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Abstract

The paper analyzes the interplay of product market competition and governance on CEO compensation in Italian listed firms from 2000 to 2011 and tests the impact of the 2007-08 financial crisis on pay-performance sensitivity. We argue that important differences both in the level of compensation and in its sensitivity to firm performance depend on two conditioning factors: family ownership and source of the competitive pressure. A novel aspect of our paper is that we rely on two definitions of competition: the intensity of import penetration, which accounts for price competition, and the intensity of R&D and advertising expenditures, which captures the oligopolistic nature of competition when products are vertically differentiated. Overall, the compensation of Italian CEOs is positively related to firm performance. Moreover, consistent with our predictions, sensitivity is higher in competitive sectors and the difference between family and non-family CEOs disappear when competition is tough. Family CEOs are significantly less paid than non-family CEOs and their pay is significantly related to firm performance. However, behind this sensitivity we find asymmetric responses to performance changes: while non-family CEOs pay mainly responds to negative changes, family CEOs pay is sensitive only to positive changes. Finally, we find that the 2007 financial crisis reduces the difference between family and non-family CEO by decreasing the level of compensation of non-family CEOs and increasing its responsiveness to performance. Altogether, our results provide supporting evidence to the idea that market competition eventually prevails over family ties even in a family-controlled governance system such as in Italy.

JEL-Code: G320, G340.

Keywords: CEO compensation, product market competition, family firms, corporate governance, pay-performance sensitivity, financial crisis of 2007-2008.

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1. Introduction

Despite the large number of empirical and theoretical studies devoted to executive compensation the issue of whether current compensation policies are the result of optimal contracting or of rent extraction by powerful managers that set their own pay is still highly debated. On one hand, the trend in top executive compensation in the last few decades has been explained as the result of entrenched managers designing their own compensation contracts with the support of captive boards. On the other hand, it has been stressed that high compensation contracts result from intense competition for scarce managerial talent and particularly for the most-talented ones. For example, Murphy and Zabojnik (2004) explain the rise in executive pay in the last decades with the increase in the importance of general skills as opposed to firm-specific knowledge. This, according to the authors, has spurred competition in the market for executives and has determined the high level of pay observed.

An important factor underlying both explanations of managerial compensation is the functioning of the corporate governance system. The rent extraction theory implies that factors that may restrain the amount of rents executives can extract, such as monitoring by the board of directors or by block-holders, are not functioning properly. According to the optimal contracting theory, instead, managerial compensation is just one element of the many firms choose when deciding their corporate governance systems. Then, to understand how incentives work we need to take into consideration all factors and their interplay. Furthermore, there may be governance externalities among firms affecting the choice of the contract offered (Acharya and Volpin 2010, Acharya, Gabarro and Volpin 2012).

Beside internal control mechanism, a powerful force mitigating the agency problems caused by separation between managers and shareholders is product market competition. If competition is at work, failure to pursue value maximization will eventually lead the firm to exit the market. Despite the ambiguous theoretical predictions on the effect of product market competition on incentive compensation, the growing empirical literature clearly indicates that increased competition results in a more widespread and intense use of incentive pay. The evidence suggests that product competition affects both the level and the composition of executive compensation and, by reducing the fixed component, it restraints the extraction of rents by the top executives at the expenses of shareholders. Thus, product competition is quite effective in providing the proper incentives to top managers.

Internal and external incentive mechanisms are interrelated, and the firm's reaction to changes in product market competition may be influenced by corporate governance as shown by few recent papers. Amore and Zaldokas (2012), for example, show that worse corporate governance makes U.S. firms either unable or unwilling to accommodate changes in competitive pressure after the Free Trade Agreement with Canada. This seems to suggest that firms with different corporate governance may react differently to changes in product market competition (see also Giroud and Mueller (2010)). The same qualitative result emerges by a study on the effect of changes in competition on private benefits as measured by voting premium (Guadalupe and Perez-Gonzales 2011).

The influence of firm level corporate governance on executive compensation is affected also by the legal and corporate systems in which firms operate. For instance, in countries with concentrated ownership, family firms are common. The most important distinguishing features of family firms are the presence of family members in the top management and the large number of CEOs with family ties. Then, the question becomes how the compensation of a family CEO is determined, and what is the impact of family ties on the magnitude and composition of compensation. On one hand, family CEOs have long-term objectives and high rewards in case of good performance, so that there is less need to use compensation to provide incentives. On the other hand, CEO may be selected because of his/her family ties rather than ability and CEO compensation can be just a mean used by the controlling family to perform the rent extraction activity at the expense of minority shareholders. However, competitive pressure in the product market may limit rent extraction by controlling families and restrict the possibility to appoint a family CEO just for the family status; incompetent CEOs selected because of their family relationship, are unlikely to successfully manage the firm in a highly competitive environment.

In the present paper, we explore the interplay of governance and product competition by analyzing how product market competition affects CEO compensation in a corporate system characterized by concentrated ownership and family control. To this end we look at the effects of competitive pressure and family control on CEO compensation in a sample of Italian listed firms over the period 2000-2011. In addition, the period considered allows us to analyze the effect of the 2007-2008 financial crisis and to investigate whether and how it has affected CEO compensation in the subsequent years. We believe that the Italian case is an interesting environment to analyze the interplay of competitive pressure and ownership and control on the design of CEO compensation for several reasons. First, previous studies have found large private benefits of control in Italy and have suggested that there may be a severe agency problem between controlling shareholder and minority

shareholders. Second, Italian corporate governance has recently undergone some significant changes in the direction of higher transparency (shorter pyramidal structure, lower ownership concentration, larger share of institutional investors, more independent boards). Despite these changes, the main characteristics of ownership structure are still concentrated ownership, family control[3], and limited institutional investors' activism. In 2013, the 48.99% of Italian listed companies (corresponding to 24.8% of market capitalization) was controlled by a single shareholder with a majority of the shares. These percentages increase to 55.1 and 33.6, respectively, if we consider only manufacturing firms.[4] Finally, Italian firms operate mainly in traditional sectors where the competition from countries with low labor cost is intensive. Empirical evidence suggests that Italian firms have reacted to the increased competition by reducing prices and mark-ups. Thus, an interesting question to investigate is if and how this increase in competitive pressure has affected CEOs compensation and particularly the compensation of CEOs in family firms.

The contribution of the paper is twofold. First, to the best of our knowledge it is the first study of the interplay between competition and family firms. Recently, some studies have examined the relationship between competition and other aspects of corporate governance, such as the anti-takeover regulation (Giraud and Mueller 2010 and Amore and Zaldokas 2011) or the voting premium between shares with different voting rights (Guadalupe and Perez-Gonzales 2011) suggesting that the hypothesis that competition reduces managerial slack can have several implications. We pursue this issue in a different direction, looking at differences in the effect of competition on the compensation of family and non-family CEOs. Second, we measure competition along two different directions: by the intensity of import penetration, which account for price competition, and by the intensity of the sunk investment in intangible assets such as R&D and advertising expenditures, that captures the oligopolistic nature of competition among differentiated products where dominates non-price competition.

The paper is organized as follows. In Section 2, we present the related literature framework from which we draw our testable hypotheses. Section 3 outlines the empirical strategy while Section 4 describes the dataset, the variables and the summary statistics. Section 5 presents the results of the econometric analysis. Finally, Section 6 concludes.

[3] The family was the ultimate controlling agent in 152 listed companies out of 251 at the end of 2012 and in June 2013 the number of companies where a single shareholder owns more than half of ordinary shares is 121 out of 247 (Consob 2013 Report on corporate governance of Italian listed companies).

[4] Consob, 2013 Report on Corporate Governance of Italian listed companies.

2. Theoretical framework and hypotheses

This paper is related to two strands of literature, the literature on the effects of (product) market competition on executive compensation and the literature on the relationship between firm corporate governance and executive compensation.

2.1 Market competition

The theoretical predictions on the effects of product market competition on managerial incentives are ambiguous. According to the type of competition and how competition is measured, a rise in the competitive pressure can lead both to an increase or decrease of the optimal level of managerial incentive and, as a result of this, of the incentive-related pay (Vives 2004). Indeed, changes in competitive pressure may take place in several ways and the effects are different according to the source of the increase in competition: a rise in the number of firms, a change in the degree of product differentiation or a change in the entry cost.

When competitive pressure arises by a higher degree of product substitutability, the optimal level of effort is lower and this in turn decreases the optimal incentive provided to the manager (see Graziano and Parigi 1998 and Raith 2003). When instead the number of firms rises, the result is ambiguous. The reason for this ambiguity rests on the fact that there are two opposing forces at work when more firms compete in the same market. The first effect is that firm market share tends to decrease with more intense competition due to free entry reducing the incentive to exert effort. The second and opposite effect arises because the elasticity of market share to productivity increases and thus the return to higher effort grows. Hence, it pays to incentivize the manager to reduce costs and improve performance. Which effect prevails is not clear a priori. However, Schmidt (Schmidt 1997) demonstrated that when increased competition leads to higher threat of bankruptcy and exit from the market, the effect is unambiguous and optimal effort rises independently of the type of competition. Thus, we expect higher incentives whenever firm survival is at risk.

In the last two decades, Italian firms have been subject to stronger foreign competition. New emerging countries entered the WTO, trade barriers have been reduced and imports from emerging countries with low labor cost have increased dramatically. This is particularly important since most Italian firms operate in traditional sectors where entry barriers are small. For example, Bugamelli, Fabiani and Sette (2008) show that Italian firms have been affected by import penetration by Chinese products and, as a result of this, have reduced prices and markups and this effect is stronger in less

technologically advanced sectors and, within these sectors, for less productive firms. This suggests that Italian firms operating in less technologically advanced sectors are exposed to penetration of products from countries with low labor cost and that higher import penetration may represent a threat for the survival of Italian firms. On this basis, we expect to find a positive relationship between the intensity of foreign competition and pay-performance sensitivity in Italian firms. This leads us to formulate the following hypothesis on the effect of imports on managerial pay-performance sensitivity.

HP. 1: *Firms in a more competitive environment, as measured by the degree of import penetration, provide stronger monetary incentive to their CEOs: CEO pay-performance sensitivity is larger in industries more exposed to foreign competition.*

The fast growing, though still limited, empirical literature on product-market competition and CEOs compensation provides support for the prediction that competition affects managerial pay and increases pay-performance sensitivity. Hubbard and Palia (1995) and Cunat and Guadalupe (2009a) study the effect of deregulation of the U.S. banking sector on CEO compensation. Hubbard and Palia do not find a clear effect on incentive-pay, however they show that CEO turnover is higher in unregulated banks.[5] Cunat and Guadalupe (2009a) instead analyze the effect of competition on estimated pay-performance sensitivities and on the sensitivity of stock option grants, and show that increased competition following the two deregulation waves resulted in higher performance pay sensitivity of executive compensation schemes.

The effect of an increased competitive pressure by foreign products is the focus also of Cunat and Guadalupe (2005) and (2009b). Overall, they find that higher competitive pressure reduces the level of non-performance related pay, increases pay-performance sensitivity and increases wage differentials within firms since compensation increases for top executives. A different approach is followed by Abowd and Lemieux (1993) who look at the effect of firm profitability on negotiated wages using foreign competition shocks as a source of exogenous variation in firm's product market

[5] A similar finding is obtained by DeFond and Park (1999), who look at the role of relative performance evaluation (RPE) in CEO turnover in US firms. Their hypothesis is that RPE is more useful among firms operating in more competitive sectors as measured by the Herfindahl-Hirschman Index (HHI). Consistently with this hypothesis, they find that CEO turnover is negatively associated with the HHI.

conditions and find that increased competition (i.e. lower import and export prices) reduces both wages and quasi-rent per worker[6].

Summarizing, empirical studies find clear-cut evidence that an increase in foreign competition directly affect the incentives provided to top executives and that firms operating in more competitive environments are the most affected.

The above literature does not distinguish between price and non-price competition and focus mainly on the first type of strategic interactions. However, competition may induce different behavior when products are differentiated and firms have market power. As mentioned before, theoretical models suggest that product substitutability determines the manager's optimal level of effort. Indeed, firms operating in oligopolistic markets have a strong incentive to differentiate their products in order to relax price competition and decrease demand elasticity. Along these lines, Aggarwal and Samwick (1999) develop oligopoly models where an optimal managerial compensation scheme is related to the degree of product differentiation and show that, as product differentiation increases, managerial compensation becomes more sensitive to own firm performance and less to rivals performance. The degree of product differentiation is thus a key element in shaping the strategic interactions among firms that may also affect optimal compensation contract.

Another twist in the definition of competitive pressure, which underlines the oligopolistic nature of competition and the importance of product differentiation, highlights the strategic use of intangible assets in enhancing and sustaining the competitive advantage of vertically differentiated products (Krugman 1979, Gabszewicz and Thisse 1980, Sutton, 1991, 1998, Davies, Lyons et al, 1996). According to this view, the nature and the intensity of competition depend on the firm's investment in sunk intangible assets - such as R&D and advertising and marketing expenditures - that increase product differentiation, consumer perceived quality of the product and willingness to pay. The distinguishing feature of these industries is that increases in market size are not associated with a rise in the number of firms but rather with rise in firm intangible sunk expenditures. This "escalation" in R&D and advertising expenditures enables us to distinguish between vertically differentiated products, where competition relies on these (non-price) elements, and homogenous and horizontally differentiated products where price competition dominates. Furthermore, it highlights the dif-

[6] Fernandes et al. (2014) use the change in firm entry regulation in Portugal after 2005 as quasi-natural experiment and study the effect of the increased product competition resulting from the reform on top-managers compensation. Their finding indicates that the pay-performance sensitivity of CEO compensation decreased after the deregulation. The authors interpret this finding as consistent with Raith's theoretical model where the effect of competition are different according to whether the increase in competition takes place through changes in market size or through a reduction of entry cost.

ferences in firm competitive strategies and in the required skills for CEOs willing to become a leader in markets where non-price competition dominates. Therefore, by emphasizing the oligopolistic nature of competition and the strategic use of intangible assets to sustain the competitive advantage in these industries, this classification links the nature of competition to the managerial talent hypothesis whereby "*a higher level of potential competition" requires "a more capable CEO and, therefore, higher and more responsive pay*" (Hubbard and Palia, 1995, p. 108).

The conceptual separation of industries according to the nature of competition somewhat overlaps with the foreign trade definition, as many oligopolistic vertically differentiated market are also highly internationalized and dominated by multinational enterprises, still it relies on an alternative perspective that we decide to explore in this paper.

Furthermore sectors with high level of R&D and advertising expenditures have another feature relevant for compensation policy. The presence of intangible assets exacerbates the asymmetry of information between managers and shareholders making more difficult to evaluate manager effort. This in turn implies that, according to principal-agent theory managerial incentives should be stronger to align her objectives with those of the shareholders (see for example Milkovich, Gerhart and Hannon 1991).

A countervailing force that may weaken managerial incentives is discussed by Aggarwal and Samwick (1999). When firms operate in oligopolistic markets, strategic considerations may induce owners to manipulate incentives to attenuate competition because inducing highly aggressive managerial behavior may not be in their interest. The authors show that when products are strategic complements as in the differentiated Bertrand model, shareholders benefit from less aggressive pricing strategy and managers are given weaker incentives to maximize own firms value and stronger incentive to maximize the value of all firms in the industry as competition increases.

Summing up the fact that talent is more valuable in R&D intensive sectors and the effect of asymmetry of information, we expect sectors with high level of expenditures on intangible assets to have both high compensation and high pay-performance sensitivity. This leads to the following hypothesis.

HP. 2: *CEO pay and pay-performance sensitivity are higher in industries with large investment expenditures in intangible assets that increase the perceived product differentiation like advertising and R&D.*

We are not aware of empirical studies analyzing the effect of non-price competition and product differentiation. To the best of our knowledge, this is the first study that attempts to capture the diversity of competitive behavior among firms operating in the same market focusing on different dimensions of competition and market power.

2.2 Corporate governance and family firms

Many firms around the world are not public companies, not even in countries with dispersed ownership as shown by Holderness (2009). In corporate governance systems with concentrated ownership and family membership, firms are often managed by a family member and this in turn implies a quite different incentive structure with respect to firms owned by atomistic shareholders. Family members can alleviate some agency problems and at the same time, they can exacerbate others. Then, the magnitude and the composition of executive compensation packages are deeply affected by family ties. However, despite the importance of founding families and continued family ownership less attention has been paid to managerial compensation in environments with concentrated ownership.

There are two competing views of why family firms are so prevalent, efficient response to the institutional environment or outcome of cultural norms that might be costly for corporate decision (see Bertrand and Schoar 2006 for a survey). The first view underlines the positive role that family can have and states that, family control can lead to superior economic results with respect to non-family firms. This is due to the long-term horizon of families as opposed to the short-termism and myopia of corporate managers, and possibly to the "within family correlation in managerial talent" (Bertrand and Schoar 2006 page 76). The negative view instead sees family firms as a suboptimal economic organization emerging when cultural values induce the founder/owner to pursue nonmonetary objectives (see Banfield 1958 and Fukuyama 1995). The theoretical analysis of the effect of family ties on CEO compensation reflects the two alternative points of view on the role of family firms summarized above. On the positive side, if the CEO is a member of the controlling family, his/her objective is already aligned and there is no need to rely on monetary incentives. Furthermore, since family CEOs face less risk of being fired, there is less risk to be compensated and monetary compensation should be lower for family CEOs[7]. Another element that may reduce the

[7] Evidence showing that the need to compensate family CEOs for the risk of being fired is lower in Italian listed firms is provided by Volpin (2002) and Brunello et al. (2003) who study the turnover-performance relationship. In particular, Brunello et al. find that CEO turnover is negatively related to firm performance, but this relationship holds only if the CEO is not the controlling shareholder. When the CEO belongs to the controlling family, no significant relationship emerges.

level of compensation for family CEOs is the lower value of their outside options given that family CEOs are unlikely to compete in the external managerial market (see for example Gomez-Mejia et al. 2003). Hence, according to the positive view, family ties impact both the level and the composition of CEO compensation by lowering the fixed and the variable component. This leads us to the following hypothesis for the compensation of family CEOs.

HP. 3a: (family CEOs) *If family firms are an efficient response to the institutional environment, we expect lower compensation and lower pay-performance sensitivity for CEOs who are members of the controlling families than for non-family CEOs.*

The alternative hypothesis considers the negative impact that a controlling shareholder can have in absence of strong protection of minority shareholders and looks at CEO compensation as a possible mean used by the controlling family to extract rents at the expenses of other shareholders. Since expropriation takes place mainly through fixed compensation, this hypothesis predicts higher total pay while there is no clear prediction for variable pay that can be either lower or higher. Indeed, expropriation can take place also through variable pay as explained by Bebchuck who takes the view that managerial power and discretion play an important role in shaping executive compensation. Although his analysis focuses on companies with widespread ownership where the main agency problem is between managers and shareholders, some of the problems pointed out apply also to companies with a controlling family trying to expropriate minority shareholders. In particular, Bebchuck and Fried (2004) underline the role of "camouflage" in the design of compensation arrangements with the aim to legitimate "the amount and performance-insensitivity of executive compensation". Camouflage for example can explain why bonuses and cash compensation are not designed to reward the manager for his/her contribution to firm performance and why executive compensation increases when firm profits rise for reasons that are independent of manager's effort as shown by Bertrand and Mullainathan (2001). Similarly, when relative performance is used, the relevant peer group may be selected strategically, choosing the one more favorable to the manager. A different form of camouflage can be represented by an asymmetric relationship between pay and performance so that pay increases when performance rises but it does not decreases when performance worsens. All this leads us to formulate the following hypothesis alternative to HP. 3a.

HP. 3b: (family CEOs) *Under the expropriation view, we expect higher level of compensation for family CEOs and weak pay-performance sensitivity. Moreover, if incentive pay is higher for family CEOs than for non-family CEOs this should be due to a suboptimal pay structure consistent with "camouflage activities" like compensation for luck, or asymmetric relation between pay and performance.*

Overall, there is empirical evidence supporting both the positive and the negative view of the role of family ties on CEO compensation, though the majority is consistent with the first one predicting lower pay and lower pay-performance sensitivity. In a sample of publicly traded US family-controlled firms, Gomez-Mejia et al. (2003) show that CEOs who are members of the controlling family are paid less (lower total pay) than outside CEO and their pay is less sensitive to firm performance. The difference gets larger as family ownership as well as R&D investment increase. As discussed above, R&D investment has a positive effect on CEO pay, primarily in the form of long-term income. This is confirmed in their sample but only for non-family-CEOs. Evidence in favor of the first hypothesis is found also in a sample of European firms by Croci, Gonenc and Gozkan (2012).

On the other hand, the rent extraction hypothesis is supported by the finding of Cohen and Lauterbach (2008) who analyze the compensation of family versus non-family CEOs in a sample of Israeli firms. Family CEOs are paid more and their pay-performance sensitivity is lower (though insignificantly).

Controlling shareholders and blockholders have a clear monitoring advantage on small and dispersed shareholders since they are not affected by the free-riding problem faced by dispersed owners (Shleifer and Vishny, 1986). Hence, the CEO of a firm where the main shareholder owns a significant share, is strictly monitored. Indeed, the main agency problem in firms with concentrated ownership is between the controlling shareholder and minority shareholders, rather than between managers and shareholders. Contrary to what happens in public companies with dispersed ownership, large shareholders may have an incentive to over-monitor (see Pagano and Roell, 1998) and in family firms there may even be an "excessive" involvement of owners in the management of the firm with the resulting negative effect on the managerial initiative (see Burkart, Gromb and Panunzi 1998). Thus, we can expect CEOs in firms with a controlling shareholder being strictly monitored. In this case there is less need to rely on monetary compensation to incentivize managers. This leads us to formulate the following hypothesis:

HP. 4: (Non-family CEOs) We expect the compensation of non-family CEOs to have a weak pay-performance sensitivity due to the concentrated ownership structure and the resulting monitoring incentive for large shareholders and blockholders.

Evidence in favor of this hypothesis is offered by Brunello et al. (2001), who estimate the pay-performance elasticity of top manager remunerations in a non-representative sample of Italian firms. Their analysis provides strong evidence on the importance of ownership structure: pay–performance sensitivity is higher in firms that are less likely to be affected by the main features of Italian capitalism. The authors interpret this finding as supportive of the view that the specific Italian economic environment leads to a lower sensitivity of managerial pay to firm performance. The low sensitivity of Italian executive pay to firm performance is confirmed by a recent study by Conyon, Fernandes, Ferreira, Matos and Murphy (2010) on ten European countries, among which Italy[8].

The recent financial crisis of 2007-08 provides us with a unique opportunity to verify the role of family involvement in firm management. During the financial crisis firms revenues and stock market value decreased significantly and the high compensations and high bonuses paid by firms with very negative results has determined a public outcry. The public and the media strongly criticized the very generous pay packages received by the top executives even in firms suffering severe losses and firing employees. This in turn has produced recommendations and reforms mandating higher transparency and better disclosure of the firm compensation policy. Though the sample period considered in the present study is not affected by the proposed reforms in Italy[9] we expect nonetheless to find a clear impact on the level and/or structure of pay.

HP. 5: (financial crisis) *We expect the 2007-08 financial crisis to increase the pay-performance sensitivity both for family and nonfamily CEOs.*

2.3 Market competition or family ties?

The hypotheses discussed above have been derived by looking separately at product competition and family control. However, firms operate in environments with different degree of competi-

[8] According to their study the composition of Italian CEO pay in 2008 is as follows: 56% base salary; 16% bonuses; 6% option grant; 3% Stock Pay and 19% Other pay. The only estimated pay-performance elasticity marginally significant is the one where performance is measured by sales growth and is negative (-.310).

[9] Starting in 2012 listed firms are required to make public the firm remuneration policy for top executives.

tion and, at the same time, have different governance. Then, the issue is how these two aspects interact and whether they are complements or substitutes.

When competition is tough, selecting the CEO from a small pool of family members can lead to significant underperformance endangering firm survival. As a result, we expect family firms operating in highly competitive markets to separate family and business objectives and to rely less on family members to select the CEO. In a highly competitive environment, also family firms are likely to compete for hiring the best possible CEO from the pool of managerial talent[10]. Hence, we expect the selected CEO to have the necessary skills irrespective of his/her family status. This implies that if a family member is appointed as CEO he/she has the same outside option as non-family CEOs and this in turn results in the need for the firm to offer a competitive compensation package. In other words, we expect that the effect of competition will mitigate, and perhaps cancel, the influence of family firm and family ties on managerial compensation.

HP. 6: *In highly competitive industries, pay-performance sensitivity of family and non-family CEOs should be the same and should also be equal to the compensation of CEOs in non-family firms.*

3 Empirical Strategy

The corporate finance literature typically quantifies managerial incentives by estimating pay-performance sensitivity, i.e. by relating changes in CEO compensation to a measure of firm performance (Murphy, 1985, Jensen and Murphy, 1990, Goergen and Renneboog, 2011, Murphy 2012). The econometric specifications differ depending on whether one wants to obtain the *magnitude* of the sensitivity (e.g. the dollar change in CEO's wealth associated with a dollar change in shareholders' wealth, as in the seminal Jensen and Murphy's paper), or the *elasticity* (the percentage change in CEO pay associated with the percentage change in, say, shareholders' wealth), or the *semi-elasticity* (the percentage change in CEO pay associated with a 1 unit change in a profitability index). The elasticity specification requires a logarithmic transformation for both pay and performance while the semi-elasticity implies that the only the dependent variable is logged. We estimate the elasticity of managerial compensation to market capitalization (*MarketCap*) and the semi-elasticity to an accounting profitability ratio (the return on asset, *ROA*).

[10] We already saw in section 2.1 that the managerial talent hypothesis is related to the degree of competition in the industry.

Given the longitudinal nature of our data (117 firms tracked from 2000 to 2011), pooling time and cross-section observations and using OLS would result in biased and inconsistent estimates due to the presence of omitted firm-specific effects. We thus estimate panel regressions using the fixed-effect model, which allows us to account for unobservable firm characteristics that do not change over time. Indeed, using firm fixed-effects as a stratification variable does not account for the fact that different CEOs may have managed the company in the period. Therefore, we include *CEO tenure*, the number of year the CEO served in the company to account for managerial turnover, which may bring undesirable breaks in the estimation. In addition, CEO tenure allows us both to test whether managers' compensations tend to rise with tenure as well as with firm size and to control for potential managerial entrenchment, since a longer tenure is typically associated with CEO's internal power by the corporate governance literature (Bebchuk and Fried, 2003; Hu and Kumar, 2004). As a further CEO specific characteristic, we control for CEO age, which is often used to proxy for CEO experience and expertise, by including a dichotomous variable to denote whether the CEO has at least 61 years of age (the 75th percentile in our sample). Finally, we include firm size because past research has established that remunerations tend to increase with firm size.

From the empirical point of view, the main purpose of this paper is to estimate the effect of competition on CEO pay, i.e. if a more competitive environment increases the required managerial skills and, accordingly, the willingness of shareholders to propose incentive contracts that link their compensation to firm performance. In our case, this boils down to asking whether CEO pay-performance sensitivity is higher in firms subject to a tougher competitive environment and whether differences in the competitive mechanism – "price" competition due to increasing exposition to foreign trade or "non-price" competition in endogenous sunk cost markets – may imply differences in the remuneration schemes.

The identification of the effect of competition on pay-performance sensitivity raises several econometric concerns. First, ideally, one would like to rely on a natural experiment to control for an external change in the competitive conditions for the firms, such as a sudden appreciation of the currency (Cunat and Guadalupe, 2005) or a sudden reduction in trade barriers (Cunat and Guadalupe, 2009). Such a sudden change is not available in Italy over the sample period for the Italian economy.[11] Therefore, in the absence of a well defined natural experiment during the sample period

[11] With respect to a foreign trade shock, although it is true that the Italian economy, similarly to other EU member states, has been subject to a gradual trade liberalization process, with increasing import penetration by Chinese products, this process started at the beginning of the 2000's (as did the Lira/Euro changeover), and gradually, but not uniformly spread to industrial sectors. Moreover, especially in the first decade, Chinese products typically competed with low-quality undifferentiated goods in traditional sectors while our sample comprises large quoted firms operating in a

2000-2011, we use dichotomous variables based on the import penetration in the year 2000 (the first year in the data) to differentiate the competitive environment. For the purpose of a "quasi-natural" experiment, however, the financial crisis of 2007-2008 is probably better equipped and, even if the theoretical implications for competition as well as for incentive contracts are still uncertain, we will use this episode to investigate the impact of the crises on the pay-performance sensitivity within the non-financial sector in Italy. The empirical approach we follow for this analysis will be more in line with a difference-in-difference strategy.

Second, as explained in Section 2, foreign trade covers, by definition, one only kind of competitive pressure. One novelty of this study is to analyze the impact of competition on incentive compensations not only through the lens of foreign trade, but also hinging on a different way to "measure" the nature of competition, more typical of the new industrial organization literature,. For this concept of "competition", based on the endogenous sunk costs incurred by the firm to sustain the competitive advantage in oligopolistic markets, is likewise difficult to find an exogenous shock. So, in the end, in the empirical analysis, firms are therefore classified as more or less subject to competitive pressure (under both definitions) based on their primary industry. Because the primary industry is typically invariant over time, hence perfectly collinear to the firm fixed effects (which of course cannot be omitted); we investigate differences in sensitivity by interacting firm performance with the primary industry type (high and low import penetration; high and low R&D and advertising expenditures, at the industry level) . The third econometric issue is that managers are not randomly assigned to firms operating in more or less competitive industries. In want of a natural experiment, as pointed out above, we choose to rely on family ownership, an important feature of the Italian corporate governance, to help us with identification of the effect of competition. As described in Section 2, the economic literature has recognized many differences, including predictions about monitoring strategies and remuneration schemes, between family- and non-family firms and, to a deeper level, between firms run by a member of the controlling family and those run by a professional manager.[12] We exploit a key variable in our hand-collected dataset, i.e. the information

wide range of vertically, horizontally and homogeneous sectors. All of this suggests that using the China foreign trade episode would be incomplete and at best imprecise and blurred from both the cross-sectional a temporal point of views.

[12] We began with the family ownership perspective and then we moved on to collect information about family CEOs partly inspired by the literature and partly for a practical reason. While both family ownership and family management may, in principle, be expected to vary over time, we noticed that this is not the case in our sample of Italian firms, where the large majority of family owned firms do not change their status over the sample period, thus depriving us of the necessary firm-level variation. Fortunately, when we look at management we do not find the same immovability and resilience to change. Not all family firms are managed by family CEOs and in most firms there is a turnover between family and non-family managers in the sample period. Therefore, when we investigate whether similar incentive contracts work similarly across family and non-familyCEO, we can use specifications that interact firm performance with the *Fam_CEO* dummy.

about firm ownership (controlling shareholding) and about the parental relationships of the CEO with the controlling family. We use this information as well as the received wisdom described in Section 2, to test if differences in pay-performance sensitivity that can be related to family control (family and non-family CEOs) tend to disappear whenever the company is subject to tougher competition. In other words, our identification strategy relies on the idea that, under tougher competitive conditions, all family-related idiosyncratic features in the compensation contract should be leveled out when competitive pressure bites.

Consistently with this approach, we ground the descriptive analysis of the data on tests of the mean differences in the distribution of family firms and family CEOs across different types of competition. We then examine mean differences in CEO compensations and in firm profitability. Next, we turn to regression analysis. To summarize, the baseline specification is the following:

$$Log(CEOcomp)_{it} = \alpha + \beta_1(FirmPerfomance)_{it} + \beta_2 Tenure_{it} + \beta_3 Log(FirmSize)_{it} + \beta_4(CEO_Age)_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

where $Log(CEOcomp)_{it}$ is the logarithmic transformation of total compensation (inflation corrected) awarded by the CEO in the year and $Firm_Performance_{it}$ is the performance variable and can enter either in logarithmic form when we use the firm's market capitalization ($MarketCap_{it}$) or in linear form when we use an accounting profitability ratio (ROA_{it}). $Tenure_{it}$ indicates the number of years served as a CEO in the company and $Log(FirmSize)_{it}$ is the log of real sales, CEO_Age is a dichotomous variable that is equal to 1 when the CEO age is at least 61 (the 75th percentile in our dataset). μ_i is the firm specific fixed effect, λ_t are the year dummies and ε_{it} is the error term. To detect differences in CEO pay-performance sensitivity we interact performance measures with two dichotomous and time invariant variables indicating low and high competitive pressure as defined by import penetration (IMP_PEN) or by R&D and advertising intensity ($TYPE_{jt}$). To test the impact of competition across family control, we further interact the performance measure with two dichotomous variables that identifies whether the CEO is related or not with the controlling family ($FAMCEO_{it}$).

4 Data source and variables used in the analysis

4.1 Data description

Our study uses an unbalanced panel of 117 Italian non-financial firms listed on the Italian exchange and tracked over the period 2000-2011 (1173 firm-year observations). Our sample includes the entire Italian market at this time, excluding only those firms which were not appropriate for our study, such as companies that had less than four continuous years of CEO compensation data, and firms that were objects of merger or large divestiture operations.[13] The time frame is imposed by the fact that managerial compensation data only became publicly available in Italy in 2000, when CONSOB, (Commissione Nazionale per le Società e la Borsa), the national authority ruling on equity markets (the Italian counterpart of the US Securities Exchange Commission) released a new rule whereby listed companies are required to disclose information on managers' compensations in their annual reports[14].

The research questions we try to answer in this paper require data from different sources. First and foremost, we need information about CEOs' identity and remuneration schemes. Second, we need measures of firm performance, to be related to CEO pay in order to determine whether Italian firms rely on this corporate governance mechanism. Third, we need variables that capture the competitive environment in which Italian firms operate. To this end, as argued in Section 2, we rely on the intensity of foreign competitive pressure as measured by import penetration and on the intensity of R&D and advertising expenditures as a proxy of the strategic use of product differentiation. Fourth, following the literature documenting the fact that a large majority of Italian listed firms, even the very large mature ones, are ultimately family-owned (Volpin 2002, Carpenter and Rondi, 2006, and Rondi and Elston, 2009) and often managed by family CEOs, we collected information about firms' ownership structure, board of directors' composition and CEOs' parental relation with controlling shareholders.

Managerial or executive compensation is the key variable in our study. The data for this measure were collected from annual end-of-year reports using the classification system required by the CONSOB which include four items: *Base Compensation*, *Bonuses (Monetary Benefits)*, *Non-Monetary Benefits*, and *Other Compensation*. We define *Total Compensation* the sum of the four items and use this in the regression estimations because a careful inspection of the data across firms and time revealed that the individual items are not uniformly reported by companies. Moreover, for a subsample of companies, the only available information is the total amount of CEO compensation. A comprehensive measure of CEO pay should also cover the values of the CEO's stock and option

[13] The final sample totaled 117 out of the original 227 listed firms in the "Industrial Companies" segment of Borsa Italiana as of 2012.
[14] The CONSOB regulation n. 11971 was released on May 14, 1999.

holdings. However, the classification system of the CONSOB does not allow us to obtain a consistent and reliable measure of the value of stock options and stock option plans, and when we tried to collect the detailed information which is needed to construct this variable we found that these data are not disclosed for the large majority of the sample firms. We complete information about the CEO's by including two CEO-specific characteristics, *CEO Tenure* and the dummy *CEO_Age*. The former indicates the number of years the CEO served in the company and controls for CEO turnover, which brings undesirable breaks in the time series when we estimate the pay-performance sensitivity at the firm level. *CEO Tenure* accounts for the fact that compensations usually increase with tenure over time and also, to some extent, for managerial entrenchment, as it is likely that managers become more entrenched the longer they stay in a company. The latter, CEO's age, is a way to control for the manager's experience and expertise.

The compensation data are integrated with annual financial and accounting and ownership firm-level data taken from the CERIS database (2001) and subsequent updates[15], which we used to calculate the book and market-based measured of performance. We thus use two performance measures: *Market Capitalization*, i.e. the product between the share price at the end of the year and the number of outstanding shares in the market (sourced from *Indici e Dati*, by Mediobanca's annual reports); and *Return on Assets* (*ROA*), a measure of accounting profitability given by the ratio between *ebitda* (earnings before interest, taxes and depreciation) and total assets, which captures how efficiently managers use firm total assets, regardless of the financial structure.

To account for the competitive pressure deriving from foreign trade, we use Import Penetration, the ratio between industry import and apparent consumption, sourced from OECD STAN-Database for Structural Analysis (ISIC–Rev. 4) and defined as $M_{jt}/(Y_{jt}+M_{jt}-X_{jt})$ where M, Y, and X are industry j's annual import, production and export respectively in the year 2000, in Italy. From this ratio we obtain a dichotomous variable, *IMP_PEN2000,* which categorizes industries into Low (below the median) and High Import Penetration (*LIP* and *HIP*) industries that can be used to analyze if pay-performance varies across firms subject to different levels of exposure to foreign trade.

[15] The CERIS database contains extensive information on ca. 1800 Italian industrial firms over the period 1977-2011 (Benfratello et al. 2001). It is constructed and updated using multiple sources. Balance sheet, dividends and stock exchange data are collected from two annual directories, *Le Principali Società*, *Indici e Dati* and *Il Calepino dell'Azionista,* all published by Mediobanca, a large Italian investment bank. Extensive information about the firms' ultimate ownership, corporate governance, group affiliation, location, age, and business activity was obtained from annual reports, DUN's Bradstreet, company websites, CONSOB, the Italian Exchange (Borsa Italiana) website and other directories.

We then draw on the industrial organization literature for the classification of competitive pressure based on the competitive advantage obtained via endogenous sunk costs in intangible assets (Sutton, 1991, 1998), as typically in oligopolistic markets that rely on "non-price" competition. Accordingly, we classify industries producing homogeneous or horizontally differentiated products, based on low advertising and R&D expenditures, (*Type 0*) and vertically differentiated industries (*Type 1*). For operational purposes, we use the 3-digit NACE industrial classification used based on R&D and advertising to sales ratios for UK industries, constructed by Davies et al. 1996 to analyze the competitive mechanisms in the European Union industry, and revised by Matraves and Rondi, 2007).

Finally, our theoretical framework accounts for the corporate governance environment where the sample firms operate, which is characterized by family firms. We consider the role family ownership at two levels, as controlling shareholders and as insiders, since members of the family are often in charge of executive roles. To this end, we constructed a dummy for "Family ownership", based on CONSOB reports that provide information about shareholders with > 2% holdings[16] as well as about the components of directors' boards. The collected information confirmed anecdotal evidence about ownership and control of Italian family firms. First, the "family" or the individual investor often holds the controlling stake directly rather than indirectly through a holding company. This finding is reasonable because the founder or entrepreneur-manager who took the company public, or one of their heirs, usually sits on the board together with other members of his family. Alternatively, these family owners are often members of pyramidal groups where ownership and control are seemingly separated, but members of the founding family keep executive roles. We thus matched the ownership data with the owner's position on the board of directors and/or on the managerial board, as well as with information about parental links across board members (as required by CONSOB regulation about stocks owned by board members), and we found that controlling families often participate in top management in Italy, confirming findings of La Porta Lopez-de-Silanes and Shleifer (1999) about the presence of "family CEOs" in countries where investor protection is weak (Enriques and Volpin, 2007). We therefore constructed another dummy *FAM_CEO* to identify when the CEO is also a member of the controlling family. Specifically, the data show that "family ownership" holds in 65% of firm-year observations and "family control", i.e. a family CEO is in charge in 61.3% of the family-owned firms.

[16] We use 50% as cut-off values in the definition of family control.

4.2 Descriptive evidence

Table 1 presents descriptive evidence on the main characteristics of our sample. It shows that average CEO tenure is 7 years, and average age is 55. Family firms are clearly predominant: (70% of observations), while family CEOs represent the 43.7%. Finally, 56% of observations refer to firms operating in industries with high R&D and advertising (vertically differentiated products, or Type 1) and 48% to firms operating in industries with high import penetration.

Table 2 explores the distribution of family firms and family CEOs across industries classified by intensity and type of competition. Since this is a key factor in the identification of the impact of competition on incentive compensation, in this table we test whether the distributions of family and non-family firms and family- and non-family CEOs statistically differ across industries with different degrees and types of competition. Family firms tend to cluster significantly in vertically differentiated (*Type 1*) vis-à-vis homogeneous and horizontally differentiated product (*Type 0*), and in *High Import Penetration* (HIP) vis-à-vis *Low Import Penetration (LIP).* When we turn to the distribution of family CEOs, we find a significantly larger share of family CEOs in Type-1 industries and in High import penetration industries. In the bottom row, we test the distribution of family- and non-family CEOs employed *within* family firms and we find a significantly larger share of family CEOs in Type 1 firms, but a statistically similar distribution across low and high import penetration industries.

Overall, the results suggest that family firms tend to concentrate in sectors subject to relatively tougher competitive pressure. Moreover, family firms seem to prefer to be managed by family-CEOs when non-price competition prevails while no preference emerges in high/low import penetration. However, note that all values in the last raw are larger than 50% indicating that regardless of the sector, the majority of family firms is managed by a family member. This is good news for our identification strategy, since we plan to test whether the impact of competition leads family and non-family firms and CEOs to have similar compensation policies.

As argued in Section 2, we expect that price competition prevails within *HIP* and Type-0 sectors, and non-price competition prevails within Type-1 industries and we want to investigate how the different competitive environment affects CEOs compensation. We start in this section by looking at pay *levels* while in the following sections the regression analysis will analyze the *structure* of the compensation, i.e. the fixed and variables components.

In Table 3, Panel A, we look at the impact of competition and governance on the levels of CEO compensation and we present summary statistics and mean differences on CEO total compensation in the whole sample, by intensity of competition and by family-status (origin) of the CEO.

Panel B instead looks at mean differences in firm (accounting) performance as measured by ROA, return on assets, by intensity of competition and by family-status (origin) of the CEO.

The t-tests on mean differences show that managerial compensations are quantitatively (though not significantly) higher in Type-1 industries as predicted by our *Hypothesis 2*. In contrast, CEO pay is significantly lower in sectors with high import penetration, thus suggesting that competition tends to reduce levels of compensation, but only when it is measured by import penetration.

Turning to the family status of the CEO, we find that family CEOs are paid significantly less than non-family CEOs regardless of the type competition, a finding that is consistent with our *Hypothesis 3a* about the *level* of compensations. Moreover, family CEOs in type 1 sectors obtain compensations significantly higher than family CEOs in type 0 sector, consistently with our *Hypothesis 2*.

Overall, the evidence presented suggests that in Type 1 sectors managerial effort and talent are high in demand to make competitive advantage more sustainable and firm less likely to be imitated. However, this is at variance with the finding that the fraction of family CEOs is higher in Type-1 industries (see Table 2). If managerial talent is high in demand we would expect firms to search for the best manager in the whole pool of managers, hence a less skewed distribution of family and non-family CEOs. A possible interpretation is that family firms might prefer to be in charge in sectors where the presence of intangible assets makes more difficult to evaluate the manager.

In Panel B of Table 3, we test the differences in firm performance, using ROA as an accounting measure of profitability. We find that, profitability is significantly (and quantitatively) higher where competitive pressure is tougher (according to our definition), both in terms of import penetration and as measured by strategic investment in intangible sunk costs. This suggests that, as found also by other studies, the lack of competitive pressure in these sectors is probably more conducive to a "quiet life" than to higher profits (see for example Giroud and Mueller 2011 and Guadalupe and Perez-Gonzales 2011). When we turn to differences by CEO family status, we find that profitability is significantly higher when the firm is managed by a non-family CEO. However, when we disaggregate by competitive pressure, family CEOs do significantly better than non-family CEOs in industries with high import penetration and report the same ROA within Type-1 industries. Interestingly, non-family CEOs perform significantly better only in industries with low import penetration and homogeneous products (Type-0).

The descriptive evidence presented so far suggests that there may be two different kinds of family CEOs, one that extract rents from relatively underperforming firms and another one that attains high profitability and is more in line with a positive agency-solving view of large shareholder.

However, this pattern is contingent on the intensity of competition in the market, and it is time now that we focus on the structure, not only on the level, of the managers' compensations.

5. Results and Discussion

5.1 Pay-performance sensitivity and industry competition

To set the scene, we begin with the pay-performance sensitivity estimated for the large sample of non-financial companies in the Italian Stock Exchange market for which we hand-collected the data on CEO pay, tenure and age and kinship with the controlling family (whenever the firm is family owned). We use a specification where the performance variable is interacted with the dichotomous variables indicating low and high competition according to the two different dimensions of competitive pressure we measure, i.e. IMP_PEN and TYPE. Notably, the source of the competitive pressure is different across the two classifications, as foreign trade may generate "price competition" while endogenous sunk costs is more likely to imply "non-price competition". The dependent variable is the log of total compensation in thousands of 2000 constant Euros (*lrtotcomp*). We measure performance by the log of *Market Capitalization* (*lrmktcap* also in constant Euros) and by the return on asset (ROA) as a book measure of performance. *Firm size, CEO tenure* and *CEO age* are the control variables. We rely on the fixed effect model to control for other omitted and unobservable factors and we add time dummies to account for time-specific common factors, like the business cycle or changes in foreign trade liberalization or regulations that may affect Italian firms' competitive environment. Standard errors are robust to heteroscedasticity and clustered at the firm level.

Table 4 reports the results from estimating relationship between pay and performance where the performance term is interacted with the competition dummies. The results show that the estimated coefficients on *Perf*High_Comp* is always positive and highly significant irrespective of how we measure performance (ROA or market capitalization) while the coefficients on *Perf*Low_Comp* is always insignificant except in Column (3), where competitive pressure is measured by import penetration. Our findings, consistently with *Hypotheses 1* and *2*, suggest that pay-performance is high and significant where competition in the market is tougher, as defined by both high import penetration and by vertical differentiation sustained by endogenous intangible assets as R&D investments and advertising expenditures. The evidence is similar whether we use the accounting or the market-based performance variable.

Turning to control variables, we find that CEO pay is positively related with firm size, consistently with consolidated evidence that managerial compensation increases with firm size, and with CEO tenure, consistently with corporate governance literature that suggests that the longer the tenure the stronger the power of the CEO and his/her ability to increase the compensation. CEO age is negatively related with pay, but the coefficient is never significant.

Prima facie evidence shows that where competitive pressure is low, firms do not feel compelled to motivate their managers with incentive compensation contracts. In contrast, where competitive pressure is tough, both in terms of import penetration and as measured by strategic sunk investment expenditures, CEO pay-performance sensitivity is high and significant, consistently with our *H1* and *H2*.

5.2 The "competition" effect and the "family" issue

We now take into account that competition may be systematically correlated with the unobserved component of compensations if CEOs sort themselves into different sectors according to the degree of competition. We thus rely on family control, an important feature of the Italian corporate governance system, to help us with the identification of the effect of competition. As discussed above, the theory suggests that the structure of compensation contracts in family companies and with family CEOs is likely to differ from that of managers in widely-held companies, for example because agency and monitoring problems are more typical in public companies, or because the rent expropriation hypothesis is more likely to apply to family firms. In a similar vein, differences between family and non-family CEOs may arise because of managerial slack or entrenchment in a poorly monitored environment. Therefore, if competitive forces drive pay-performance sensitivity, market competition should also level all differences out, as suggested in Section 3.

This is what we test in Table 5. Empirically, the test implies that we interact performance with the two dummies to account for competition levels (*Low_Comp* and *High_Comp*), and, at the same time, with two dummies indicating whether the CEO is a member of the controlling family (*FamCEO* vs. *No_FamCEO*). We then test the significance of the difference between the coefficients of family and non-family CEOs' pay-performance sensitivities for the relevant cases. We report the results at the bottom of the table.

The estimated coefficients show that both family and non-family CEOs report high and statistically significant pay-performance sensitivities when competitive pressure is high (the only exception is the positive coefficient on family CEOs' in Column (3) where the p-value is 13%). When

we turn to firms in industries with low competitive pressure, however, we find that pay-performance remains high and significant for family CEOs (when performance is measured by ROA) while it is always insignificant for non-family CEOs. Interestingly, these results suggests that, contrary to much of the theoretical literature and of the empirical evidence, family CEOs in Italy (hence family firms) tend to rely on incentive contracts, typically designed to discipline agency problems, more frequently than non family CEOs.[17] The high sensitivity of family CEO pay to performance may hint at a signaling behavior by family firms who wish to convince the equity market and minority investors that their family managers operate in line with optimal contracting and best practice of corporate governance. From this point of view this would be consistent with what predicted by Jensen and Meckling (1976) when they first introduced *bonding* related agency costs that the founder of the firm has to bear when increasing shares of the firm are offered to the equity market.

Finally, to gauge the effect of competition, we look at tests of differences in coefficients at the bottom of the table. We find that the pay-performance sensitivity of family CEOs significantly differs from that of non-family firms in less competitive sectors. The difference is significant if we use ROA (Columns (1) and (3)), not if we use market capitalization.[18] More importantly, the difference in pay-performance sensitivity of family and non-family CEOs is no longer significant within highly competitive industries. In other words, when competitive pressure toughens differences in pay-performance sensitivity disappear. This evidence is consistent with our *Hypothesis 5* as well as previous evidence for UK firms by Cunat and Guadalupe (2005), supporting the idea that competition shapes the structure of compensations in line with optimal contracting and with best practice corporate governance.

5.3 Are Family CEOs different? Testing for "camouflage": asymmetry in pay sensitivity

The results above show that differences in incentive compensations between family and non-family CEOs in less competitive industries tend to disappear when the competitive pressure toughens. However, our theoretical framework has advanced questions related to family CEOs that the above tests does not address, particularly about the latitude that family CEOs might have in the

[17] Notably, non-family CEOs are evenly distributed across family and non-family firms (50.9 vs. 49.1%) and the share of non-family CEOs in family firms is 38%.

[18] If we perform the test on the subsample of manufacturing firms (thereby excluding public utilities and building construction companies), we find that the difference between family and non-family CEOs Type-0 (homogenous) industries is significant also when performance is measured by market capitalization.

extraction of rents and private benefits of control at the expense of minority shareholders. In this section, we experiment further on pay-performance relationships in order to understand if, behind the apparently similar sensitivity in highly competitive environments that we found in Table 5, a "family control" specificity may be detected. .

Table 6 tests the asymmetry of the pay-performance sensitivity and, particularly, the difference between family and non-family CEOs in this respect. Motivated by the debate about compensations allegedly related to performance increases, but not to decreases (Bebchuk and Fried, 2004), we investigate whether the responsiveness of pay to performance of family and non-family CEOs in competitive industries is similar (symmetric) in good times and in bad times, that is when the company reports positive and negative changes in the performance measure. This analysis allows us further insights into the corporate governance of family firms as, for example, family CEOs might compensate their lower pay (see Table 3) by reducing its sensitivity to performance in bad times and by increasing the elasticity in good times, in other words by maneuvering the symmetry in the structure of the compensation. To test the asymmetry in pay-performance sensitivity, we focus on the accounting profitability index, the Return on Asset ratio, which we first-difference and then use to construct two dichotomous variables, one that identifies the positive changes in ROA (*Dumpos*) and one for the negative changes in ROA (*Dumneg*). Then we estimate first-differenced regressions of the pay-performance equation, interacting ROAs with *Dumpos* and *Dumneg* and with *FamCEO* and *no-FamCEO* dummies, in order to estimate separately the effect of positive and negative changes in profitability on family and non-family CEOs pay (see also Joskow and Rose, 1994).

Table 6 reports the results for the full manufacturing sector and for industry sub-samples by price and non-price competition (Type 0 vs. Type 1) and for high vs. low import penetration (because further interacting the above variables with competition-related dummies would be awkward). The results for the full sample in Column (1) suggest that there is a differential sensitivity in good and bad periods. While both coefficients estimated for non-family CEOs are statistically significant and positive, indicating that their compensations change with changes in (accounting) profitability, family CEO pay seems to respond *only* to *positive* changes in profitability, not to negative changes. Interestingly, judging by the estimated coefficients, the remuneration of non-family CEOs seems to be highly sensitive to negative changes.

The remaining columns of Table 6 estimate asymmetries conditioning for industry competition. Based on the previous result that differences between family and non-family CEOs tend to disappear when competition bites, our purpose is to investigate whether also pay-performance asymmetries disappear in competitive environments. The results by sub-samples reveal an interesting

pattern that differs from the apparently smooth evidence in Column (1) , but is similar across the two definitions of "competition". First of all, in less competitive industries, where pay-performance was found to be overall insignificant in Table 4, the analysis by asymmetry shows that non-family CEOs' pay is sensitive to *positive* changes in profitability (Columns (2) and (4)). In contrast, in highly competitive industries (highly sensitive according to Table 4), results show that family CEOs pay is only sensitive to *positive* ROA changes while non-family CEOs' pay is only sensitive to *negative* changes in profitability.

This suggests an asymmetry in the structure of pay for family and non-family CEO that surfaces in competitive environments, hence in those industries where, according to the evidence in Table 5, pay-performance sensitivity did not statistically differ. The new evidence in Table 6 suggests that the source of high sensitivity is indeed different. Specifically, non–family CEOs see their pay *decrease* when profitability falls, while family-CEOs see their pay *increase* when profitability grows. If an outsider investor looks at pay of family CEO, at prima facie it would believe it is positively related to performance in line with optimal contracting, but a second look into the structure of the contract would reveal that family CEOs compensations only respond to positive changes, consistently with Bebchuk and Fried (2004) as well as with our *Hypothesis 3b*.

5.4 The 2007-2008 financial crisis and incentive compensation

What are the implications of the financial crisis of 2007, and of the economic downturned that followed for the pay-performance schemes of Italian firms' CEOs? Did the competitive conditions combine with the crisis to tighten or relax the relationship between CEO pay and performance, and are family CEOs' compensations protected by their apparently asymmetric incentive schemes? As described in Section 3, our last piece of evidence derives from a difference in difference exercise exploiting the financial crisis episode as a "quasi-natural" experiment in which the effect of the crisis is combined with the degree of competition in the industry. The purpose is to test if sensitivity has significantly increased after the 2007 crisis in industries where competition is tougher. Moreover, we also test if differences can be detected between family and non-family CEOs. The specification we estimate is the following:

$$Log(CEOpay)_{it} = \alpha_0 + \alpha_1 Competition_j * Post2007_t + \beta_0 Performance_{it} + \beta_1 Performance_{it} * Post2007_t + \beta_2\ Competition_j * Post2007_t * Performance_{it} + \beta_3 FirmSize_{it} + \beta_4 CEO\ Tenure_{it} + \beta_5 CEO_Age_{it}\ \ \mu_i + \lambda_t + \varepsilon_{it}$$

where *Competition* is in turn defined as Type-1 (vertically differentiated industries) and high import penetration industries, *Performance* is alternatively the Return to Assets or the log of Market Capitalization and *Post2007* is a dummy variable that takes value one from 2008 onwards. α_1 indicates the direction of the change in the level of compensations in the years following the crisis within industries more exposed to competition; β_1 accounts for the change in the slope of pay-performance sensitivity during the downturn following the financial crisis. Finally, the key coefficient is β_2, which captures the differential effect of the crisis between industries where the competitive pressure is more or less tough. All regressions include firm fixed effects and time dummies. Given that the firms do not change industry, the fixed effects also capture the existence of any industry specific fixed effect, including the effect on the level of the compensation.

The results are presented in Table 7. The first four columns report the results for the sub-sample of family CEOs and the remaining four columns report the estimated coefficients for the sub-sample of non-family CEOs.[19]

The pay structure of family CEOs seems remarkably unaffected by the crisis. The relationship between pay and performance remains positive and significant, confirming previous evidence in Table 5, while the interactions included to capturing the differential impact of the crisis as well as of market competition are insignificant. The only exception is the negative sign on the significant β_1 coefficient in Column (4), indicating that the crisis apparently *reduced* sensitivity to performance (firm value) for family CEO (in line with the evidence from the analysis of asymmetry). However, we also note that the sign on the α_1 coefficient is negative, albeit insignificant, suggesting that compensations decreased after the crisis, in highly competitive industries.

When we turn to non-family CEOs, we find sharper results suggesting that the financial crisis had had a statistically significant impact on the level and structure of non-family CEOs, especially if operating in highly competitive industries. To begin with, we notice that the significance of the coefficients on the linear performance variables is not very strong (even below the conventional standard in Column (3)). Second, we find that, for non-family CEOs, the negative impact of the crisis on the level of their compensation in highly competitive industries is statistically significant. Third, and more importantly, their pay sensitivity to performance increased significantly in the post crisis years, provided they operate in highly competitive environments. In other words, the crisis has made the pay of non-family CEOs much more susceptible to performance as compared to the previous period. Linking the evidence presented in Table 5 – whereby family and non-family CEO

[19] In the appendix Table A1, we report the results for the full sample.

do not seem to differ in competitive industries –to the results in Table 6 – non-family CEOs pay is more sensitive to performance in bad periods – and in Table 3 – pay of non-family CEOs is significantly higher - we can conclude that in good years, non-family CEOs succeed in detaching (through entrenchment, weak monitoring or poor governance) their compensations from performance, but not in bad years. When bad times loom, our results suggest that not only competitive pressure, but also some form of corrective mechanism tightens the link between CEO pay and firm's results. Whether it is the financial market, perhaps through the presence institutional investors, or the family (for non-family CEOs in family firms) this is a promising question in our research agenda.

6. Concluding Remarks

We have analyzed how product market competition and family ties contribute to shape the CEO compensation in Italian listed firms over the 2000-2011 period. Our purpose is to study the effect of competition on the level and structure of CEO pay and, in doing so, our analysis naturally extends to governance features of the Italian corporate economy and to the impact of the recent financial crisis effect on CEO pay for performance sensitivity. We rely on two sources of competitive pressure: import penetration and non-price competition, as determined by strategic escalation in endogenous sunk costs to sustain the competitive advantage in vertically differentiated markets. To account for family ties we rely on family ownership and focus on family control, i.e. identifying whether the CEO is a member of the controlling family. We use two alternative measures for performance, the accounting return on assets and the firm value, i.e. market capitalization.

We draw on the corporate governance and agency theories to develop testable predictions about the level and the sensitivity of managerial compensations to firm performance.

Our main results can be summarized as follow. Overall, the compensation of Italian CEOs is positively related to firm performance. Moreover, consistent with our predictions, sensitivity is higher in competitive sectors and the difference between family and non-family CEOs disappear when competition is tough, supporting our hypothesis that competition levels differences (and managerial slack) out. Family CEOs receive a significantly lower pay than non-family CEOs, but their pay is related to firm performance, which is in contrast with the traditional agency view. Therefore, we further dig into the family question by investigating whether the responsiveness of family and non-family CEOs is the same in good and in bad times. We find that, behind this apparent sensitivity the response to performance changes is asymmetric, particularly in competitive industries: while non-family CEOs remunerations mainly respond to negative changes, family CEOs pay is

sensitive only to positive changes. This suggests a sort of self-insurance for family CEOs aimed at preventing that their compensation fall too much when the firm's results deteriorate.

Finally, we find that the 2007 financial crisis reduces the difference between family and non-family CEO by reducing the level of compensation of non-family CEOs and increasing its responsiveness to performance. Altogether, our results provide supporting evidence to the idea that market competition eventually prevails over family ties even in a family-controlled governance system such as in Italy.

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Table 1
Summary Statistics

	Mean	Std.Dev.	Min	Max	N. Obs.
Total Compensation	899	1825	92	36720	1037
Market Capitalization	2224960	7946719	3712.07	88830072	1064
ROA	0.100	0.066	-0.11	0.52	1071
Firm Sales	2760147	9503376	4367.64	88864424	1071
Ceo tenure	7.068	5.726	1	31	1088
Ceo age	55.295	9.681	33.00	86.00	1086
Family dummy	0.705	0.456	0	1	1088
Family Ceo dummy	0.437	0.496	0	1	1088
High R&D and Advertising (Type) dummy	0.649	0.477	0	1	1173
High Import Penetration (Imp_Pen) dummy	0.391	0.488	0	1	1173

Note: CEO compensations, Market Capitalization and Sales are in Thousands of 2000 constant Euros

Table 2

Percentage Share of Family Firms and Family CEOs in high/low competitive industries

Type 0 and Type 1 denote industries with low and high R&D and advertising intensity. Family control is defined based on the family membership of the CEO in each year. (Standard errors are in parenthesis). The p-values are based on two-sided test of the null hypothesis that the difference in the share of family firms, family CEOs and family CEOs in family firms (vs. their respective counterparts) in each industry type is equal to 0.

	Type 0 **N = 481**	**Type 1** **N = 607**	**Difference by Type 0 and Type 1** **p-value**	**Low Import Penetration** N = 569	**High Import Penetration** N = 519	**Difference by Import Penetration p-value**
% of Family firms	62.6 *(2.21)*	76.8 *(2.22*)	**-14.2** **p = 0.000**	60.3 (2.05)	81.7 (1.70)	**-21.4** **p = 0.000**
% of Family CEOs	34.5 *(2.17)*	50.9 *(2.03)*	**-16.4** **p = 0.000**	38.5 (2.04)	49.3 (2.20)	**-10.8** **p = 0.000**
% of Family CEOs in Family Firms	55.1 (2.87) N=301	66.3 (2.19) N=466	**-11.2** **p=0.002**	63.8 (2.60)	60.4 (2.38)	**3.47** **P=0.326**

Table 3 – Mean CEO compensation by competition and control

CEO compensation is in thousands of 2005 Euros, *ROA* is the EBITDA/Total Asset ratio. Type 0 and Type 1 denote industries with low and high R&D and advertising intensity. Family control is defined based on the family membership of the CEO in each year. (Standard errors are in parenthesis). The p-values are based on two-sided test of the Null hypothesis that the difference in the average compensation /average ROA between two different groups is equal to 0.

Panel A: Mean CEO Compensation by product differentiation / import penetration and family control							
	Total observations N = 1037	**Type 0** N = 457	**Type 1** N = 580	**Difference by Type 0/Type 1 p-value**	**Low Import Penetration** N = 539	**High Import Penetration** N = 498	**Difference by Import Penetration p-value**
Total observations		**811.4** ***(85.7)***	**968.0** ***(75.4)***	**-156.6 p = 0.170**	**1011.5 (103.4)**	**777.2 (36.9)**	**234.3 p = 0.038**
Non-Family CEO N=586	**1061.9** ***(71.7)***	992.6 *(124.6)* N=298	1133.5 *(68.0)* N = 288	**-141.0 p = 0.326**	1134.1 (117.0) N = 333	966.7 (61.9) N = 253	**167.3 p = 0.248**
Family CEO N=451	**687.3** ***(90.2)***	471.8 *(70.8)* N = 159	804.7 *(133.4)* N = 292	**-333.9 p = 0.077**	813.2 (192.9) N = 206	581.5 (34.9) N = 245	**231.8 p = 0.201**
Difference p-value	**374.5 p = 0.001**	520.8 p = 0.004	328.8 p = 0.058		320.9 p = 0.132	385.3 p = 0.000	
Panel B: Mean ROA by product differentiation / import penetration and family control							
	Total observations N = 1071	**Type 0 N = 470**	**Type 1 N = 601**	**Difference by Type 0/Type 1 p-value**	**Low Import Penetration** N = 556	**High Import Penetration** N = 515	**Difference by Import Penetration p-value**
Total observations		**0.093** ***(0.003)***	**0.105** ***(0.002)***	**-0.011 p = 0.005**	**0.094 (0.003)**	**0.107 (0.003)**	**-0.013 p = 0.001**
Non-Family CEO N=603	**0.106 p=(0.003)**	0.107 *(0.004)* N=311	0.105 *(0.004)* N = 292	**0.001 p = 0.787**	0.110 (0.004) N = 344	0.101 (0.004) N = 259	**0.009 p = 0.114**
Family CEO N=468	**0.092 p=(0.003)**	0.068 *(0.004)* N = 159	0.105 *(0.004)* N = 309	**-0.037 p = 0.000**	0.068 (0.003) N = 212	0.112 (0.004) N = 256	**-0.045 p = 0.000**
Difference p-value	**0.014 p = 0.000**	0.039 p = 0.000	0.000 p = 0.951		0.042 p = 0.000	-0.012 p = 0.043	

Table 4
Pay-Performance Sensitivity and Competition by Industry Type

	Type 1 vs. Type 0		High vs. Low Imp_Pen.	
	ROA	MktCap	ROA	MktCap
VARIABLES	(1)	(2)	(3)	(5)
Perf*High_Comp	1.314***	0.156***	1.059**	0.184***
	(0.499)	(0.057)	(0.523)	(0.057)
Perf*Low_Compr	0.556	0.091	0.905*	0.077
	(0.543)	(0.068)	(0.520)	(0.067)
Log(sales)	0.369***	0.333***	0.366***	0.333***
	(0.071)	(0.071)	(0.071)	(0.072)
CEO tenure	0.021*	0.022*	0.021*	0.022*
	(0.012)	(0.012)	(0.012)	(0.012)
CEO_Age	-0.073	-0.067	-0.077	-0.068
	(0.059)	(0.059)	(0.059)	(0.060)
Firm dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	1,024	1,018	1,024	1,018
Number of firms	115	114	115	114
R2	0.198	0.199	0.197	0.201

Notes. Fixed effects estimates. Time dummies included in all columns. "Perf" denotes the performance variable, which is in turn the ROA (Return to Total Assets) and the log of Market Capitalization. Type 0 denotes industries with homogeneous and horizontally differentiated products; Type 1 denotes research- and advertising- intensive industries (vertically differentiated products); High and Low Imp_Pen denote industries with high and low import penetration. Robust standard errors in parentheses are clustered by firms. *** p<0.01, ** p<0.05, * p<0.10

Table 5
Pay-Performance sensitivity by Industry Type and Family Origin of the CEO

	Type 1 vs. Type 0		High vs. Low Imp_Pen	
VARIABLES	ROA	MktCap	ROA	MktCap
	(1)	(2)	(3)	(4)
Perf*High_Comp*FamCEO	1.237**	0.145**	0.997	0.178***
	(0.616)	(0.059)	(0.661)	(0.059)
Perf*High_Comp*No-FamCEO	1.442**	0.153***	1.151*	0.182***
	(0.672)	(0.057)	(0.675)	(0.058)
Perf*Low_Comp*FamCEO	1.683**	0.089	1.988***	0.075
	(0.692)	(0.066)	(0.585)	(0.066)
Perf*Low_Comp*No-FamCEO	0.126	0.077	0.406	0.068
	(0.656)	(0.066)	(0.607)	(0.065)
Log(sales)	0.363***	0.343***	0.362***	0.339***
	(0.071)	(0.075)	(0.071)	(0.076)
CEO tenure	0.021*	0.022*	0.021*	0.022*
	(0.012)	(0.012)	(0.012)	(0.012)
CEO_Age	-0.076	-0.064	-0.082	-0.067
	(0.059)	(0.060)	(0.058)	(0.061)
Firm dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
$H0_{Perf*Low_Comp}$: FCEO=NFCEO *(p-value)*	*0.052*	*0.244*	*0.028*	*0.453*
$H0_{Perf*High\ Comp}$: FCEO=NFCEO *(p-value)*	*0.800*	*0.320*	*0.855*	*0.569*
Observations	1,024	1,018	1,024	1,018
Number of firms	115	114	115	114
R2	0.202	0.202	0.201	0.202

Notes. Fixed effects estimates. Time dummies included in all columns. "Perf" denotes the performance variable, which is in turn the ROA (Return to Total Assets) and the log of Market Capitalization. Type 0 denotes industries with homogeneous and horizontally differentiated products; Type 1 denotes research- and advertising- intensive industries (vertically differentiated products); High and Low Imp_Pen denote industries with high and low import penetration. Robust standard errors in parentheses are clustered by firms. *** p<0.01, ** p<0.05, * p<0.10

Table 6

Asymmetry in Pay-performance sensitivity across Family and non-Family CEOs by Toughness of Competition

	Full sample	Type 0	Type 1	Low I_P	High I_P
	(1)	(2)	(3)	(4)	(5)
Positive ΔROA*FamCEO	0.928**	0.253	1.123**	0.373	1.332**
	(0.456)	(1.063)	(0.518)	(0.743)	(0.624)
Positive ΔROA*No-FamCEO	1.021**	0.940*	1.007	0.916*	1.148
	(0.419)	(0.539)	(0.609)	(0.540)	(0.705)
Negative ΔROA*FamCEO	0.662	-0.428	0.941	-0.229	1.210
	(0.528)	(1.063)	(0.634)	(0.735)	(0.746)
Negative ΔROA*No-FamCEO	1.422**	1.382	1.316*	1.232	1.598*
	(0.594)	(0.843)	(0.777)	(0.899)	(0.833)
Log(sales)	0.165*	0.255**	0.033	0.275***	-0.030
	(0.097)	(0.101)	(0.152)	(0.095)	(0.161)
CEO tenure	0.033***	0.052***	0.023	0.052***	0.021
	(0.011)	(0.014)	(0.016)	(0.014)	(0.016)
CEO_Age	0.026	0.049	0.008	0.039	-0.003
	(0.047)	(0.067)	(0.061)	(0.064)	(0.066)
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	813	343	470	410	403
R2	0.086	0.116	0.092	0.106	0.097

Notes. First-difference estimates. Type 1 and Type 0 denote industries with high/low R&D and advertising intensity; L_IP and H_IP denote industries with high/low import penetration. Robust standard errors in parentheses are clustered by firms. *** p<0.01, ** p<0.05, * p<0.10

Table 7

Pay-performance sensitivity and the recent crisis by family control

	Family CEOs				Non-Family CEOs			
Dep. Var.:	Type		Import Penetration		Type		Import Penetration	
Total Compensation	ROA	MaktCap	ROA	MktCap	ROA	MaktCap	ROA	MktCap
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Performance	1.545***	0.137**	1.572***	0.143**	0.792*	0.142*	0.714	0.137**
	(0.550)	(0.057)	(0.554)	(0.061)	(0.470)	(0.072)	(0.494)	(0.068)
Competition*Post07	0.125	-0.548	-0.042	-1.800	-0.332*	-1.946*	-0.243	-2.472**
	(0.147)	(0.981)	(0.172)	(1.277)	(0.196)	(1.055)	(0.193)	(0.968)
Performance*Post07	-0.730	-0.066	-0.499	-0.092*	-1.739	-0.110	-1.027	-0.084
	(1.086)	(0.043)	(0.901)	(0.053)	(1.607)	(0.078)	(1.410)	(0.055)
Perf*Comp*Post07	1.438	0.065	1.638	0.154	3.474**	0.148*	2.733*	0.192**
	(1.686)	(0.083)	(1.702)	(0.108)	(1.726)	(0.084)	(1.685)	(0.078)
Log(sales)	0.291***	0.336***	0.264**	0.296***	0.464***	0.379***	0.466***	0.411***
	(0.105)	(0.103)	(0.106)	(0.097)	(0.098)	(0.091)	(0.102)	(0.099)
CEO tenure	0.025*	0.028**	0.027**	0.029**	0.027	0.028*	0.025	0.028*
	(0.013)	(0.014)	(0.013)	(0.013)	(0.017)	(0.016)	(0.017)	(0.016)
CEO_Age	-0.070	-0.057	-0.057	-0.059	-0.157*	-0.144*	-0.154*	-0.098
	(0.074)	(0.078)	(0.073)	(0.082)	(0.079)	(0.076)	(0.080)	(0.069)
Firm dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	445	445	445	445	579	573	579	573
Number of firms	60	60	60	60	80	79	80	79
R2	0.261	0.248	0.248	0.247	0.238	0.248	0.234	0.256

Notes. Fixed effects estimates. *Performance* is in turn ROA (Return to Total Assets) and the log of Market Capitalization. *Post07* is a dummy equal tto 1 for the the year 2008 onwards. *Competition* is in turn Type 1 and Type 0 denoting industries with high/low R&D and industries with High vs. Low import penetration. Robust standard errors in parentheses are clustered by firms. *** p<0.01, ** p<0.05, * p<0.10

Appendix

Table A1

Pay-performance sensitivity and the recent crisis by nature of the competition

	(1)	(2)	(3)	(4)
	Type		Import Penetration	
VARIABLES	ROA	MarketCap	ROA	MarketCap
Performance	0.875**	0.135***	0.870**	0.136***
	(0.379)	(0.048)	(0.384)	(0.048)
Competition*Post07	-0.033	-1.016	-0.054	-1.728**
	(0.145)	(0.848)	(0.142)	(0.742)
Perf * Post07	-0.533	-0.067	-0.250	-0.058
	(1.285)	(0.063)	(1.116)	(0.041)
Perf * Comp * Post07	1.490	0.087	1.281	0.142**
	(1.425)	(0.069)	(1.355)	(0.061)
Log(sales)	0.370***	0.341***	0.368***	0.344***
	(0.073)	(0.070)	(0.073)	(0.071)
CEO tenure	0.021*	0.023**	0.020*	0.021*
	(0.012)	(0.011)	(0.011)	(0.011)
CEO_Age	-0.077	-0.072	-0.070	-0.049
	(0.057)	(0.054)	(0.056)	(0.052)
Firm dummies	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes
Observations	1,024	1,018	1,024	1,018
Number of firms	115	114	115	114
R2	0.203	0.209	0.201	0.217

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.10