European countries and Turkey. The extent to which these data accurately measure executive compensation is also under question. According to Kienbaum, the value of stock options for German firms recorded in this database has been estimated by the companies' auditors, but no details on the evaluation process are available and some evidence suggests that stock option-grants are not consistently evaluated over time or between firms (Fabbri and Marin 2016).



2009). The standards address the measurement principles and specific requirements for equity-settled transactions and cash-settled share-based payment transactions. Among other things, they prescribe that for transactions with employees, the company is required to measure the fair value of the equity instruments granted, measured at grant date (European Parliament 2005, pp. 6). When equity vests immediately, fair value should be based on market prices whereas if market prices are not available, a valuation technique should be used, consistent with “generally accepted valuation methodologies for pricing financial instruments” (European Parliament 2005, pp. 7).

However, the use of fair value measures in this context fails to capture what a CEO actually takes home as compensation. As explained by Hopkins and Lazonick (2016), the use of fair value estimates of stock-based pay in the United States did not evolve from the concern to measure the amount of realized gains the employees might receive. It rather reflected the increased use of stock options as part of compensation packages in the 1980s and 1990s by the companies trying to incentivize a broad base of employees, especially in high-tech companies, to come and work for them. Asset managers of pension and mutual funds became concerned about the impact of broad-based stock options on the dilution of the shareholdings of the stock in the funds’ portfolios as these options would be exercised. The financial accounting standards that led to up-front estimates of the cost of vested but unexercised options (i.e., the fair value of stock-based compensation) provided them with what they thought that they needed for their decisions to buy, hold, and sell stock. However, the valuation techniques used for this purpose, most commonly the Black-Scholes model, are problematic. Such pricing models were made for financial options that are easily tradable, are relatively short-term in duration and with a contract-defined exercise date, and not for employee or executive options and awards that have structurally different attributes. Of even more importance, these models assume a log-normal distribution of stock prices that will systematically fail to predict the substantial changes in actual stock prices that are the main drivers of changes in realized gains from stock-based pay (Hopkins and Lazonick 2016).

Fair value of stock-based pay fails to take into account the changes that can take place in the company’s stock price since the time the stock awards and options were granted. In addition to this, the final number of shares to be received by the executive will in most cases depend on whether certain performance criteria have been met. It is the exercising of stock options and the vesting of stock awards that provide the actual realized gains of executives from stock-based compensation schemes. And, as we argued in the introduction, it is the realized gains that we should capture when measuring executive compensation.

Adding to the complexity of measuring executive compensation in European companies are substantial international differences in the regulatory frameworks for stock-based pay and the reporting practices of companies. Companies’ annual reports are prepared in accordance with the legal and regulatory requirements applicable in the relevant country and the companies’ consolidated financial statements, prepared in accordance with IFRS as adopted by the EU. The national rules on the disclosure of executive compensation in the listed companies include those of a) securities commission or financial regulatory agencies, b) company law, and c) corporate governance codes in each country. National corporate governance codes are

an important part of the regulatory framework. For example, in France the so-called AFEF-MEDEF code even prescribes the templates for the tables that include data on remuneration disclosure (AFEF and MEDEF 2016). The use of national corporate governance codes is also promoted by the European Commission. An EC directive from 2006 requires that listed companies state in their annual report which corporate governance code they apply and if they depart from it, they need to explain what part of it they depart from and give the reasons for doing so, the so-called “comply-or-explain” approach (European Parliament 2006). However, impact assessments that have followed the introduction of this directive have concluded that the “comply-or-explain” approach has not been well applied in practice by companies and that there is a need for greater transparency of remuneration in EU countries (European Commission 2014). The demand for increased pay disclosure has intensified after perceived excesses in executive pay that come public. For example, until 2005, listed companies in Germany were required to report only on aggregate cash compensation paid to all management directors and no details were required on individual compensation or on stock options. Following the Ackermann-Mannesman scandal over CEO pay in 2000, however, the change in legislation requiring greater disclosure, that came in effect in 2005, was put in motion (Conyon et al. 2013, pp. 34).

The regulatory framework in each country not only determines the disclosure of executive pay but is also important for the structure of the compensation itself. Conyon et al. (2013) conclude that in the U.K., France and Italy, the rise and fall of share options in executive compensation can be connected to government interventions, usually reflecting tax policies. For example, tax advantages can be conferred upon stock options by having their gains taxed as capital gains instead of as ordinary income, thus increasing their use; or, various restrictions to the tax treatment can have an opposite effect. After the Italian government intervention in 2006 which added a requirement that options must not be exercisable for at least three years after the grant date and also that executives exercising options hold a portion of acquired shares for at least five years after the exercise, the use of equity-based compensation dropped immediately (Conyon et al. 2013, pp. 62).

## **2 Data**

### **2.1 Sample**

Our empirical analysis is based on a sample consisting of large, publicly-traded companies listed in the S&P Europe 350 Index that brings together the largest European firms in terms of market capitalization. Given the type of data we need to measure CEO compensation and especially realized gains from stock-based pay, our sample cannot go beyond the publicly accountable entities such as listed companies since only these companies are required to disclose all the relevant information. An additional argument for focusing on companies in the S&P Europe 350 Index is that it will allow us to compare our results with those for the US S&P 500 firms on which the research of Hopkins and Lazonick (2016) is based. Also, it will allow for further research where executive compensation will be discussed in relation to

stock buybacks and other payouts as well as other financials for the same group of firms, analyzed in Sakinç (2017).

The process of identifying the relevant data in the annual report or other reports dedicated to corporate governance of each company has taken a substantial investment of time, especially since additional efforts were made to ensure that the data are harmonized between countries. For this reason, we have decided to focus on the companies from eleven major European economies since these represent around 85% of the companies included in the S&P Europe 350 Index: Belgium (9 companies), Denmark<sup>5</sup> (9), Finland (9), France (48), Germany (38), Ireland (8), Italy (19), Netherlands (19), Spain (20), Sweden (24) and United Kingdom (98). Our sample is thus composed of 301 companies. Table 1 shows selected economic and financial indicators for the companies in our sample. An average company in the sample has a €22.5 billion market value and employs more than 65 thousand employees. France and Germany are represented in the Index with considerably larger companies in terms of sales, employment and market capitalization compared to the averages for the whole group of the 11 economies. Given the latest available annual reports at the time the data were gathered, the data in our sample refer to 2015 fiscal year.

Table 1: Average values of selected indicators for the companies in our sample, 2015

	Sales (€MM)	Net Income (€MM)	Total Assets* (€MM)	Total Debt* (€MM)	Market Cap.** (€MM)	Employment
France (48)	28 122	1 246	45 177	10 906	25 452	103 644
United Kingdom (98)	14 892	721	53 261	13 667	20 025	52 525
Netherlands (19)	31 949	1 127	95 074	22 202	63 444	28 420
Germany (38)	39 821	1 229	59 759	19 422	111 048	29 691
Ireland (8)	8 973	759	12 374	3 543	24 955	14 997
Sweden (24)	9 657	986	11 921	2 829	45 588	15 888
Spain (20)	18 149	1 134	36 015	13 828	58 321	25 936
Denmark (9)	5 552	786	6 059	1 298	18 946	24 864
Finland (9)	6 640	720	11 543	2 479	22 425	13 556
Belgium (9)	13 748	1 401	56 762	11 095	47 906	29 528
Italy (19)	24 988	307	51 373	16 760	51 635	16 112
<b>Total (301)</b>	<b>20 944</b>	<b>940</b>	<b>47 242</b>	<b>12 769</b>	<b>22 558</b>	<b>65 756</b>

Source: Capital IQ and company annual reports. \*Financial and real estate companies are excluded from total assets and total debt averages. \*\*As of January 2016.

## 2.2 Data and data collection

The purpose of our data collection was twofold. The main one is a measure of executive compensation and its components that is based on actual realized gains from stock-based pay. Our aim is to calculate the estimated values of variable pay that the European CEOs actually receive and the relevance of stock-based pay in total CEO compensation. Our second concern is to gather qualitative data that will allow us additional insights into remuneration policies of companies, for example performance measures that determine the level of variable pay and their focus on stock market performance of the firm. The only sources of such data are the

<sup>5</sup> Two Danish S&P 350 Europe companies – A.P. Møller-Mærsk and Vestas Wind Systems – are not included in the analysis due to lack of their CEO pay data.

annual reports of listed firms and other official documents, such as remuneration reports or corporate governance reports. Companies present the executive pay data and details of remuneration policy in a number of ways, creating problems of comparability. The disclosures range from a single page in the annual report to an entirely separate document with several dozens of pages, depending on the country-specific regulation and the willingness of the company to share the information with the general public.

We collected several types of data on CEO pay from these reports. First, we collected the quantitative information on the values of different forms of compensation: salary, bonus, other benefits, pensions, and share-based remuneration that includes stock options and stock awards. We gathered the data needed to calculate the realized gains from stock-based pay in the fiscal year: i) in the case of stock options, this included the number of shares in the options exercised, exercise price of the option, and the market price of the share on the day of exercise; ii) in the case of stock awards, it is the number of shares in the stock awards vested, and the stock price on the day of the vesting. There is no standardized table that would bring this information together, and the data can be scattered in various parts of the company's documents. In addition, the terminology that the companies use is quite diverse across countries. For these reasons, this part of the data gathering was the most demanding. It was also crucial for the harmonization of the data between countries.

After identifying every different component of variable pay the CEOs received, we have categorized them according to whether they were cash or stock-based. We have done this for both types of remuneration, the one granted in 2015 to be paid later on in the years to follow, depending on certain performance criteria; and the one realized in 2015, either vested stock awards, exercised stock options, or allotted multi-year cash-based bonuses that are converted into company shares when they are received. In doing so, we have identified the firms that offer stock-based remuneration to their executives as well as the ones that do not offer such schemes. From the annual reports, we have also identified the data on total employee costs and the number of employees to be able to calculate the CEO-to-average worker pay ratio. In parallel, we have obtained the data on CEO compensation and its elements for year 2015 from the Capital IQ database, to allow us to compare our realized gains measure of CEO pay with their figures which are primarily based on fair-value and face-value calculations of stock-based pay.

Second, we collected qualitative information on the method the companies use to calculate the value of options and awards at the grant date. As long as the companies have stock-based schemes of executive pay and they specify the methods for fair-value calculations, we collected such information in order to document whether European companies follow the practices that US companies use to calculate the expected value of stock options and awards. Third, we collected information on the performance measures that the companies use to determine the eligibility for variable pay, either single-year cash bonuses or multi-year stock-based pay, or the level of such pay. These variable compensation schemes are designed in such a way that they are tied to economic and financial performance metrics of the company. We were interested in whether certain financial performance metrics like earnings per share (EPS) or total shareholders return (TSR) are among the most used measures to tie pay to

performance. Fourth, we have collected information on the diversity of the benchmark groups the companies use when deciding on the level of compensation to be offered to their executives. As long as the companies provide such information, we have noted whether they define peers from different industries or among the US and other non-European companies as benchmark groups.

### 3 Empirical findings

#### 3.1 Realized-gains measure of CEO compensation

In this section, we review the main empirical facts relating to the actual realized gains from stock-based pay of European CEOs in our sample and the value and structure of total CEO compensation. Table 2 shows the average value (in thousand euros) of total compensation for 299 CEOs in our sample,<sup>6</sup> on average and by country, as well as each of its elements (fixed salary, annual bonus, other benefits, multi-year cash bonus, share awards and share options). For comparison purposes, pensions are excluded from the total amounts. The values for stock-based compensation refer to actual realized gains for the CEO, i.e., the value of vested stock awards and exercised stock options in the 2015 fiscal year. To illustrate the prevalence of specific forms of CEO compensation, Table 3 shows the number of companies in the sample where each of the forms of pay could be found in 2015, together with the share of such companies amongst all companies, by country.

Table 2: Average total CEO compensation and its components, for 299 executives of S&P Europe 350 companies from 11 European countries, 2015

Form of compensation:	Fixed Salary		Annual Bonus		All Other Benefits		Non-share-based, Multi-year Bonus		Share award-based pay		Share option-based pay		Total compensation	
	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean	%
France (48)	955	16	1 213	20	276	5	75	1	1 166	20	2 264	38	5 950	100
United Kingdom (98)	1 147	19	1 026	17	191	3	0	0	3 440	58	143	2	5 947	100
Netherlands (19)	989	19	1 034	19	390	7	25	0	2 812	53	89	2	5 339	100
Germany (38)	1 348	28	1 492	31	136	3	470	10	1 037	21	405	8	4 888	100
Ireland (8)	1 046	24	754	17	43	1	0	0	2 331	54	153	4	4 327	100
Sweden (24)	1 309	37	519	15	246	7	9	0	1 480	42	0	0	3 561	100
Spain (20)	1 250	38	1 231	38	260	8	44	1	320	10	174	5	3 279	100
Denmark (9)	1 153	32	659	19	784	22	0	0	208	6	750	21	3 553	100
Finland (9)	856	30	531	19	33	1	0	0	1 023	36	407	14	2 850	100
Belgium (8)	1 097	48	680	30	119	5	0	0	116	5	293	13	2 305	100
Italy (18)	941	53	389	22	163	9	34	2	204	11	43	2	1 773	100
<b>All 11 Countries (299)</b>	<b>1 190</b>	<b>24</b>	<b>1 034</b>	<b>21</b>	<b>236</b>	<b>5</b>	<b>81</b>	<b>2</b>	<b>1 894</b>	<b>38</b>	<b>531</b>	<b>11</b>	<b>4 965</b>	<b>100</b>

Source: Company annual and remuneration reports.

Note: Compensation of the CEOs of Fiat and Anheuser-Busch Inbev are removed from the calculations. Numbers in parentheses indicate the number of companies in each country.

<sup>6</sup> The figures of the extraordinarily highly paid CEO of Fiat and Anheuser-Busch Inbev are removed from some of the calculations represented in the tables and charts of this section.

Table 3: The number and percentage share of companies with each form of CEO compensation, for 299 executives of S&P Europe 350 companies from 11 European countries, 2015

Form of compensation:	Fixed Salary		Annual Bonus		All Other Benefits		Non-share-based, Multi-year Bonus		Share award-based pay		Share option-based pay	
	#	%	#	%	#	%	#	%	#	%	#	%
France (48)	47	98	44	92	44	92	2	4	16	33	24	50
United Kingdom (98)	98	100	88	90	95	97	0	0	78	80	15	15
Netherlands (19)	18	95	17	89	17	89	1	5	14	74	1	5
Germany (38)	38	100	37	97	38	100	18	47	22	58	3	8
Ireland (8)	8	100	6	75	7	88	0	0	4	50	3	38
Sweden (24)	24	100	18	75	20	83	1	4	9	38	0	0
Spain (20)	20	100	19	95	18	90	1	5	6	30	1	5
Denmark (9)	9	100	8	89	4	44	0	0	3	33	3	33
Finland (9)	9	100	9	100	7	78	0	0	7	78	2	22
Belgium (8)	8	100	8	100	7	88	0	0	2	25	1	13
Italy (18)	18	100	16	89	18	100	2	11	6	33	1	6
<b>All 11 Countries (299)</b>	<b>297</b>	<b>99</b>	<b>270</b>	<b>90</b>	<b>275</b>	<b>92</b>	<b>25</b>	<b>8</b>	<b>167</b>	<b>56</b>	<b>54</b>	<b>18</b>

Source: Company annual and remuneration reports.

Note: Compensation of the CEO of Fiat and Anheuser-Busch Inbev are removed from the calculations. Numbers in parentheses indicate the number of companies in each country.

The tables show that there is a considerable heterogeneity among countries. For example, the average fixed salary paid in France constitutes only 16% of the total CEO pay, while the average total pay of its CEOs is the highest. In the case of Italian firms, fixed salary presents more than half (53%) of total CEO pay and their share of stock-based pay in total pay is the lowest amongst the eleven countries.

Some forms of remuneration seem to be specific to certain countries. In the case of Germany, an important form of executive compensation used by almost half of the companies is cash-based bonuses that are paid when multi-year performance measures are met. This form of remuneration is rarely seen in other countries and is virtually non-existent in the U.K. where the annual bonuses are converted to deferred share awards and paid after they vest. In the other countries in the sample, cash-based, multi-year bonuses are used by a very limited number of companies, resulting in very low average figures for the total.

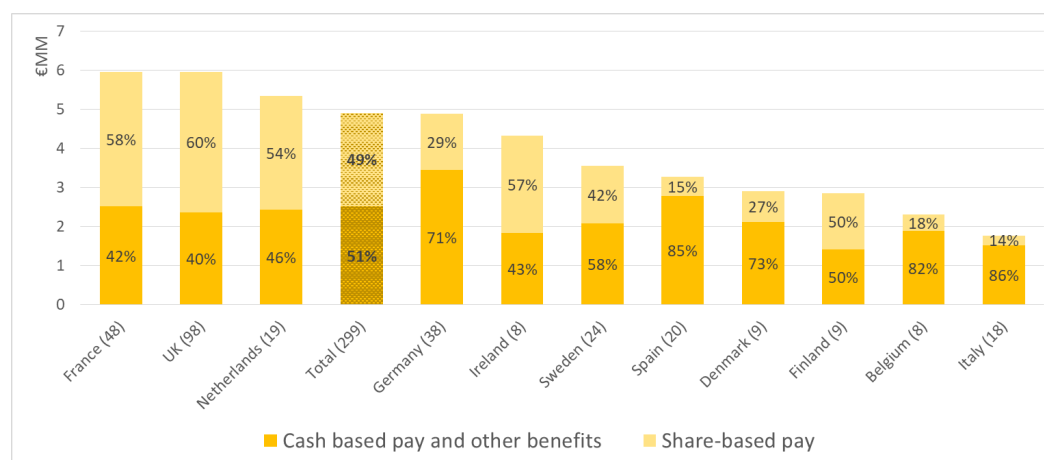
Similarly, stock options that were offered to a larger number of corporate executives and employees a decade ago (Towers Perrin 2005) currently have a relatively unimportant share in total CEO compensation in all countries but France.<sup>7</sup> French executives continue to exercise a great number of stock options, and the realized gains they receive constitute the largest component of their remuneration, accounting for 38% of the total in 2015. In other

<sup>7</sup> Note that our 2015 data on the number of companies with share-based remuneration will not necessarily reflect the number of companies that granted stock-awards and stock-options to their CEOs in 2015 because our analysis of CEO compensation is based on realized gains from the stock-based components. As an example, in 2015, 30 out of 38 German CEOs were awarded a certain form of share-based compensation but only 24 CEOs actually realized any share-based remuneration in the same year. If performance criteria are not met or if the company started share-based programs only in the last few years, a CEO would not receive any share-based compensation in 2015. The numbers in Table 3 are for the ones who actually realized gains on these forms of compensation in the 2015 fiscal year.

countries except Denmark, stock options are not an important part of CEO compensation. They are virtually non-existent among Swedish companies and represent an unimportant share of total compensation among more than half of the countries in our sample, on average.<sup>8</sup> The use of stock awards is more widespread. They represent the largest share of total compensation for the CEOs of the U.K. (57%), Irish (54%) and Dutch (53%) firms.

Overall, Figure 1 summarizes the ratios of cash and share-based compensation in total CEO pay by country. Based on the whole sample of listed companies from the 11 European countries, we find that the share of share-based compensation (49%) almost equals that of cash-based compensation (51%). There are, however, large differences among the countries. The ratio of share-based compensation is the highest among French, British and Irish firms while Spanish, Belgian (excluding AB Inbev) and Italian firms (excluding Fiat) offer a very limited amount of share-based compensation. Note that in the case of Sweden, the disclosure of CEOs' share-based pay in the companies' documents is less detailed than in other countries in our sample so we must treat their results with caution. Swedish companies publish the total number of vested awards for the executives as a group, but some of them do not provide information on realized gains from vested stock awards of the CEOs. The same pattern of undisclosed share-based pay data is also valid for Swiss companies, which are not presented in our sample.

Figure 1: Average share of cash and share-based compensation in total CEO compensation, for 299 executives of S&P Europe 350 companies from 11 European countries, 2015



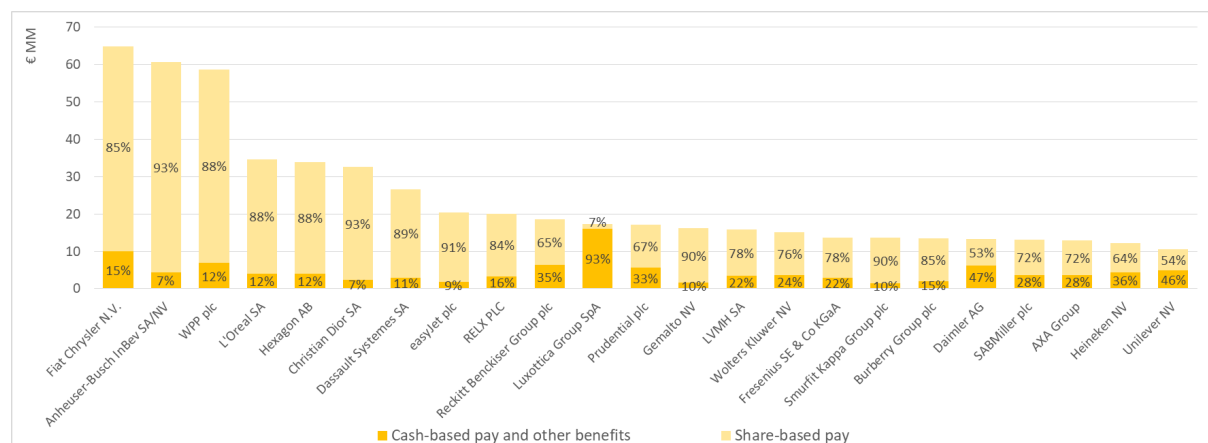
Source: Company annual and remuneration reports.

<sup>8</sup> More than half of the U.K. companies' 15 CEOs who have realized gains from stock options have exercised only SAYE (Save As You Earn) stock options which are granted in very small numbers compared to normal executive stock option grants. Different than executive stock options granted and exercised according to certain performance criteria, SAYE is a savings-related share-based pay scheme where an employee can be granted share options for a fixed price set at a discount to the market value at the time of grant. The scheme is a contract through which the employee agrees to save a fixed amount to fund the exercise price of the options. This has resulted in relatively small realized gains (not more than £10,000 per CEO, on average). As a result, stock options present not more than 2% of total compensation for CEOs of the U.K. companies.

Note: Compensation of the CEOs of Fiat and Anheuser-Busch Inbev are removed from the calculations.

Figure 2 shows the highest-paid European executives (with total compensation above €10M excluding pension contributions) in our sample. The top-paid CEO is Sergio Marchionne of Fiat Chrysler who received close to €65 million in 2015, with 85% of his pay in the form of realized gains from share awards. He is followed by Carlos Brito of Belgian brewing company Anheuser-Busch Inbev and Martin Sorrell of British advertising company WPP. The average ratio of share-based pay of these 23 executives is much higher than that of all the companies in our sample. Excluding Fiat Chrysler and Anheuser-Busch Inbev CEOs, the share-based portion of the 21 CEOs with more than €10 million total compensation is 79% compared to 49% of the sample.

Figure 2: Highest-paid CEOs of European corporations with more than €10 million total compensation, from 301 executives of S&P Europe 350 companies from 11 European countries, 2015



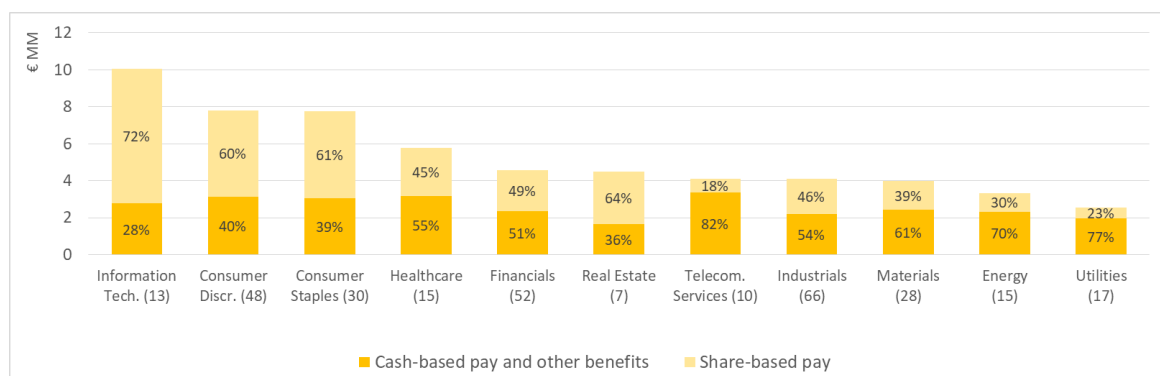
Source: Company annual and remuneration reports.

Note: Numbers on bars indicate the percentage share of the form of pay.

Figure 3 shows the sectoral comparison of CEO pay (note that the sample now includes the CEOs of Fiat and AB Inbev). The highest average CEO pay in Europe can be found in the IT sector and it is the same sector that has the highest average share of stock-based pay. Consumer discretionary is the second highest-paid sector among all. This sector is composed of a diversified group of companies from consumer durables, services, car manufacturers, media and retailing. More than one third of the highest-paid CEOs from the previous figure are in this sector. The stock-based portion of their pay (60%) is also considerably higher than the average. The average CEO pay of the sectors like telecommunications, energy or utilities is considerably lower and their stock-based portion is also lower than the average.



Figure 3: Average total CEO compensation and the share of stock-based pay by GICS sector, for 301 executives of S&P Europe 350 companies from 11 European countries, 2015



Source: Company annual and remuneration reports. Note: Numbers on bars indicate the percentage share of the form of pay; numbers in parentheses indicate the number of companies in each sector.

### 3.2 Comparison with Capital IQ data on executive compensation

The data on CEO compensation is often sourced from the existing databases including such information, such as BoardEx and Capital IQ, especially for the purposes of scientific research. We have compared the data that we have hand-collected with the data for the same European companies from S&P Capital IQ, a database offered by S&P Global Market Intelligence. The comparison, shown in Table 4, reveals substantial differences between the measures of share-based compensation and total compensation, especially for some of the countries. The reason for these differences is twofold. The main reason is connected to the fact that our data capture actual realized gains from stock-based pay whereas Capital IQ data usually record fair values of share-based pay, as we explained in greater detail in Section 2. However, through the process of data collection from the companies' documents and comparing it to the Capital IQ data, we have uncovered a series of inconsistencies in the latter. They resonate with the same problem that Hüttenbrink et al. (2014) pointed out about the BoardEx data on variable compensation components of Continental European companies: namely that for the stock-based components there is no clear distinction in these databases between fair or face values of granted stock based remuneration and realized gain values at the end of vesting period. Companies from different countries publish different calculations of the share-based pay in their summary compensation tables, which seem to be used for data collection by Capital IQ. Most often a more detailed examination of the text surrounding the summary tables is needed, as well as of the terminology used in each of the countries, to reveal the exact nature of the data, something that probably goes beyond the usual efforts to gather the data for a large number of companies that are included in such a database.

Table 4: Comparison of the average total CEO compensation and share-based compensation between our data and Capital IQ data, for 301 executives of S&P Europe 350 companies from 11 European countries, 2015

	Our calculation (including pensions)			Capital IQ calculation (including pensions)			Difference with the Capital IQ data			
	Share-based	Total	SBP / TC	Share-based	Total	SBP / TC	SBP	TC	SBP (%)	TC (%)
	Pay	Compensation	(%)	Pay	Compensation	(%)	Difference	Difference	Difference	Difference
France (48)	164 661 811	285 997 243	58	80 604 951	195 860 009	41	84 056 860	90 137 234	104	46
United Kingdom (98)	351 130 914	621 143 976	57	310 609 907	628 448 945	49	40 521 007	-7 304 970	13	-1
Netherlands (19)	55 119 357	108 539 088	51	29 356 732	84 760 814	35	25 762 625	23 778 275	88	28
Germany (38)	54 780 390	208 956 528	26	61 694 085	193 500 610	32	-6 913 695	15 455 918	-11	8
Ireland (8)	19 874 252	37 711 776	53	21 143 591	42 601 241	50	-1 269 339	-4 889 464	-6	-11
Sweden (24)	35 512 677	97 084 677	37	3 379 910	45 831 650	7	32 132 767	51 253 027	951	112
Spain (20)	9 878 613	72 840 501	14	12 748 300	56 158 748	23	-2 869 687	16 681 753	-23	30
Denmark (9)	8 620 450	33 927 672	25	6 140 697	33 364 963	18	2 479 753	562 709	40	2
Finland (9)	12 870 648	30 357 340	42	13 218 666	27 047 426	49	-348 018	3 309 914	-3	12
Belgium (9)	59 424 062	81 779 829	73	2 687 802	25 009 872	11	56 736 260	56 769 957	2 111	227
Italy (19)	64 185 084	132 766 444	48	15 513 177	77 811 536	20	48 671 907	54 954 907	314	71
<b>Total (301)</b>	<b>836 058 257</b>	<b>1 711 105 072</b>	<b>49</b>	<b>557 097 818</b>	<b>1 410 395 814</b>	<b>39</b>	<b>278 960 439</b>	<b>300 709 258</b>	<b>50</b>	<b>21</b>

Source: Company annual and remuneration reports; Capital IQ database.

Note: Numbers in parentheses indicate the number of companies in each country.

For example, in their summary tables the U.K. companies generally provide the realized gains from stock awards, so in this case Capital IQ has captured realized gains instead of fair value and their measurement should not differ from our data. However, in many of the cases the U.K. companies publish the hypothetical value of the awards that are going to vest early in the following year but their performance period has already finished with the end of the fiscal year. Companies report the value of these soon-to-be-vested shares, using the current stock prices, which do not reflect the value of the realized gains. In our work, we instead calculate the value of the awards that are already vested in 2015 by multiplying the number of shares in these awards by the stock price at the day of vesting, therefore measuring the actual realized gain. Another complication that results in our total compensation measures being lower than those in Capital IQ is deferred bonuses of U.K. companies. Capital IQ wrongly collects the total value of bonuses awarded as ‘bonus’ even though a certain proportion of them are not paid during the fiscal year but rather are converted into shares and deferred to be paid in the future. In our calculations, we extract these portions from the annual bonuses as they are neither annual nor cash-based. As a result, our non-share based portion of the compensation of the British CEOs, and thus also their total compensation, is lower compared to the Capital IQ data. The same is true for Irish companies, which adopt similar compensation schemes to British firms.

Overall, a comparison of our realized-gains measure of share-based pay with that of Capital IQ shows that in many countries, Capital IQ underestimates this component of CEO compensation, substantially in the cases of France and Italy and even more so for Sweden and Belgium.

### **3.3 Some qualitative data on companies' remuneration policy**

In addition to quantitative data, we have collected some qualitative data on CEO pay. First, in the light of the debate on the link between pay and performance in the European companies, we have looked at the performance measures that are used to determine whether the CEO is eligible for share-based compensation and to what extent. We are interested in whether certain financial performance metrics like earnings per share (EPS) or total shareholders return (TSR) are among the major measures to which the companies tie the extent of the variable pay. When performance measures are attached to stock-market performance or any criteria based on company shares, the CEOs are given incentives to boost the stock prices of their companies, which, as the research of Lazonick (2016) for the United States shows, might lead to excessive shareholder distributions instead of investments in productive capabilities and increased rewards for employees in general.

Table 5 provides the number of companies utilizing measures focusing on the stock value of the company for the bonus (upper part of the table) and the share-based pay to their CEOs (lower part of the table). Companies use these measures either as a single or the main form of measure to decide on the level of remuneration to be paid at the end of a specific performance period, which lasts from one to three years in the case of bonuses and from two to four years in the case of stock options and awards. Often, they also use other quantitative and qualitative measures in addition to those represented in the table. In such cases, every single measure has a certain weight in a decision on the proportion of awards/options to be vested at the end of the performance period. The achievement of a target indexed to such performance measures determines the number of options or awards to be vested. In many cases, the CEOs receive a certain number of shares between the target amount and a maximum which is either indexed to several times the value of the base salary, several times the number of target shares granted, or in some cases to a certain proportion of the total compensation.

Table 5: Use of stock-based performance measures that determine the bonuses and stock-based pay, for 301 executives of S&P Europe 350 companies from 11 European countries, 2015

	# of firms used <b>EPS</b> as a performance measure for <b>bonuses</b>	# of firms used <b>TSR</b> or share price performance as a performance measure for <b>bonuses</b>	# of firms used <u>at least one</u> of <b>EPS, TSR</b> or <b>share price performance</b> as a performance measure for <b>bonuses</b>	% of firms used <u>at least one</u> of <b>EPS, TSR</b> or <b>share price performance</b> as a performance measure for <b>bonuses</b>
France (48)	15	6	20	41,7
United Kingdom (98)	25	15	33	33,7
Netherlands (19)	1	0	1	5,3
Germany (38)	4	3	7	18,4
Ireland (8)	4	0	4	50,0
Sweden (24)	2	1	3	12,5
Spain (20)	1	3	4	20,0
Denmark (9)	0	1	1	11,1
Finland (9)	0	0	0	0,0
Belgium (9)	0	0	0	0,0
Italy (19)	1	0	1	5,3
<b>Total (301)</b>	<b>53</b>	<b>29</b>	<b>74</b>	<b>24,6</b>
	# of firms used <b>EPS</b> as a performance measure for <b>share-based pay</b>	# of firms used <b>TSR</b> or <b>share price performance</b> as a performance measure for <b>share-based pay</b>	# of firms used <u>at least one</u> of <b>EPS, TSR</b> or <b>share price performance</b> as a performance measure for <b>share-based pay</b>	% of firms used <u>at least one</u> of <b>EPS, TSR</b> or <b>share price performance</b> as a performance measure for <b>share-based pay</b>
France (48)	5	27	27	56,3
United Kingdom (98)	49	75	89	90,8
Netherlands (19)	6	10	9	47,4
Germany (38)	7	22	25	65,8
Ireland (8)	2	6	6	75,0
Sweden (24)	6	7	12	50,0
Spain (20)	3	12	12	60,0
Denmark (9)	2	4	4	44,4
Finland (9)	4	5	6	66,7
Belgium (9)	0	2	2	22,2
Italy (19)	1	11	12	63,2
<b>Total (301)</b>	<b>85</b>	<b>181</b>	<b>204</b>	<b>67,8</b>

Source: Company annual and remuneration reports.

Note: Numbers in parentheses indicate the number of companies in each country.

The findings show that a considerable number of companies use earnings per share and total shareholder return as a performance measure to decide on the level of remuneration at the end of the period. These two measures are the principal financial performance metrics currently used by public companies all over the world, and they became the major metrics used to evaluate the overall performance of a company in the era of financialization. Of the companies in our sample, 24% use a stock-related performance measure for the CEO bonus. The use is the highest among French, British and Irish firms with more than one third to half of them using at least one of these performance measures.

In the case of share-based pay, the number of companies using these measures is much higher compared to bonuses, and 68% of the companies use at least one of them to decide the level of share-based pay of their CEOs. The ratio is the highest among British firms. Less than 10% of them do not use stock-related measures to evaluate the level of share-based CEO pay. Other measures frequently used by companies are net income or return on capital employed,

cash flow growth, market share increase, customer satisfaction index, and a broad range of qualitative individual objectives for the CEOs.

As a second type of qualitative data, we have collected data on the benchmark groups the European companies use when deciding on the level of share-based compensation to be offered to their executives. We are interested in whether companies choose the benchmark among a more homogeneous group of peers from the same industry and from Europe or among a broader group of firms to benchmark the pay of their executives. Considering the very high levels of executive compensation offered by large U.S. companies, benchmarking of European companies with their U.S. peers can be especially problematic. Table 6 displays the use of peers to determine the level of share-based remuneration of the CEO by European companies. We only collected the data for firms which selected peers among firms either from other industries or from outside of Europe. Of the firms in our sample, 52% mention at least one peer from other industries or among non-European firms. Twenty-eight and 12% of the firms choose peers among the U.S. and other non-European firms, respectively. The remaining companies choose their peers among European firms or they do not provide any information.

Table 6: Benchmark groups used when deciding on the level of share-based compensation to be offered to CEOs, for 301 executives of S&P Europe 350 companies from 11 European countries, 2015

	# of companies with peers from other industries	# of companies with peers among US firms	# of companies with peers among non-US, non-European firms	# of companies with at least one non-European or out-of-sector peer	% of companies with at least one non-European or out-of-sector peer
France (48)	17	14	4	25	52,1
United Kingdom (98)	59	34	18	76	77,6
Netherlands (19)	8	10	3	15	78,9
Germany (38)	14	10	6	20	52,6
Ireland (8)	2	3	2	5	62,5
Sweden (24)	0	1	1	1	4,2
Spain (20)	1	3	0	3	15,0
Denmark (9)	0	1	1	1	11,1
Finland (9)	0	1	1	1	11,1
Belgium (9)	3	3	0	5	55,6
Italy (19)	2	5	1	5	26,3
<b>Total (301)</b>	<b>106</b>	<b>85</b>	<b>37</b>	<b>157</b>	<b>52,2</b>

Source: Company annual and remuneration reports.

Note: Numbers in parentheses indicate the number of companies in each country.

Third, we have collected data on the methods the companies use for fair-value calculations for their stock options and awards at grant date (Table 7). We documented three methods used by companies to estimate fair value, if such information was available. Close to 30% of the firms report at least one method to calculate the fair value of the stock options they grant

and the most popular method is the Black-Scholes model. For awards, 42% of the companies report a method and the most popular one is the Monte Carlo model<sup>9</sup>.

Table 7: Methods used for fair value calculations of stock-based CEO compensation, 301 executives of S&P Europe 350 companies from 11 European countries, 2015

	Black- Scholes or Black-Scholes-Merton		Monte Carlo		Cox-Ross-Rubinstein or Binomial model		More than one method used		No method mentioned	
	options	awards	options	awards	options	awards	options	awards	options	awards
France (48)	18	3	4	7	7	4	3	2	16	32
United Kingdom (98)	11	18	1	18	3	3	6	32	77	27
Netherlands (19)	2	0	0	8	0	0	3	0	14	11
Germany (38)	1	1	2	9	2	1	0	2	33	25
Ireland (8)	0	0	0	3	1	0	1	2	6	3
Sweden (24)	1	5	0	0	0	0	0	0	23	19
Spain (20)	1	0	0	0	0	0	1	0	17	0
Denmark (9)	6	1	0	1	0	0	0	0	3	8
Finland (9)	4	1	0	0	0	0	0	0	23	8
Belgium (9)	1	1	1	0	1	0	2	1	5	7
Italy (19)	0	0	2	3	0	2	0	0	17	14
<b>Total (301)</b>	<b>45</b>	<b>30</b>	<b>10</b>	<b>49</b>	<b>14</b>	<b>10</b>	<b>16</b>	<b>39</b>	<b>234</b>	<b>154</b>

Source: Company annual and remuneration reports.

Note: Numbers in parentheses indicate the number of companies in each country.

Different than the US, where SEC requires companies to use fair-value measure of CEO pay, European companies are not obliged to publish any details on fair-value estimates of the share-based remuneration offered to employees and executives. In their summary tables or tables providing the number of options and awards granted, the companies use a wide variety of methods even though they continue to calculate fair values for accounting purposes. For example, many U.K. firms provide the face value of the awards to be vested based on the most recent stock price averages in their summary tables. Moreover, companies either use the maximum or the target number of share options and awards to be vested, although the number of shares to be received at the end of the vesting period is proportioned to the attainment of the performance criteria.

### 3.4 CEO-to-average employee pay ratio

The size of the CEO compensation will also depend on the size of the company itself. In order to take this into account, we have collected from the company's annual reports the data needed to calculate the average earnings of an employee in the company. Comparing these average employee earnings with the CEO compensation allows us to measure the CEO-to-average employee pay ratio, a measure often used to assess income inequality from a corporate perspective. Table 8 provides the CEO-to-average employee pay ratio for each country in our sample.

<sup>9</sup> Black-Scholes, sometimes called Black-Scholes-Merton, is a mathematical model used to estimate the price of derivative investment instruments including options with the aim to hedge the derivative to eliminate risk. Similarly, Monte Carlo models are also used to calculate the value of an option with multiple sources of risk and uncertainty

Table 8: CEO-to-average employee pay ratio by country, for 295 S&P Europe 350 companies from 11 European countries, 2015

	Average total workforce expense per employee (€)	CEO-to-average employee pay ratio
France (48)	60 425	113
United Kingdom (98)	79 646	105
Netherlands (18)	69 359	99
Germany (37)	73 496	84
Ireland (8)	50 328	211
Sweden (24)	61 860	70
Spain (19)	59 271	90
Denmark (9)	61 955	78
Finland (9)	55 540	60
Belgium (7)	63 421	51
Italy (18)	69 647	54
<b>Total (295)</b>	<b>69 295</b>	<b>96</b>

Source: Company annual and remuneration reports.

Note: Fiat Chrysler and Anheuser-Busch Inbev are excluded from the calculations due to their extraordinarily high CEO pay. Groupe Bruxelles Lambert, Porsche, Ahold and AENA are excluded due to lack of their workforce expense data. CEO pay includes pension benefits and employee pay includes social security contributions and other benefits. Numbers in parentheses indicate the number of companies in each country.

Offering highest CEO pays with the highest stock-based pay ratios on average, Irish, French and British companies also have the highest CEO-to-average employee pay among all. In interpreting these numbers, we need to keep in mind that the average employee pay differences between countries may also be dependent on the degree of internationalization of the companies in the sample as a large portion of the workforce of the companies in the sample is employed outside of their home countries.

## Conclusion

This study shows the extent to which stock-based pay of CEOs in European listed firms is usually underestimated and documents the heterogeneity among countries. Measured by actual realized gains, half of the total compensation of the European CEOs in our sample is stock-based, on average. However, large differences can be observed between countries. The largest proportion of stock-based compensation can be found in companies from the U.K., France and Ireland (60%, 58% and 57%, respectively) which does not yet reach the 76% of stock-based pay documented for a similar sample of US firms (Hopkins and Lazonick, unpublished data; see also Hopkins and Lazonick 2016). The proportions of stock-based pay

are much lower for companies in Spain (15%), Italy – excluding Fiat (14% of stock-based pay), and Belgium – excluding AB Inbev (18%). A comparison of realized gains measure of CEO compensation with the data from Capital IQ database, based on fair value estimates, shows that the latter underestimates the size and relevance of share-based pay, in the case of some countries dramatically.

There are considerable differences also in the relevance of certain forms of compensation. For example, fixed salary is relatively irrelevant for CEOs in France and Netherlands, and almost half of German firms use cash-based bonuses tied to multi-year performance measures. Stock options have a relatively unimportant share of total CEO compensation in all European countries but France, whereas the relevance of stock awards is more widespread. The average ratio of stock-based pay of the highest paid European executives (those with total compensation above 10 mio EUR) is much higher than the average for our sample. The highest average CEO pay in Europe can be found in the IT sector and it is the same sector that has the highest average share of stock-based pay. The CEO-to-average-employee pay ratio is the highest in Ireland, France and the U.K. (with the ratio of 211, 113 and 105, respectively) while the lowest ratio can be found in Italy (54) and Belgium (51), after excluding the outliers. We have looked at performance measures to which the companies tie the extent of variable pay, to examine the link between the executive pay and the focus on stock market value of the company. Especially in the case of stock-based pay, reliance on measures connected with stock-market performance is high, with more than two-thirds of European companies in our sample using at least one such measure. We have also examined the extent to which European companies use U.S. firms as a benchmark when determining the level of stock-based pay for their CEOs. Twenty-eight percent of them use U.S. firms for this purpose; a much smaller number of firms look outside of European or U.S. firms for a benchmark.

Our research findings add to the existing debate on the conflict between financialization and the allocation of corporate resources to investments in productive capabilities. Stock-based executive pay plays an important role in this conflict. Some studies suggest that it creates incentives for the executives to pursue the allocation of resources leading to value extraction rather than value creation (Laurin-Lamothe and L'Italien 2015, Lazonick 2016b). To be able to do further research on this topic, we need reliable data measuring the extent to which the executives are incentivized and rewarded by stock-based pay. Empirical evidence that we present indicates a lower degree of excessive CEO pay in Europe as compared with the United States, although with variation across European nations. Nevertheless total payout ratios in terms of corporate resources allocated to dividends and buybacks in Europe are comparable to those in the United States (Sakinç 2017).

Our study is subject to limitations, which provide directions for future research. First, incentives from stock-based pay will also depend on the tax treatment of exercising stock options and stock awards, the specifics of which go beyond the limits of this paper. Moreover, tax regimes are only a part of the regulatory framework that applies to the determination of executive compensation in these countries. To better understand cross-



country differences in CEO compensation, we should address the differences in a) social norms, which may be reflected in corporate governance codes, b) financial regulations, and c) company law. Another interesting issue, connected to regulation, is that there is little evidence that greater disclosure requirements concerning CEO compensation actually result in lower pay (Gibbs 2017). We consider our study to be an empirical foundation for future research on the interaction between CEO pay and national institutions.

Second, in order to better understand the possible implications of equity-based compensation for short-termism and manipulation of the CEOs, future research should focus on the relation between executive pay and stock buybacks in Europe. An important issue for study is cross-national differences in rules concerning the timing of CEO sale of shares that they acquire when options are exercised and awards vest; as a general rule, CEOs at U.S. firms can cash by selling shares when options are exercised or awards vest. Data on actual realized gains from stock-based pay of CEOs should be matched by the data on stock buybacks in the companies that the CEOs manage. Such research would focus on the relation between value creation and value extraction processes in European companies.

Third, because of the substantial investment of time that is needed to collect the data, our research focuses on one year only. This gives us a snapshot of the situation in European companies and has also given us the opportunity for a comparison with the U.S. data collected and analyzed by Hopkins and Lazonick. The methodology that was used should be applied to previous years and updated over time to determine CEO pay trends in Europe. In the case of United States, the difference between the actual realized gains and estimated fair value of stock-based compensation was greatest in the years when the stock market was booming (Hopkins and Lazonick 2016). It would be interesting to see whether such was also the case in Europe.

And last, in our sample we only include countries that had CEO-level disclosure mandated since 2006. In many European Union Member States, shareholders do not have sufficient information on executives' remuneration since “the information disclosed by companies is not comprehensive, clear nor comparable” (European Commission 2014, pp. 28). Research would thus benefit from including a wider range of countries in the analysis.

Our understanding of CEO compensation and its effects would also benefit from research focusing on particular industries and companies. Existing theories of executive compensation can try to model the decisions that the CEOs make. But often these decisions are hard to translate into unidimensional single actions often used in modeling (Gibbs 2017, pp. 11), not to mention that even the innocuous features of modeling setup in modern theories of executive compensation can lead to significant differences in the model's implications (Edmans and Gabaix 2016). It would be instructive to learn from in-depth case studies, especially of particularly interesting organizational settings or from those that would follow large-scale organizational change over time (Gibbs 2017).

Finally, further research should focus on the relation between executive pay and company performance, with performance measured in terms of innovative performance rather than

financial (and particularly stock-price) performance. To conceive such measures, one should focus on the efforts that favor productive value creation rather than speculative value extraction. Accordingly, metrics for assessing executive performance should be structured in a way to incentivize CEOs to invest into productive capabilities, mobilize the processes of collective learning and sustain the process that can lead to innovation, as well as taking into account the success of the company in generating high-quality, low-cost products (Lazonick 2016a). Developing such metrics for incentivizing and rewarding top executives remains a challenge.

## References

- AFEP, and MEDEF. 2016. Code of corporate governance for listed companies. [http://www.afep.com/uploads/medias/documents/Corporate\\_Governance\\_Code\\_of\\_listed\\_corporations\\_November\\_2016.pdf](http://www.afep.com/uploads/medias/documents/Corporate_Governance_Code_of_listed_corporations_November_2016.pdf).
- Beal, Brent D, and Marina Astakhova. 2017. "Management and income inequality: A review and conceptual framework." *Journal of Business Ethics* 142 (1):1-23.
- Bouras, Mehdi, and Mohamed Imen Gallali. 2016. "The Board of Directors and Executive Compensation in the Context of Crisis: A Comparative Study Between the United States and France." *International Journal of Business* 21 (1):68.
- Burns, Natasha, Brian C McTier, and Kristina Minnick. 2015. "Equity-incentive compensation and payout policy in Europe." *Journal of Corporate Finance* 30:85-97.
- Clifford, Steven. 2017. *The CEO Pay Machine*: Blue Rider Press.
- Connelly, Brian L, Katalin Takacs Haynes, Laszlo Tihanyi, Daniel L Gamache, and Cynthia E Devers. 2016. "Minding the gap: antecedents and consequences of top management-to-worker pay dispersion." *Journal of Management* 42 (4):862-885.
- Conroy, Samantha A, Yeong Joon Yoon, Peter A Bamberger, Barry Gerhart, Nina Gupta, Anthony J Nyberg, Sanghee Park, Tae-Youn Park, Jason D Shaw, and Michael C Sturman. 2015. "Past, Present and Future Compensation Research Perspectives." *Compensation & Benefits Review* 47 (5-6):207-215.
- Conyon, Martin J, Nuno Fernandes, Miguel A Ferreira, Pedro Matos, and Kevin J Murphy. 2013. "The executive compensation controversy: A transatlantic analysis." In *Executive Remuneration and Employee Performance-Related Pay: A Transatlantic Perspective*, edited by Tito Boeri, Claudio Lucifora and Kevin J Murphy. Oxford: Oxford University Press.
- Cox, Josie. 2017. "BP slashes CEO's pay by 40% amid shareholder protest." *The Independent*, 6 April. <http://www.independent.co.uk/news/business/news/bp-ceo-pay-cut-bob-dudley-shareholder-protest-a7670091.html>.
- Croci, Ettore, Halit Gonenc, and Neslihan Ozkan. 2012. "CEO compensation, family control, and institutional investors in Continental Europe." *Journal of Banking & Finance* 36 (12):3318-3335.
- De Cesari, Amedeo, and Neslihan Ozkan. 2015. "Executive incentives and payout policy: Empirical evidence from Europe." *Journal of Banking & Finance* 55:70-91.
- Edmans, Alex, Vivian W Fang, and Katharina A Lewellen. 2017. "Equity vesting and investment." *The Review of Financial Studies* 30 (7):2229-2271.
- Edmans, Alex, and Xavier Gabaix. 2016. "Executive compensation: A modern primer." *Journal of Economic Literature* 54 (4):1232-1287.
- Edmans, Alex, Xavier Gabaix, and Dirk Jenter. 2017. Executive compensation: A survey of theory and evidence. NBER Working Paper 23596. National Bureau of Economic Research.
- European Commission. 2004. Commission Recommendation of 14 December 2004 fostering an appropriate regime for the remuneration of directors of listed companies. 2004/913/EC. Brussels: Official Journal of the European Union.
- European Commission. 2009. Commission Recommendation of 30 April 2009 complementing Recommendations 2004/913/EC and 2005/162/EC as regards the regime for the remuneration of directors of listed companies. 2009/385/EC. Brussels: Official Journal of the European Union.
- European Commission. 2014. Commission Staff Working Document: Impact Assessment, Accompanying the document Proposal for a Directive of the European Parliament and

- of the Council on amending Directive 2007/36/EC as regards the encouragement of long-term shareholder engagement and Directive 2013/34/EU as regards certain elements of the corporate governance statement. SWD(2014) 127. Publications Office of the European Union.
- European Commission. 2015a. Commission Staff Working Document: Evaluation of Regulation (EC) N° 1606/2002 of 19 July 2002 on the application of International Accounting Standards. SWD(2015) 120. Publications Office of the European Union.
- European Commission. 2015b. Report From The Commission To The European Parliament And The Council: Evaluation of Regulation (EC) N° 1606/2002 of 19 July 2002 on the application of International Accounting Standards. COM(2015) 301. Publications Office of the European Union.
- European Commission. 2017. Shareholders' rights directive Q&A: MEMO/17/592. (14 March 2017). Brussels: European Commission.
- European Parliament. 2005. "Commission Regulation (EC) No 211/2005 of 4 February 2005 amending Regulation (EC) No 1725/2003 adopting certain international accounting standards in accordance with Regulation (EC) No 1606/2002 of the European Parliament and of the Council as regards International Financial Reporting Standards (IFRS) 1 and 2 and International Accounting Standards (IASs) No 12, 16, 19, 32, 33, 38 and 39." *Official Journal of the European Union*.
- European Parliament. 2006. "Directive 2006/46/EC of the European Parliament and of the Council of 14 June 2006 amending Council Directives 78/660/EEC on the annual accounts of certain types of companies, 83/349/EEC on consolidated accounts, 86/635/EEC on the annual accounts and consolidated accounts of banks and other financial institutions and 91/674/EEC on the annual accounts and consolidated accounts of insurance undertaking." *Official Journal of the European Union*.
- Fabbri, Francesca, and Dalia Marin. 2016. "What Explains the Rise in Executive Pay in Germany? A Panel Data Analysis for 1977–2009." *The Scandinavian Journal of Economics* 118 (2):235-263. doi: 10.1111/sjoe.12141.
- Fernandes, Nuno, Miguel A. Ferreira, Pedro Matos, and Kevin J. Murphy. 2013. "Are U.S. CEOs Paid More? New International Evidence." *Review of Financial Studies* 26 (2):323-367. doi: 10.1093/rfs/hhs122.
- Ferrarini, Guido A, Niamh Moloney, and Maria Cristina Ungureanu. 2009. "Understanding directors' pay in Europe: A comparative and empirical analysis." *ECGI-Law Working Paper* (126).
- Geiler, Philipp, and Luc Renneboog. 2016. "Executive remuneration and the payout decision." *Corporate Governance: An International Review* 24 (1):42-63.
- Gibbs, Michael. 2017. "Past, Present and Future Compensation Research: Economist Perspectives." *Compensation & Benefits Review* 48 (1-2):3-16.
- Gopalan, Radhakrishnan, Todd Milbourn, Fenghua Song, and Anjan V Thakor. 2014. "Duration of executive compensation." *The Journal of Finance* 69 (6):2777-2817.
- Gupta, Aditi, Jenny Chu, and Xing Ge. 2016. Form Over Substance? An Investigation of Recent Remuneration Disclosure Changes in the UK. Available at SSRN: <https://ssrn.com/abstract=2798001>.
- Hill, Jennifer G. 2006. Regulating executive remuneration: International developments in the post-scandal era (ICFAI Journal of Corporate & Securities Law, 2006; Vanderbilt Law and Economics Research Paper No. 06-15; Sydney Law School Research Paper No. 06/10; European Company Law, Vol. 3).
- Hopkins, Matt, and William Lazonick. 2016. The Mismeasure of Mammon: Uses and Abuses of Executive Pay Data. INET Working paper No. 49. New York: Institute for New Economic Thinking.

- Hüttenbrink, Alexander, Jana Oehmichen, Marc Steffen Rapp, and Michael Wolff. 2014. "Pay-for-performance—Does one size fit all? A multi-country study of Europe and the United States." *International Business Review* 23 (6):1179-1192.
- Jensen, Michael C, and Kevin J Murphy. 1990. "Performance pay and top-management incentives." *Journal of political economy* 98 (2):225-264.
- Laurin-Lamothe, Audrey, and François L'Italien. 2015. "Financiarisation des entreprises et rémunération des dirigeants au Québec et au Canada." *Revue Interventions économiques* (52).
- Lazonick, W. 2018. "The Value-Extracting CEO: How Executive Stock-Based Pay Undermines Investment in Productive Capabilities." *Structural Change and Economic Dynamics*, forthcoming.
- Lazonick, William. 2014. "Profits Without Prosperity." *Harvard Business Review* 92 (9):46-55.
- Lazonick, William. 2016a. "Innovative Enterprise or Sweatshop Economics?: In Search of Foundations of Economic Analysis." *Challenge* 59 (2):65-114. doi: 10.1080/05775132.2016.1147297.
- Lazonick, William. 2016b. The Value-Extracting CEO: How Executive Stock-Based Pay Undermines Investment in Productive Capabilities. INET Working paper No. 54. New York: Institute for New Economic Thinking.
- Lazonick, William. 2017. Innovative Enterprise Solves the Agency Problem: The Theory of the Firm, Financial Flows, and Economic Performance. New York: Institute for New Economic Thinking.
- Lazonick, William, and Matt Hopkins. 2017. Comment on the SEC Pay Ratio Disclosure Rule. Submitted to the U.S. Securities and Exchange Commission in response to a call for public comment.
- Muslu, Volkan. 2010. "Executive directors, pay disclosures, and incentive compensation in large European companies." *Journal of Accounting, Auditing & Finance* 25 (4):569-605.
- Oxelheim, Lars, and Trond Randøy. 2005. "The Anglo-American financial influence on CEO compensation in non-Anglo-American firms." *Journal of International Business Studies* 36 (4):470-483.
- Piketty, Thomas. 2014. *Capital in the twenty-first century*: Harvard University Press.
- Piketty, Thomas, and Emmanuel Saez. 2003. "Income inequality in the United States, 1913–1998." *The Quarterly Journal of Economics* 118 (1):1-41.
- Rappaport, Alfred. 1999. "New thinking on how to link executive pay with performance." *Harvard Business Review* 77 (2):91-101, 186.
- Rost, Katja, and Antoinette Weibel. 2013. "CEO pay from a social norm perspective: The infringement and reestablishment of fairness norms." *Corporate Governance: An International Review* 21 (4):351-372.
- Sakinç, M. E. 2017. Share Repurchases in Europe – A Value Extraction Analysis. ISIGrowth Working Paper 16/2017. <http://www.isigrowth.eu/2017/06/15/share-repurchases-in-europe-a-value-extraction-analysis/>.
- Schmid, Stefan, and Dennis J Wurster. 2016. "Are international top executives paid more? Empirical evidence on fixed and variable compensation in management boards of German MNCs." *European Journal of International Management* 10 (1):25-53.
- Towers Perrin. 2005. Equity incentives around the world: The 2005 study. [http://www.globalequity.org/membersonly/Articles/Worldwide\\_Towers092805.pdf](http://www.globalequity.org/membersonly/Articles/Worldwide_Towers092805.pdf).