The Impact of Market Competition and Family Control On CEO Compensations*

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Abstract

The paper analyzes the impact of product market competition and family control on the structure of CEO compensation in a panel of Italian listed firms, controlling for two sources of competitive pressure, the financial crisis and asymmetric pay-performance sensitivity.

Family CEOs are paid significantly less than non-family CEOs and, contrary to standard agency theory, their pay is significantly related to firm performance. We find that pay-performance sensitivity is higher in competitive sectors and that the differences between family and non-family CEOs disappear when competition is tough. Finally, complementarity between competition and performance pay is even stronger during the financial crisis. Altogether, our results suggest that market competition prevails over family ties also in a family-controlled governance system such as in Italy.

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

JEL classification: G32, G34.

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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 that align managers and shareholders' interests or of rent extraction by powerful managers that set their own pay, is still highly debated. On the one hand, the high level of top executive compensation in the last decades has been explained as the result of competition for scarce managerial talent that particularly intensifies with the increase in firm size (Gabaix and Landier 2008). On the other hand, it has been stressed that high compensations result from entrenched managers designing their own contracts with the support of captive boards (see for example Bebchuk and Fried 2004)[1].

A powerful force mitigating the agency problems caused by the separation between ownership and control is product market competition (Hart, 1983). 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 (Raith, 2003; Vives, 2008), a growing empirical literature indicates that increased competition results in a more widespread and intense use of incentive pay (Abowd and Lemiex, 1993; Cunat and Guadalupe, 2009a). The evidence suggests that product competition affects both the level and the composition of executive compensation and, by reducing the fixed component, restrains the extraction of rents by the top executives at the expenses of shareholders. (Cunat and Guadalupe, 2005 and 2009b; Karuna, 2007). Product market competition, thus, seems quite effective in providing top managers with the proper incentives. This paper contributes to this literature by investigating the impact of product market competition on CEO compensations in a panel of publicly listed Italian firms from 2000 to 2011.

Another important determinant of managerial compensation is the corporate governance system (Shleifer and Vishny, 1997) chosen by the firm, where other mechanisms concur to align managers and shareholders' interests. Hence, to evaluate the effectiveness of the incentives provided by the compensation policy we need investigate what how they work in association with other mechanisms aimed at restraining rent extraction by the executives, such as monitoring by the board of directors or by large shareholders and what happens if they are not functioning properly. For example, in countries with concentrated ownership, firms are often owned and directly managed by their

[1] Of course, these are just two possible explanations among the many that have been offered. For an extensive review of the theories on executive compensation, see Edmans and Gabaix 2015 (forthcoming on JEL).

founders or by the founder's heirs or relatives (La Porta et al., 1999). Although in theory, such governance systems should eliminate the agency problem created by separation between shareholders and managers, we argue below that family firms can create other agency problems that potentially affect the CEO's incentive structure. Therefore, internal controlling mechanisms, such as monitoring, incentive compensations or ownership structure, intertwine with external mechanisms, as those provided by product market competition and they can influence each other. Our main research question then becomes what is the impact of product market competition on the structure of CEO compensations when firms have different ownership structures and the CEO may be the controlling shareholder or a member of the controlling family (i.e. the case of inside ownership).

Recently, some studies have examined the relationship between product market competition and some aspects of corporate governance. Giraud and Mueller (2010) and Amore and Zaldokas (2012) look at the relationship between competitive pressure and antitakeover regulation, Guadalupe and Perez-Gonzales (2011) analyze how competition affects the voting premium between shares with different voting rights, and Stoughton and Wong (2009) show that industry competition plays an important role in dictating the form of compensation (stock or options).

Building on this evidence, we postulate that the disciplining effect of competition may transmit to managers via incentive compensations, controlling for the effect of firm governance, and specifically of family direct involvement in management, on incentive compensation.[2] We test our predictions by looking at differences in the effect of product market competition on the pay-for-performance sensitivity of family and non-family CEOs. To identify the effect of competition in the absence of a natural experiment, we rely on the idea that tough competitive conditions should expel all family-related influences in the compensation contracts of family-CEOs and make them similar to those of non-family CEOs. To control for possible ambiguities of the effect of competition, we rely on two sources of the competitive pressure: import penetration, which mainly accounts for price competition, and intensity of R&D and advertising expenditures, which are at the root of product differentiation and non-price competition (Sutton, 1991). In addition, the period considered allows us to analyze the effect of the 2007-2008 financial crisis on CEO compensations and to investigate whether it has affected firms in more or less competitive industries, and family and non-family CEOs differently. This is our best proxy of an exogenous shock.

The Italian case is an interesting environment to analyze the interplay of competitive pressure and inside ownership on the design of CEO compensation for several reasons. First, previous

[2] See Holmstrom (2005) for a suggestion to use family firms as "an obvious control group" in the analysis of managerial compensations.

literature on the effect of competition on managerial compensation has focused only on Anglo-Saxon countries, (mainly U.S. and U.K.) characterized by dispersed ownership and by a market-based corporate governance. Italy, on the contrary, like other countries in Continental Europe, has a governance system based on concentrated ownership, family control (also among listed firms), a relatively small stock market and a relatively small role of institutional investors. Thus, our study sheds some light on whether the impact of market competition is similar across diverse corporate governance systems. Second, the empirical evidence on Italian firms has documented large private benefits of control and has suggested that agency problems may be more severe between controlling and minority shareholders, rather than between shareholders and managers as in dispersed ownership environments[3]. Recently, Italian corporate governance has undergone some significant changes in the direction of higher transparency (shorter pyramidal structure, larger share of institutional investors, more independent boards). Despite these changes, the main characteristics of ownership structure are still concentrated ownership, family control[4], and limited institutional investors' activism. In 2013, 48.99% of Italian listed companies (corresponding to 24.8% of market capitalization) was controlled by a single shareholder with the majority of the shares. These percentages increase to 55.1 and 33.6, respectively, if we consider only manufacturing firms.[5] Finally, Italy is an open economy with a large share of import and export (in 2013 trade was 56% of GDP and import 26.5[6]) and many Italian firms operate in traditional sectors where the competition from countries with low labor cost is severe. Empirical evidence shows that competition by foreign firms has increased in the last few decades and that the Italian firms have reacted to the increased competition by reducing prices and mark-ups (Bugamelli, Fabiani and Sette, 2015). Thus, Italy provides a valuable opportunity to examine whether competition and corporate governance complement each other in determining CEO incentives.

Our main findings may be summarized as follows. We find that pay-performance sensitivity is higher in competitive sectors and that differences between family and non-family CEOs disappear when competition is tough, suggesting that competitive pressure has a disciplining effect also in family firms. Interestingly, family CEOs are paid significantly less than non-family CEOs, and their pay is positively and significantly related to firm performance. These findings look consistent with a view of family firms as organizations that align minority and majority shareholders' inter-

[3] See Barca and Becht (2001) and Volpin (2002).
[4] 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).
[5] Consob, 2013 Report on Corporate Governance of Italian listed companies.
[6] OECD statistics.

ests, thus reducing agency costs. However, motivated by the latitude of family CEOs in the extraction of rents, we consider two alternative explanations of the apparently similar sensitivity between family and non-family CEOs, both aimed at revealing camouflage activities. First, we test the asymmetry of pay-performance sensitivity and find that the response of family-CEO pay to firm performance is indeed symmetric. In contrast, non-family CEOs' pay seems symmetrically unresponsive to performance in less competitive industries, and turn significantly sensitive only when subject to tough competition. Second, we test whether family or non-family CEOs succeed in obtaining pay rises for increases in firm performance that are beyond their control (see for example, Bertrand and Mullanaithan, 2001). The results show that family CEOs are more likely rewarded for luck, but only when they operate in "protected", i.e. less competitive, industries. All in all, our tests of camouflage activities bring further evidence in favor of the disciplining role of market competition. Finally, we examine the effect of the 2007 financial crisis, and find that pay-performance sensitivity decreased in protected industries, but increased where competition is tough. Moreover, the crises has reduced the gap between family and non-family CEOs, curbing the level of non-family CEOs' pay and increasing its responsiveness to firm performance. To conclude we present robustness tests using salaries and bonuses instead of total pay to estimate the fixed and variable components and we discuss why omitting dividend policy does not bias our results.

This paper contributes to the literature along three directions. First, to the best of our knowledge it is the first study to examine the impact of product market competition on CEO compensation while accounting for firm internal governance, specifically when the CEO is a member of the controlling family. Our paper contributes by showing that market forces are a powerful disciplining device also in a governance system characterized by concentrated ownership and family management like Italy. Second, this is also the first paper that, to our knowledge, exploits two different definitions of competition: foreign (price) competition and non-price competition, as in oligopolistic markets where products are differentiated. By providing evidence of the impact of non-price competition on CEO compensation, our paper suggests that analyses focusing only on price competition overlook that incentive compensation contracts may be highly effective in oligopolistic markets where firms have market power and managerial talent is needed to deal with large investment in intangible assets. One further implication of our results is that markets product competition is likely to *substitute* for incentive schemes in homogeneous product markets and to *complement* performance-pay in differentiated product markets as a corporate governance mechanism. Third, we provide evidence that the financial crisis has determined a disciplining impact on executive compensation but only in industries subject to competitive pressure.

The picture that emerges from our analysis highlights that the effect of product market competition on the design of CEO compensations prevails on the effect of family ties. The main policy implication of our analysis is that (minority) shareholders and institutional investors should pay more attention to the negative effect on CEO compensation resulting from of lack of competition than to those due to possible drawbacks of family involvement in management. Indeed, firms not exposed to competitive pressure are the ones that might benefit most from adopting compensation packages more related to firm performance. This is particularly true in more recent years since we found that, in the years after the financial crises, CEO pay-performance sensitivity has declined in less competitive industries. In contrast, family firms do not seem to use CEO compensation as a rent extraction device, particularly those operating in industries more exposed to competitive pressure.

The remainder of the paper is organized as follows. Section 2 illustrates the theoretical 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 reports the results of the econometric analysis. Section 6 presents further discussion and robustness tests. Finally, Section 7 concludes.

2. Theoretical framework and hypotheses

This paper relates 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 ownership, 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 a decrease of the optimal level of managerial incentive and, as a result of this, of the incentive-related pay (Vives 2008). Indeed, changes in competitive pressure may take place in several ways and the effects are different depending on 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 from 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. First, firm market share tends to decrease due to free entry, reducing the CEO incentive to exert effort. The second and opposite effect arises because the elasticity of the market share to productivity increases, boosting the returns to effort. Hence, it pays to incentivize the manager to reduce costs and improve performance. Which effect prevails is not clear a priori. However, 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 increasing 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 (2015) show that Italian firms have been affected by import penetration by Chinese products and, as a result of this, have reduced prices and markups. This suggests that Italian firms operating in sectors more exposed to import penetration from countries with low labor cost face a more severe threat for their survival vis-à-vis firms in industries protected from foreign competition. On this basis, we expect to find a positive relationship between the intensity of foreign competition and the sensitivity of CEO compensation to firm performance. This leads us to formulate the following hypothesis.

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 monetary incentives but they do find an effect on non-monetary in-

centives: CEO turnover is higher in unregulated banks.[7] 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 two deregulation waves resulted in higher performance pay sensitivity of executive compensation schemes.

The effect of 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 as well as within-firm wage differentials 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 the firm's product market conditions and find that increased competition (i.e. lower import and export prices) reduces both wages and quasi-rents per worker[8]. Finally, Karuna (2007) analyzes the effect on managerial incentives provided by three determinants of competition, product substitutability, market size and entry cost. He finds that product substitutability and market size have a positive relation with managerial incentives, while entry costs have a negative relation.

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

Despite the variety of measures of competition used in previous literature, all studies focus on increases in competition resulting in more intense price competition, such as that driven by increasing foreign competition. However, competition may affect compensation policies also when products are differentiated, firms have market power, and strategic interaction among firms leads to non-price competition. As mentioned before, theoretical models suggest that product substitutability determines the manager's optimal level of effort (Graziano and Parigi 1998 and Raith 2003). 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

[7] A similar finding is obtained by DeFond and Park (1999) who study the effect of relative performance evaluation (RPE) on CEO turnover in US firms, and find that RPE is more effective in firms in more competitive sectors as measured by the Herfindahl-Hirschman Index (HHI).

[8] Fernandes et al. (2014) find opposite evidence, using the change in firm entry regulation in Portugal after 2005 as quasi-natural experiment. They show that pay-performance sensitivity of CEO compensation decreased after the deregulation.[9] Although the classification of industries based on R&D and Advertising investment to proxy for the nature of competition somewhat overlaps with a classification based on the intensity of foreign trade (as many oligopolistic vertically differentiated market are also highly internationalized and dominated by multinational enterprises), the former enables to emphasize the non-price competition component in the competitive mechanism. This is also the reason why we prefer to rely on measures of sunk intangible assets rather than on straightforward concentration measures of industry structure (such as the Herfindhal index), to proxy for competitive pressure.

Samwick (1999) develop oligopoly models where an optimal managerial compensation scheme relates to the degree of product differentiation, finding that in both Cournot and Bertrand differentiated models, compensation becomes more sensitive to own-performance as product differentiation increases.

The degree of product differentiation is thus a key element in shaping the strategic interactions among firms that may ultimately affect optimal compensation contract. The relevant implication for our research question is not that in homogeneous product markets, there is no competitive pressure, but that in these markets product competition is likely to *substitute* for incentive schemes in disciplining managers, as predicted by Hart (1983). In contrast, when products are differentiated, we expect the market mechanism - competition - to *complement* the internal corporate governance mechanism - incentive schemes, in order to reduce managerial slack.

The difference between homogeneous and differentiated products is properly explained within the recent industrial organization literature, where industry structure (such as industry concentration) is not merely an exogenous determinant of firm conduct and performance, but is instead endogenously determined by the competitive process. 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 (Sutton, 1991, Davies, Lyons et al, 1996).

The "escalation" in R&D and/or advertising expenditures thus enables us to distinguish between industries where product differentiation dominates and competition relies on these (non-price) elements, and homogenous product markets where price competition prevails. Furthermore, the strategic use of intangible assets to sustain the competitive advantage highlights the need to rely on CEOs with the appropriate skills in markets characterized by non-price competition, thus linking the nature of competition with the managerial talent hypothesis, as synthesized by Hubbard and Palia (1995): "*a higher level of potential competition" requires "a more capable CEO and, therefore, higher and more responsive pay*" (p. 108).

Finally, sectors with high level of R&D and advertising expenditures have another feature relevant for the 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).

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 in industries with large investment expenditures in intangible assets that increase the perceived product differentiation like advertising and R&D are higher than in homogeneous product industries where competitive pressure is a substitute for incentive compensations.*

We are not aware of empirical studies analyzing the effect of non-price competition and product differentiation and, 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.[9]

2.2. Corporate governance and family firms

Many firms around the world have a controlling shareholder, often a family, even in countries with dispersed ownership (see for example Holderness, 2009). There are two competing views of why family firms are so prevalent (see Bertrand and Schoar, 2006 for a survey). The first view underlines their positive role and states that family control can lead to superior economic results with respect to non-family firms. This is so because ownership aligns objectives and provides the proper incentives, thus minimizing the agency costs of owner management, and because owner-managers have a long-term horizon as opposed to the short-termism and myopia of corporate managers.[10] Furthermore, there may be a "within family correlation in managerial talent" (Bertrand and Schoar, 2006, p. 76, and Sraer and Thesmar, 2007). The negative view instead sees family firms as a suboptimal economic organization emerging where cultural values and weak investor protection

[9] Although the classification of industries based on R&D and Advertising investment to proxy for the nature of competition somewhat overlaps with a classification based on the intensity of foreign trade (as many oligopolistic vertically differentiated market are also highly internationalized and dominated by multinational enterprises), the former enables to emphasize the non-price competition component in the competitive mechanism. This is also the reason why we prefer to rely on measures of sunk intangible assets rather than on straightforward concentration measures of industry structure (such as the Herfindhal index), to proxy for competitive pressure.

[10] This view is supported by several empirical studies reporting higher performance in family firms than in non-family firms, particularly when the firm is still managed by its founder (see for example Anderson and Reeb 2003).

induce the founder/owner to pursue nonmonetary objectives (see Banfield 1958, Demsetz and Lehn, 1985, Fukuyama 1995 and Burkart and Panunzi, 2006). For example, a family member may be appointed as CEO because of family ties rather than ability. This view is consistent also with the managerial power theory according to which the higher is the power of the CEO the higher the probability that he/she pursues personal objectives different from firm value maximization. In case of the owner-CEO, the personal objectives of the CEO would coincide with the objectives of the family, rather than those of the firm.

Despite the importance of founding families and continued family ownership, less attention has been paid to managerial compensations in environments with concentrated ownership.

Traditional agency theory does not recognize the need for incentive contracts for family members. Being entitled to residual rights should already provide the proper incentives to maximize firm value and make firm owners less prone to divert resources. In other words, if family firms are an efficient organizational form that minimizes agency costs because of convergence of interest, there is no need to rely on monetary incentives. However, family ownership can alleviate some agency problems and at the same time, can exacerbate others such as expropriation of minority shareholders or inefficient CEO succession when the founder retires (see Burkart, Gromb and Panunzi 1997). In particular, also the owner-manager faces the lure of opportunistic behavior whenever its ownership stake shrinks and he/she becomes at least in part the agent of outside shareholders.

In their seminal paper, Jensen and Meckling (1976) explicitly model a situation in which the insider begins to bear the *agency costs of equity* – monitoring, bonding and residual loss – as soon as he/she decides to go public, i.e. to sell equity claims of the corporation to outside shareholders. The bonding costs are all expenditures necessary to limit his ability to take full advantage of some opportunities at his advantage but at the expenses of other stockholders. Among these bonding costs, they include "the establishment of incentive compensation systems which serve to identify the manager's interests more closely with those of the outside equity holders" (p. 323). This in turn may lead to a quite different incentive structure, in firm managed by the owner, with respect to firms owned by atomistic shareholders, where the magnitude and the composition of executive compensation packages may depend on the firm ownership and family status of the CEO.

The few contributions that relate the empirical findings on managerial compensations in family firms to the theoretical framework in which family firms operate reflect the two alternative points of view on the role of family firms summarized above. According to the positive view, stressing the convergence of interest, several factors may affect the compensation package of family CEOs and reduce the level of their remunerations. First, there is less risk to be compensated since

family CEOs face less risk of being fired.[11] Second, given that family CEOs are unlikely to compete in the external managerial market, the value of their outside options is lower (see for example Gomez-Mejia et al. 2003). More recently, other authors have argued that also privately-held family firms face agency costs. According to Schulze et al. (2001), the agency problem in family firms arises because while family owners share the same economic objective they may have different non-economic goals. Indeed, family considerations may induce owners to take actions that endanger firm value. For example, family ties make it very difficult to take disciplining actions toward a family member even if his/her behavior damages firm value. While Schulze et al. focus mainly on privately held family firms, we believe that most of their predictions apply also to listed family firms that need to tap the public equity markets for funds and have to reassure the potential investors that they will not be expropriated. Therefore, incentive pay may be a useful tool also when the CEO is a family member and we should expect a positive relationship between family-CEO pay and performance. This leads us to the following hypothesis for the compensation of family CEOs.

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

By the negative view instead, family firms as suboptimal organization pursuing non-economic objectives, where controlling shareholders, in absence of strong protection of minority shareholders, can use CEO compensation as a possible mean to extract rents at the expenses of other shareholders. Since expropriation takes place mainly through fixed compensation, this hypothesis predicts higher salary for family CEOs. However, Bebchuck and Fried (2004) explain that expropriation can take place also through variable pay. In particular, they underline the role of "camouflage" in the design of compensation arrangements with the aim to legitimate high compensation packages with no real relationship with firm performance, despite the appearance. Camouflage, for example, can explain why in many circumstances bonuses and incentive pay are not designed to reward the manager for his/her contribution to firm performance but they are simply aimed to dis-

[11] 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.

guise a high compensation, that, otherwise, shareholders would oppose. In other cases, it can explain why executive compensation increases when firm profits rise for reasons that are independent of manager's effort as shown by Bertrand and Mullainathan (2003). A different form of camouflage may be represented by asymmetric relationship between pay and performance according to which pay is sensitive only to positive changes in 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 - rent extraction hypothesis) *We expect higher level of compensation for family CEOs and, possibly, incentive compensation contracts that hide "camouflage activities" like rewards for luck, or asymmetric sensitivity to positive and negative changes in firm performance.*

Overall, the empirical evidence supports both the positive and the negative view of the role of family ties on CEO compensation, though the majority is consistent with the former, predicting lower pay and weaker pay-performance sensitivity. Gomez-Mejia et al. (2003) look at a sample of publicly traded U.S. family-controlled firms, and show that the pay of CEOs who are members of the controlling family is lower and less sensitive to firm performance than the pay of outside CEOs. The difference gets larger as family ownership as well as R&D investment increase since the positive effect of R&D investment on CEO pay, primarily in the form of long-term income, holds only for non-family-CEOs. Croci, Gonenc and Gozkan (2012) also find evidence in favor of the positive view in a large sample of publicly listed firms in Continental Europe, where family control is more common than in the US. In particular, they find that family-CEOs receive lower total and equity-based compensations than professional CEOs.

On the other hand, the findings of Cohen and Lauterbach (2008) and Cai et al. (2013) support the rent extraction hypothesis. The first study analyzes the compensation of family versus non-family CEOs in a sample of Israeli firms and finds that family-CEOs ("Owner") are paid significantly (50%) more than professional ("Non-owner") CEOs. The second one looks at private, unlisted Chinese family-firms and shows that family managers have higher compensation than non-family managers and that a larger portion of their bonuses is not contingent on firm performance.

Finally, Bandiera et al. (2015) use personnel data on managers of Italian firms in the service sector to analyze how firms select and motivate managers. They find that firms offering stronger incentives attract more talented managers and have higher profits and returns on capital. Moreover,

they find clear-cut differences between family and non-family firms. Specifically, family firms offer low powered incentive contracts, are less likely to offer bonuses and to promote or fire managers based on their performance, and less likely to have promotions fast tracks.

2.3 Market competition or family ties?

We derived the hypotheses discussed above by looking separately at product competition and family control. However, firms are simultaneously subject to different competitive pressure and to different governance structures. We thus argue that, in a corporate governance system of concentrated ownership, these two factors have to be jointly considered in order to disentangle their impact on the structure of managerial compensation. Then, the issue is how these two forces interact and whether they complement or substitute each other.

When competition is tough, selecting the CEO from a small pool of family members can lead to significant underperformance, endangering firm survival; incompetent CEOs appointed because of their family relationships, are less likely to manage successfully the firm. As a result, we expect family firms operating under competitive pressure to separate family and business objectives, and to ignore family ties when they select the CEO and compete for hiring the best possible CEO from the pool of managerial talent (in line with the managerial talent hypothesis described in Section 2.1). Therefore, 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 options as a non-family CEO and this in turn results in the need for the firm to offer him/her a compensation package similar to the one offered to a non-family CEO. Ultimately, the effect of competition will mitigate, and perhaps dispel, the influence of family ties on managerial compensation. This leads us to the following hypothesis:

HP. 4: *While in less competitive industries the level of compensations and pay-performance sensitivity of family and non-family CEOs may differ, we expect that in more competitive industries they are the same.*

Exploring differences in pay-performance sensitivity of family and non-family CEOs in differently competitive environments, allows us to throw some light on the behavior of family CEOs. For example, high compensations and positive pay-performance sensitivity for family CEOs in less competitive industries is likely to signal rent extraction and rewards for luck consistent with the

negative view of family firms whereas high sensitivity in more competitive industries would support the positive view and the efficient fit of family incentives to more complex business environments.

The recent financial crisis of 2007-08 provides us with a unique opportunity to verify the response of family and non-family CEOs to an external shock to the firm environment that is quite similar to an unexpected increase of competitive pressure. During the crisis and the subsequent downturn, firms' earnings and market valuations 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 top executives, particularly in financial firms, even when firms were suffering severe losses and firing employees. For instance, an article titled "*Big Compensations with Very Poor Results*" ("*Grandi Stipendi con pessimi risultati*") criticized the high managerial compensations and the missing link between pay and performance, complaining that the CEO of Unicredit, one of the largest Italian banks, received a sum in excess of 40 million euros upon his leaving the bank, while at the same time the bank was announcing the layoff of 5,000 workers.[12] The public outcry has led the CONSOB, the national authority supervising the equity markets, to require firms to disclose the full remuneration policy (i.e. including stock options and equity compensations) for top executives and has possibly driven many firms to align executives' pay and firm performance more closely even before then. This may have occurred particularly within firms that are more exposed to foreign competition, differently from banks and financial services.

As long as the financial crisis is a severe threat to firm survival and provides a disciplining mechanism for both managerial slack and rent extraction behavior similar to an increase in competitive pressure, we derive the following hypothesis:

HP. 5: (financial crisis) *We expect the 2007-08 financial crisis to increase the pay-performance sensitivity for both family and non-family CEOs. Furthermore, we expect a stronger incentive effect in more competitive industries.*

3 Empirical Strategy

[12] Il Fatto Quotidiano, February 16, 2012. Another article highlighted that reports on CEO compensations of listed companies lack transparency and the information provided on the composition of compensation is still inadequate, *Niente crisi per gli stipendi dei super manager*" by Andrea Mollica, September 19, 2012, available at: http://www.gadlerner.it/2012/09/19/niente-crisi-per-gli-stipendi-dei-super-manager

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 1999). 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), 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 rely on two measures of firm performance. One is market capitalization, the product between the share price at the end of the year and the number of outstanding shares in the market. However, stock market-based variables are influenced by many factors beyond the executives' control and, for this reason, they may be a noisy measure of the CEO performance. As a result, we also consider an accounting, or book, measure of performance, the return on assets, or *ROA* (EBITDA to total assets), which is a standard ratio of profitability that measures how efficiently the firm's assets are employed, regardless of the financial structure. 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*). [13]

Given the longitudinal nature of our panel data, 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. However, using firm fixed effects as a stratification variable does not control for the fact that different CEOs may have managed the company in the period. Therefore, we include *CEO tenure*, the number of years the CEO served in the company to account for managerial turnover, which would otherwise bring undesirable breaks in the estimation. In addition, CEO tenure allows us both to test whether managers' compensations tend to rise with tenure 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). We then control for another CEO spe-

[13] According to Murphy (1999), elasticity generally leads to a better fit of performance-pay in cross-sectional analyses and has the advantage that it can be better compared across firms of different size.

cific characteristic, CEO age, which is often used to proxy for the CEO's experience and expertise. Finally, we include firm size because past research has established that remunerations tend to increase with firm size (Murphy, 1985) and that family firms (and more generally closely-held firms) tend to be small (La Porta et al. 1999). To summarize, the baseline specification is the following:

$$Log(CEOcomp)_{it} = \alpha + \beta_1(FirmPerformance)_{it} + \beta_2 CEO\_Tenure_{it} + \beta_3 Log(FirmSize)_{it} + \beta_4(CEO\_Age)_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (1)$$

where $Log(CEOcomp)_{it}$ is the logarithmic transformation of (inflation corrected) total compensation awarded to the CEO of firm i in year t, and $Firm\_Performance_{it}$ is the performance variable of firm i in year t 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}). CEO_Tenure_{it} indicates the number of years served as a CEO in firm i *at time* t and $Log(FirmSize)_{it}$ is the log of real sales, *CEO_Age* is a dichotomous variable 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.

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. *Prima facie*, 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 may imply differences in the remuneration scheme.

On closer inspection, however, 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 within the sample period from 2000 to 2011, as the Italian economy, similarly to other EU member states, has experienced a gradual trade liberalization process, not a foreign trade shock, with increasing import penetration by Chinese products.[14] Therefore, in the absence of a well-defined natural exper-

[14] 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 producing a wide range of homogeneous, vertically and horizontally differentiated products. All of this suggests that using the China for-

iment that exploits a *change* of competitive pressure over time, we exploit the *differences* in the nature and intensity of competition across industries as measured in two different ways (see below). We thus use a dichotomous variables to distinguish industries (and firms accordingly, based on their primary industry) and we interact the appropriate industry-specific dummy with firm performance variables to test the difference in CEO pay-performance sensitivity.

Second, as explained in Section 2, the impact of competition differs depending on the source of the competitive pressure. In particular, increasing exposition to foreign trade typically covers only one kind of competitive pressure, i.e. "price-competition". One novelty of this study is that we extend the analysis to the impact of "non-price" competition driven by R&D and advertising expenditures, which is typical of oligopolistic markets, as modelled in the industrial organization literature.[15] Therefore, in the empirical analysis, we classify firms as subject to *Low* or *High* competitive pressure (high vs. low import penetration or high vs. low R&D and advertising intensity, measured at the industry level) based on their primary industry. Because the primary industry is usually invariant over time, hence perfectly collinear to the fixed firm-specific effects (which of course cannot be omitted), we will investigate cross-firm differences in pay-performance sensitivity by interacting firm performance with the primary industry's competitive environment (under both definitions). The baseline specification (1) thus modifies as follows:

$$Log(CEOcomp)_{it} = \alpha + \beta_1(FirmPerformance)_{it} * High\_Comp_i + \beta_2(FirmPerformance)_{it} * Low\_Comp_i + \beta_3 CEO\_Tenure_{it} + \beta_4 Log(FirmSize)_{it} + \beta_5(CEO\_Age)_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (2)$$

Where *High_Comp* and *Low_Comp* are two dichotomous variables that indicate alternatively high and low import penetration and high and low R&D and Advertising intensity at the industry level and *Firm_Performance* is alternatively the Return on Asset ratio (ROA) or the log of market capitalization.

The third econometric issue is the non-random assignment of managers to firms operating in more or less competitive industries. In the absence of a natural experiment, we rely on family ownership to help us with identification of the effect of competition. Family ownership and control are important features of the Italian corporate governance, and a large majority of Italian listed firms, even the very large mature ones, is ultimately family-owned and often managed by family CEOs

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eign trade episode would be incomplete and at best imprecise and blurred from both the cross-sectional and temporal point of views.

[15] Finding an "exogenous shock" or a natural experiment for "competition" as defined by the intensity of endogenous sunk costs incurred by the firm to sustain their competitive advantage is even more difficult than for a definition of competition based on foreign trade .

(Volpin 2002, Carpenter and Rondi, 2006, and Rondi and Elston, 2009). 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.[16] We exploit two key variables in our dataset, both hand-collected and based on information about firm ownership: the controlling shareholder and the parental relationships of the CEO with the controlling family. We then test if differences in pay-performance sensitivity between family and non-family CEOs disappear or increase whenever the company is subject to tougher competition, the idea being that all family-related idiosyncratic features in the compensation contract should be leveled out when competitive pressure bites. Although it can be argued that also family ownership (or control) is not randomly assigned (because the decision to keep or release firm's ownership may depend on the complexity of the competitive scenario), if the impact of competition is stronger than family ties, then all differences should disappear for family and non-family firms under the same regime. Otherwise, our findings would reveal that family ties are stronger than competition.

Last but not least, as anticipated in Section 2.3, we do exploit the "quasi-natural" experiment provided by the financial crisis of 2007-2008 episode, as this shock may be viewed as a disciplining mechanism, similar to a sudden increase in the competitive pressure. We thus adopt the difference-in-difference strategy to investigate how incentive compensations of family and non-family managers adjust to adverse economic conditions.

To provide a preliminary statistical framework to this identification 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 across the two dimensions of compensation policy. Next, we turn to regression analysis. To detect differences between family and non-family CEOs in pay-performance sensitivity we interact the performance measures of firms subject to high or low competitive pressure with two additional dichotomous and time variant variables indicating whether the CEO is a member of the controlling family (*FamCEO* and *no-FamCEO*). Notably, these new family

[16] 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 its 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.

related dummies vary over time as the firms in our panel report quite a turnover between family and non-family CEOs within family firms.

4 Data sources, variables and descriptive evidence

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 stock market at this time, excluding only those firms that are not appropriate for our study, such as financial companies, firms that had less than four continuous years (to guarantee long enough time series to the panel data analysis) of CEO compensation data, and firms objects of large merger or divestiture operations that interrupt the time series.[17] The starting date 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 supervising the equity markets released a new rule whereby listed companies have to disclose information on managers' compensations in their annual reports[18].

To answer the research questions of this paper we use data from different sources. First and foremost, we need information about CEOs' identity, age, tenure and remunerations. Second, we need measures of firm performance. Third, we need variables that capture the competitive environment in which firms operate. Fourth, we collected information about firms' ownership structure, controlling shareholders, board of directors' composition and CEOs' parental relation with the controlling shareholder.

We collected the data on CEO compensation 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 variable in the regression estimations. A careful inspection of the data across firms and time revealed that the individual items are not uniformly reported by companies and a number of companies only reported the total pay, in spite of CONSOB's recommendations, preventing us from using the single components of CEO pay. A comprehensive

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

measure of CEO pay should also cover the values of the CEO's stock and option holdings. Unfortunately, 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. Fortunately, stock options are not common in Italy. A study on all non-financial listed firms in Italy in 2004 shows that more than 70% of firms did not have stock option plans for top executives (Melis et al. 2012).[19] Moreover, in their comparative study on managerial compensation in Europe, Conyon et al (2010) found that the composition of Italian CEO pay in 2008 is as follows: 56% base salary; 16% bonuses; 19% Other pay; 6% option grant; 3% Stock Pay, that is less than 10% in stocks and options.

We complete information by including two CEO-specific characteristics, *CEO Tenure* the number of years the CEO served in the company, and the dummy *CEO_Age,* which is equal to 1 when the CEO is more than 61 years old.[20]

Turning to competition variables, we use two definitions, one for the intensity of foreign competition pressure (price-competition) and one for the nature of the product (non-price competition). As a foreign trade-related variable, 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 3-digit industry j's annual import, production and export respectively in the year 2000, in Italy. From this ratio, we obtain two dichotomous variables, which categorize 3-digit NACE industries into *Low* (below the median) and *High* Import Penetration industries (*LIP* and *HIP* respectively).

The alternative classification of competitive pressure draws on the competitive advantage obtained via endogenous sunk costs in intangible assets, as typically in oligopolistic markets where firms rely on "non-price" competition. Accordingly, we classify industries producing homogeneous products, based on low advertising and R&D expenditures, (*Type 1*) and differentiated products that require high R&D and advertising outlays (*Type 2*). For operational purposes, we adopt the 3-digit NACE industrial classification, based on R&D and advertising to sales ratios for UK industries, constructed by Davies et al. (1996, see Table A2.1, pp. 258-260) and revised by Matraves and Rondi (2007).

[19] Indeed, only in 2012 the CONSOB issued new recommendations that firms disclose the full remuneration policy of the CEOs and of the member of the board of directors, referring explicitly to stock option plans and equity holdings.
[20] We also collected information on CEO education and type of college degree (whether it was business or technical degree). We found this information only for a limited number of CEOs and when we included these variables in our pay-performance regressions, their coefficient were always insignificant. Therefore, we decided to proceed without these variables.

The financial, accounting and ownership firm-level annual data sourced from the CERIS-2001 database and subsequent updates[21]. These were used to calculate our accounting measure of performance, the *Return on Assets* (*ROA*) as the ratio between *ebitda* (earnings before interest, taxes and depreciation and amortization). For the market-based measure of performance we use the *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, we relied on *Indici e Dati*, published yearly by Mediobanca investment bank.

Finally, our theoretical framework accounts for the firm's corporate governance – ownership and control. We consider the role of families 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[22] as well as about the components of board of directors. 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. Second, 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. We thus matched the ownership data with both the owner's position in the board of directors (or managerial board) and with hand-collected information about parental links across board members and constructed two additional dichotomous variables (*FamCEO* and *no-FamCEO*), to identify when the CEO is also a member of the controlling family. Our data show that controlling families often participate in top management in Italy, confirming evidence by La Porta et al. (1999) and by Enriques and Volpin (2007) about the presence of "family CEOs" in countries where investor protection is weak.

4.2 Descriptive evidence

Table 1 presents descriptive evidence of the main characteristics of our dataset. It shows that average CEO tenure is 7 years, and average age is 55. Family firms are clearly predominant: (72%

[21] The CERIS database contains extensive information on Italian industrial firms obtained from 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. Information about firms' ultimate ownership, corporate governance, family ties of the CEO 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.

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

of observations), while family CEOs represent the 43.5%. Finally, 56% of observations refer to firms operating in industries with high R&D and advertising (differentiated products, or Type 2) while 48% to firms operating in industries with high import penetration.

Insert Table 1 about here

The average values presented in Table 1 conceal very large differences that we explore more in detail in Tables 2 and 3. As argued in Section 2, we expect these differences to be explained by intensity of competition in the industry as well as by family control in the firm.

Panel A of Table 2 shows 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. Far from seeking refuge in "protected industries", the share of family firms and family CEOs is significantly higher both in *Type 2* and in high import penetration industries (HIP). Partly this may be due to the fact that, Type 1 and LIP subgroups include public utilities, where the largest shareholder is often the (local or national) government. When we turn to the distribution of family CEOs *within* family firms, we find that the shares of family CEOs in HIP and LIP industries are similar, whereas the share in Type 2 (high R&D and advertising intensity) industries is significantly larger than in Type 1 (homogeneous products). Overall, this preliminary evidence suggests that family control and type of competition may be correlated, justifying our empirical strategy that controls for both when estimating pay-performance sensitivity.

Insert Table 2 about here

As well known, another concern for identification is the direction of the causality between firm ownership and profitability. In Panel B of Table 2, we test mean differences in firm performance by competition and by family status of the CEO, using ROA as an accounting measure of profitability. We find that profitability is significantly lower where competitive pressure is weaker, both in terms of import penetration and of R&D and advertising intensity. This confirms previous findings by Giroud and Mueller (2011) and Guadalupe and Perez-Gonzales (2011) that lack of competitive pressure is more likely to lead to a "quiet life" than to higher profits. Turning to differences by CEO family status, average ROA appears significantly higher in firms managed by non-family CEOs. However, when we disaggregate by competition, it turns out that non-family CEOs

perform significantly better only in industries with low import penetration and homogeneous products (Type-1). In contrast, family-CEOs do not statistically differ from professional managers in Type 2 industries, and do significantly better than non-family CEOs in industries with high import penetration. Finally, while average profitability ratios achieved by professional manager do not differ across competition types for, family CEOs appear to significantly boost firm performance when subject to tougher competitive pressure.

We now turn to CEO compensations and tenure. Table 3, Panel A, looks at differences pay *levels* while the regression analysis in the following sections will analyze the *structure* of the compensation, i.e. the fixed and variables components. Panel B focuses on CEO tenure to understand whether differences in pay levels by competitive pressure and/or family status can indeed be associated to different probabilities of being fired, with the aim to understand whether higher remunerations may compensate higher risk, as suggested by agency theory.

The t-tests on mean differences show that managerial compensations are quantitatively (though not significantly) higher in Type-2 industries as predicted by our *Hypothesis 2*. In contrast, CEO pay is significantly lower in sectors with high import penetration, thus suggesting that "price" competition reduces levels of compensation, while "non-price" competition seems to raise CEO pay on average.

Turning to the differences by family status, family CEOs are paid significantly less than non-family CEOs regardless of the type of competition, a finding that is consistent with our *Hypothesis 3a* about the *level* of compensations. Recall, however, that being a controlling shareholder entitles the family CEO to get other (possibly large) payments from the firm in addition to managerial compensation. Indeed, a study on the payout policy of Italian firms (Battacharyya, Elston and Rondi, 2014) has shown that Italian family firms have higher dividend payout than non-family firm).[23] However, interestingly, competition makes a difference only for family CEOs and only when it is measured by R&D and advertising intensity as indeed we find that family CEOs in Type 2 industries obtain compensations significantly higher than family CEOs in Type 1 industries, consistently with our *Hypothesis 2*. In general, differences by CEO family status appear larger than differences by intensity of competition, suggesting quite different remuneration policies for family CEOs regardless of competitive conditions. In other words, competition does not seem to align the compensation levels of family and non-family CEOs as the former receive a significantly lower pay than the latter.

[23] See Section 6 for a discussion of the dividend issue in the analysis of CEO pay

Overall, the magnitude of the compensations in Type 2 sectors seems to suggest that managerial effort and talent are viewed as crucial to make competitive advantage more sustainable and firm less likely to be imitated and more profitable. However, this evidence is somewhat at odds with the significantly higher fraction of family CEOs in Type-2 industries (though not in HIP, see Table 2) as, 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 explanation is that the controlling families prefer to be in charge where the presence of large and sunk intangible investments makes more difficult to evaluate the manager and at the same time creates the need to empower CEO with high discretion. Indeed, both theoretical and empirical literature have underlined that intangible assets and growth opportunities, often proxied by high R&D expenses, require high incentive pay and in particular stock-based incentives, to overcome the more severe informational problem (Gomez_Mejia et al. 2003). Then, the results of Tables 2 and 3 may indicate that in these sectors it may be efficient to have an owner-manager (see von Lilienfeld-Toal and Ruenzi, 2014).

Insert Table 3 about here

Job stability is another important important variable in managers' utility function. In Panel B we examine differences in CEO tenure and find the average tenure reported in Table 1 is the result of large differences due to both market competition and family status of the CEO. If we look at differences by competition, CEO tenure is significantly higher in Type 1 than in Type 2 industries, whereas no statistically significant difference emerges between tenure in high and low import penetration industries. On the other hand, not surprisingly, tenure is always significantly longer for family CEOs, consistent with the idea that the lower risk of being fired for family CEOs compensates for their lower total pay, as shown in Panel A. More interestingly, the tenure of family CEOs is significantly shorter in highly competitive industries, both Type 2 and HIP. This is consistent with findings in previous literature that, also for family CEOs, competition affects both monetary and non-monetary incentives, as those provided by the probability of being fired. In contrast, tenure for non-family CEOs is significantly shorter in Type 2 (differentiated) industries, but not in high import penetration sectors. Thus, the mean difference tests suggest that overall competition reduces CEO tenure though this holds true especially for family CEOs.

Finally, we also investigated tenure of non-family CEO in family firms. For brevity reason we do not report these values in the table. Results show that family firms value stability also in their labor relations with non-family members: tenure of non-family CEOs in family firms, although still

significantly shorter than that of family CEOs, is greater than in the whole sample and the difference is larger in less competitive industries.[24] Tenure of non-family CEOs in family firms is 7.64 in Type 1 industries (versus 5.85 in the whole sample of firms), and 7.22 (versus 5.37) in in low-import penetration industries.

The descriptive evidence presented so far suggests that there may be two different kinds of family CEOs: one that enjoys a quiet (and safer) life in protected industries and (possibly) extracts rents from relatively underperforming firms (see Table 2, Panel B), and another one that performs like or even better than professional CEOs and attains high profitability in highly competitive industries. The former is consistent with a negative-view of family CEOs (*H3b*), the latter with the positive, agency-solving view of large shareholder and family CEOs (*H3a*). However, it is time now that we focus on the structure, not only on the level, of the managers' compensations.

5. Results

5.1 Pay-performance sensitivity, industry competition and family status of the CEO

To set the scene, we begin with estimates of pay-performance sensitivity (equation (1) in Section 3). The fixed effect model allows us to control for 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 the firms' competitive environment. Standard errors are robust to heteroscedasticity and clustered at the firm level.

In Table 4, Columns (1) and (2), we find that CEO pay is positively and significantly related to firm performance as measured by ROA as well as market capitalization. On average, an increase of one percentage point in the ROA (the sample average being 10%) leads to an increase in CEO pay of almost 1% (0.98%) while a change of 10% in market capitalization leads to an increase of 1.2% in CEO compensation. Turning to control variables, we find that CEO pay is positively related with firm size, consistently with consolidated evidence that managerial compensations are heftier in larger firms, and with CEO tenure, in line with corporate governance literature suggesting 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 insignificant.

[24] Ellul, Pagano and Schivardi (2014) provide more general evidence that family firms stabilize employment against industry-level and idiosyncratic shocks more than non-family firms.

To investigate differences across more or less competitive, we rely on equation (2) and we report the results in Columns (3)-(6). The performance variable is interacted with the dichotomous variables indicating low and high competition (*High_Comp* and *Low_Comp*) according to two different definitions, i.e. import penetration (*Imp_Pen*) and intensity of R&D and advertising expenditures (*Type 2,* differentiated products, and *Type 1,* homogeneous products). The estimated coefficients on *Perf*High_Comp* are always positive and highly significant irrespective of how we measure performance (ROA or market capitalization) while the coefficients on *Perf*Low_Comp* are insignificant in all columns except in Column (5), where competitive pressure is measured by import penetration. Our findings suggest that pay-performance sensitivity is high and significant only where competition in the market is tougher, regardless of how we define it. The evidence is consistent with *Hypotheses 1* and *2*, and is similar whether we use ROA or market capitalization.

Finally, in Columns (7)-(8), we look at differences in the pay-performance sensitivity of family and non-family CEOs. We thus interact measures of firm performance with two dummies (*FamCEO* vs. *No-FamCEO*) indicating whether the CEO is a member of the controlling family or not. Perhaps surprisingly, when we use accounting profitability (Column 7), sensitivity is high and highly significant only for family- CEO, not for non-family CEOs, the opposite of what standard agency theory predicts. When instead, we measure performance by market capitalization (Column 8), the estimated coefficients for family and non family CEOs are very similar and both significant, suggesting that sensitivity, hence compensation policy, does not differ across family and non-family CEOs.[25]

Insert Table 4 about here

Summing up, the evidence in Table 4 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 term of import penetration and product differentiation, CEO pay-performance sensitivity is high and significant. The evidence from the corporate governance perspective is at variance with traditional agency theory, as it shows that the incentive schemes offered to family CEOs and professional managers do not differ and similarly link their pay to firm performance.

[25] We also control that pay-performance sensitivity does not vary with firm size, since family firms are typically smaller (La Porta et al. 1999). The results show that the interacted terms were always insignificant and that everything else remained equal. We do not report these additional results for brevity reasons.

5.2 The joint "competition" and "family" effects

One potential caveat to interpreting the difference between β_1 and β_2 in equation (2) as the effect of competition on pay-performance sensitivity would be the presence of another sorting mechanism for managers that is itself affected by the different competitive pressure. In other words, the effect of competition is not be correctly identified if it is systematically correlated with an unobserved component, affecting the way CEOs sort themselves into industries with different kinds of competition. One of these sorting mechanisms, in corporate governance systems such as in Italy, is family ownership and control, since the toughness of competition may influence the choice of the industry (by the firm's founder) as well as the choice of the CEO by the controlling family.

Tests of mean differences in Table 2 showed that family firms as well as family CEOs cover a significantly larger share in both high-import penetration and high R&D and advertising intensity industries, suggesting that they do not seek repair from competitive pressure. Furthermore, we also found that family CEOs tend to report significantly higher profitability than non-family CEOs in *Type 1*, *LIP* and *HIP* industries, but not in *Type 2* sectors. All this suggests that, if omitted, family control might bias our understanding of the effect of competition on the decision to apply incentive compensations.

We therefore use "family control" to identify the effect of competition. Our argument runs as follows: whatever the reasons[26] behind the decisions to rely on incentive contracts and in the structure of the remunerations, all differences should be leveled out when competition bites and managerial slack need to be curbed. Empirically this implies that if pay-performance sensitivity becomes similar for family and non-family CEOs under tougher competitive conditions then the impact of market competition prevails on family ties.

To implement the test, we interact firm performance with the two dummies *Low_Comp* and *High_Comp* and each of them with the two dummies *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 present the results in Table 5, where Columns (1)-(4) report estimates for the full sample of firms, whereas Columns (5)-(8) report results for the subsample of manufacturing firms, therefore excluding public utilities and building construction companies.

[26] As discussed in Section 2, the theory suggests that rent expropriation (of minority shareholders) is more likely to occur in closely-held (or family) firms while monitoring and entrenchment problems are more typical of widely-held companies.

Insert Table 5 about here

Columns (1)-(4) show that pay-performance sensitivity in less competitive industries is never significant for non-family CEOs, while it is significant for family CEOs but only if firm performance is measured by accounting profitability. In contrast, when competitive pressure is high, both family and non-family CEOs report high and statistically significant pay-performance sensitivity coefficients (except in Column (3), where the p-value is 13%). The results are very similar when we restrict our attention to manufacturing firms (Columns (5)-(8)): non-family CEOs pay is not significantly related to performance (while family CEOs' pay is) in less competitive industries, but turns sensitive to performance and highly significant both in in Type 2 and in high import penetration industries.

To test the effect of competition, we now look at differences in coefficients and test their significance at the bottom of the table. The difference between pay-performance sensitivity in family and non-family CEOs is statistically significant in *Low_Comp* industries in Columns (1), (3), (5), (6) and (7), but always insignificant in *High_Comp* industries. In other words, where the competitive environment becomes complex, either due to high import penetration or intensive use of sunk intangible assets to differentiate the product, all differences in pay-performance sensitivity related to family ties of the CEOs disappear. This evidence is consistent with our *Hypothesis 4*, and supports the idea that competition shapes the structure of compensations in line with optimal contracting and with best practice corporate governance.

The above result is important for at least two reasons. First, it underlines the strength of the impact of competition as a disciplining device of managerial slack and rent extraction. Second, it highlights the complementarity between an external (competition) and an internal (incentive compensation) corporate governance mechanism. Finally, this evidence is interesting because is at variance with much of the theoretical literature and empirical evidence insisting that sensitivity should be lower within family firms and for family CEOs. In contrast, our results suggest that in listed firms controlling families may wish to signal to both the equity market and minority investors that their family CEO operates in line with optimal contracting and best practice of corporate governance.[27] Such behavior is in line with Jensen and Meckling (1976)'s theory of *bonding*-related agency costs that owner-managers have to bear when they sells equity claims of the firm to outside shareholders.

[27] 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%.

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

In this section, we modify the standard pay-performance specification in order to investigate possible camouflage activities by family (or non-family) CEOs and possibly shed some light on the positive and negative views of family firms. Our theoretical framework has pointed out the latitude that family CEOs might have in the extraction of rents and private benefits of control at the expense of minority shareholders. Motivated by the debate about compensations being related to positive changes in performance, but not negative ones (Bebchuk and Fried, 2004), in Table 6 we test the asymmetry of the pay-performance sensitivity of family and non-family CEOs to positive and negative changes in firm performance.[28] This analysis allows us new insights into the corporate governance of family firms. For example, family CEOs might compensate their lower pay levels by reducing their sensitivity to performance when there is a negative change and by increasing it when the change in positive, in other words by maneuvering the symmetry in the structure of the compensation.

To test the asymmetry in pay-performance sensitivity, we do not rely on positive vs. negative earnings (as in Joskow and Rose, 1994) nor on positive or negative changes in net income (as in Bertrand and Mullainathan 2001), but we focus on changes in the accounting profitability index used so far, the Return on Asset ratio. We construct two dichotomous variables, one that identifies the positive changes in ROA (*Dumpos*=1) and one for the negative changes in ROA (*Dumneg*=1). Then, we estimate a pay-performance equation, where ROAs are interacted with *Dumpos* and *Dumneg* and with *FamCEO* and *no-FamCEO* dummies, in order to estimate separately the relationships between positive and negative changes in profitability and family and non-family CEOs' pay (see also Joskow and Rose, 1994).

Table 6 reports the results for the full sample of firms in the manufacturing sector and for four sub-samples by nature and intensity of competition.[29] The coefficients in Column (1) reveal that the pay of both family and non-family CEOs symmetrically respond to increases and decreases in performance.

[28] Starting from Bertrand and Mullainathan (2001), the recent literature has focused on asymmetry in CEO pay for luck, i.e. whenever CEO annual pay goes up when firm performance increases due to good luck, but does not go down by the same extent when firm performance deteriorates due to bad luck. For empirical evidence see also Garvey and Milbourn (2006) and Gopalan, Milbourn, and Song (2010). Overall, the idea that there is asymmetry in pay for luck is well accepted in the literature. Our research question, however, is slightly different in that we ask whether "reward for luck" is more likely for family CEOs.

[29] We use separate industry sub-sample because adding a further level of interaction (by Type1/Type2 and by HIP/LIP) would make the results quite unreadable.

Insert Table 6 about here

In the remaining columns, we explore if differently competitive environments lead to asymmetric sensitivity of pay to performance, but the results do not support this form of camouflage neither by family CEOs nor by professional managers. The only evidence of asymmetry is in Column (5), where the pay of non-family CEOs appears sensitive only to negative changes in firm performance, in industries with high import penetration. However, the results in Table 6 confirm that the impact of product market competition aligns the structures of compensations of family and non-family firms (as shown in Table 5 using a differently designed test). Again, we note, perhaps surprisingly, that competition plays a disciplining role mostly for non-family CEOs. For example, comparing Columns (4) and (5), we find that as import penetration increases, also the sensitivity of non-family CEOs' pay becomes statistically significant (if only to negative changes in profitability) and more similar to family CEOs'. Focusing on Columns (2) and (3), the results highlight important differences between Type 1 and Type 2 industries. In the former none of the coefficients is significant revealing the ineffectiveness of performance pay within Type 1 industries (for better and for worse), while coefficients point at the extreme responsiveness of CEO compensations in Type 2 industries, where the competitive mechanisms involves strategic escalation of R&D and advertising expenditures to differentiate the product and sustain the competitive advantage.

As a second test of camouflage activities, we consider the hypothesis that pay-performance sensitivity may result from compensation contracts that allow CEOs to be rewarded for luck (Bertrand and Mullainathan, 2001). Empirically, this implies that we check if CEOs receive pay rises for increases in firm performance that are beyond their control, i.e. due to events or general trends that benefit all firms alike. Under optimal contracting, managers should not be rewarded for luck, but only for improvements resulting from their effort. In particular, family CEOs, as "insiders" in the company, should be well aware when luck or (their own) merit is responsible for the firm's results and their pay should change accordingly, provided they do not derive their utility from rent extraction. Similarly, if competitive pressure reduces the scope for slack and non-monetary benefits for family CEOs and strengthen shareholders' monitoring on non-family CEOs, there should be less room for "luck" rewarding, regardless of the origin of the CEO. As before, all differences in the extent to which CEOs are compensated for luck should disappear whenever competition starts to bite.

To test this hypothesis, first, we subtract the average ROA of industry j (ROA_{jt}) from the firm's ROA (ROA_{it}) in order to obtain a straightforward measure of CEO "merit".[30] The difference between ROA_{it} and ROA_{jt} is meant to capture if the CEO really "makes a difference" for firm's performance, i.e., the *Merit* of the CEO. Then, we estimate a regression where we include this idiosyncratic CEO-specific component (ROA_{it} - ROA_{jt}) of firm performance. The purpose is to verify if the CEO pay actually responds to his/her ability to improve the firm's performance beyond the industry trend. In addition, differently from Bertrand and Mullainathan (2001), we also investigate whether this response varies with the firm's control structure and with the competitive environments. To this end, we interact our measure of performance – "*Merit*" – with the *Famceo* dummy to test whether the pay-merit relationship is significantly different for family CEOs and then we further interact "*Merit*Famceo*" with the *Type2* dummy to test if competitive pressure makes a further difference.

The results are in Table 7. *Merit* is statistically significant (and positive) only in Column (2), suggesting that, on average, CEO pay is actually sensitive to "merit" and not to luck only in the subsample of manufacturing firms. Moreover, interestingly, neither the family status nor the type of competition seems to affect the pay-merit relationship. If we restrict our attention to family firms (where the default is the non-family CEO hired by a family firm) in Column (3), we notice that sensitivity of pay to "merit" is significantly weaker for family CEOs, therefore suggesting that family CEOs are more likely rewarded for luck than non-family CEOs. However, the results also show that the interaction between *Merit*, *Famceo* and *Type 2* is positive and significant. This indicates that the pay of family CEOs becomes genuinely sensitive to performance (beyond industry performance) when they operate in industries where non-price competition dominates and, symmetrically, that "reward for luck" is only permitted to family CEOs when they operate in "protected" environments. Notably, the coefficient on *Merit*Famceo*Type2*, which describes the sensitivity of pay to "merit" of family CEOs operating in Type2 industries, is statistically significant also in Column (1), for the full sample. Overall, the evidence in Table 7 is consistent with previous results showing that family firms operating in competitive environments offer the proper incentive to their CEOs, even when they are family members.

More in general, in this section we find evidence that shows that camouflage activities or ineffective performance-pay contracts are more likely to occur within industries more "protected" from the competitive industries, but not within highly competitive industries, where also family ties of the CEO cease to matter.

[30] The test is in the spirit of relative-performance evaluation studies (see Aggarwal and Samwick, 1999)

Insert Table 7 about here

5.4 The 2007-2008 financial crisis and incentive compensation

What are the implications of the financial crisis of 2007-2008, and of the subsequent economic downturn for the pay-performance schemes of CEOs? Does the competitive environment combine with the crisis to tighten the relationship between CEO pay and performance? Do family- and non-family CEOs' compensations respond differently to declining firm performances? To answer these questions, we perform a difference in differences exercise that exploits the financial crisis episode as a "quasi-natural" experiment. The purpose is to test whether the financial crisis has produced an effect similar to a generalized increase in competitive pressure and if the effect is different for family and non-family CEOs, separately. The specification we estimate is the following:

$$Log(CEOpay)_{it} = \alpha_0 + \alpha_1 High\_Comp_j * Post2007_t + \beta_0 Performance_{it} + \beta_1 Performance_{it} * Post2007_t + \beta_2 * Performance_{it} * High\_Comp_j * Post2007_t * + + \beta_3 FirmSize_{it} + \beta_4 CEO\ Tenure_{it} + \beta_5 CEO\_Age_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (3)$$

where *High_Comp* is as usual a dummy indicating either Type-2 (differentiated industries) or 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, β_2 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 their primary 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 in Table 8 are qualitatively consistent with the idea that the crisis had a disciplining effect on managerial compensations provided the firm operates in a highly competitive environment. In the years post 2007, the level of CEO pay is lower in *High_comp* industries (α_1 is negative), and its relationship with firm performance is tighter (β_2, the coefficient of *Perf*HighComp*Post07* is positive).

Insert Table 8 about here

The difference between family and non-family CEOs is remarkable. The signs of the coefficients are similar in the two groups, but the impact of the crisis is significantly stronger within non-family CEOs. Looking at Columns (1)-(4), the pay structure of family CEOs seems unaffected by the crisis, as the β_0 coefficient indicates that pay-performance sensitivity is a strong and persistently positive, before and after the crisis and in all industries. However, the negative coefficients on β_1 - sensitivity during the years of the crisis, *Perf*Post07*- suggest that the crisis apparently *reduced* sensitivity to firm performance for family CEOs, while the positive β_2 coefficients on *Perf*HighComp*Post07* suggest that, in the downturn, pay responsiveness has increased in highly competitive industries.

Turning to non-family CEOs, in Columns (5)-(8) we note that the financial crisis had a statistically significant impact on their compensation packages, but again the effect is strong only when they are subject to competitive pressure. The level of the compensations of non-family CEOs has significantly decreased post 2007 while their sensitivity to performance has significantly increased, but only if they operate in High_Comp industries. Overall, the evidence shows that the crisis *combined with* competitive pressure has made the pay of non-family CEOs much more susceptible to performance than in the non-crisis years.

Thus, apparently, in contrast with anecdotal evidence, the pay of professional manager was not insensitive to the crisis, but only provided they are subject to competitive pressure. Moreover, noting that, for non-family CEOs, the magnitude and the significance of the β_0 coefficients on the *Performance* term is always smaller than for family CEOs, these results overall also suggest that the crisis has made the pay structure of the two groups more similar, in line with our prediction *H4* that competition prevails on family ties.

To sum up, specifically, the financial crisis seems to reduce sensitivity in protected industries, but to boost CEO incentives in highly competitive industries, where the levels of pay diminish and the slope of its relationship with performance rises. More in general, the above evidence supports the idea that the external incentives provided by product market competition and the internal incentives provided by compensation schemes complement each other. It is also consistent with the hypothesis that better corporate governance makes firms more able to adjust to increases in competitive pressure as shown also by Amore and Zaldokas (2012) for US firms.

6. Discussion and Robustness

One potential problem for the identification of the impact of competition on pay-performance is that differences between family and non-family CEOs' remuneration contracts may derive from the fact that, in addition to managerial compensation, family CEOs obtain from the firm other (possibly large) payments for example cash dividends. It is therefore important to consider if, the estimated differences across firms subject to different competitive pressure and corporate governance may be biased because these additional sources of income are omitted. *Prima facie*, dividends and other forms of ownership-related monetary benefits should affect the difference in pay *levels* across family and non-family CEOS, as we indeed find in Table 3, which shows that family CEOs always receive a lower pay. However, provided the amount of dividends increases (to some extent) with firm performance, dividends might also affect the *slope* of the relationship, by flattening (reducing) the sensitivity of family CEO pay to performance, in that dividends may be viewed as a substitute reward or compensation to the manager-owner. Hence, should we obtain that sensitivity of family CEOs is systematically and significantly *lower* than the sensitivity of non-family CEOs, we might suspect that our results indeed suffer from an omitted variable bias. Comfortingly, however, our results show exactly the opposite, i.e. that pay-performance sensitivity of family CEOs is not lower but instead *higher* than of non-family CEOs' (see Table 4, for example).

Nevertheless, we still have to consider if the omission of dividends policy may affect firms with family and non-family CEOs differently across more or less competitive sectors. For example, we might expect smaller sensitivity of dividends to earnings and more smoothing in sectors more protected from competitive pressure. In other words, we may expect an even flatter relationship between pay and performance for family CEOs. In contrast, our results show that elasticity is always higher for family CEOs also within sectors less exposed to (both types of) competition. Overall, this suggests that dividend policy should not undermine our results via the omitted variable bias.

Finally, we conduct a few robustness checks. A few recent papers (Cai et al.; 2013, Gomez-Mejia et al., 2003, Bandiera et al. 2015) do not estimate pay-performance sensitivity, but directly compare the pay structure of family- and non-family CEOs using the information reported on balance sheets, surveys or other sources, about the single components (salary, bonuses, equity-based, shares or stock options granted etc.). When we collected the CEO pay data, we found that the separate items were often reported inconsistently (over time and across CEOs) in the annual or corporate governance report, and their fixed or variable nature not easy to understand. This experience cautioned us against using these data to assess the relationship between pay and firm performance di-

rectly. Hence, we preferred to estimate the fixed and variable components via regression analysis of total pay on firm performance. Nevertheless, we can still use these data for a robustness test that, among other things, allows us to dig a bit further into the asymmetric response of CEOs pay to positive and negative changes in firm performance.

We thus look at the "*bonus*" component of pay, i.e., a component that represents a premium for the achievement of some positive results, supposedly increasing the total compensation when the CEO hits the target. In Table 9, we restrict our attention to the subsample of available observations on the bonus variable (*as per* the annual report data requested by CONSOB) and use the ratio of bonus to total pay as the dependent variable. We then investigate whether bonuses are related to firm performance, if they are higher (or lower) for family CEOs and whether the family status of the CEO affects the performance-sensitivity of the bonus. To measure firm performance we use the Return on Asset (ROA) in the first two columns and the market capitalization of the equity in the remaining two.

Insert Table 9 about here

Results in Table 9 are similar throughout the columns; the negative coefficients on the dummy *Famceo* and the positive coefficient on the interaction between *Famceo* and *Performance* (both statistically significant) indicate respectively, that family CEOs obtain smaller bonuses than non-family CEOs, but also that their bonus is more significantly related to firm performance (than non-family CEOs'). Finally, note that firm size enters with a strongly significant positive coefficient, while tenure is never statistically significant, indicating that CEO seniority does not affect the firm policy in terms of bonuses, but also that bonuses are more typical of large firms.

7. Concluding Remarks

We analyze how product market competition and family ties contribute to shape the CEO compensation policy using a panel of Italian non-financial listed firms in the period 2000-2011. 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, which accounts for price competition and investment in R&D and advertising, which contribute to product differentiation and account for non-

price competition. We encompass the role of family ties for incentive compensations by identifying whether the CEO is a member of the controlling family. Therefore, our study allows us to test whether product market competition has a different impact on the compensation structure of family and non-family CEOs.

To identify the impact of competition in absence of a natural experiment, we use the differences in the pay-performance sensitivity of family and non-family CEOs subject to high or low competitive pressure. We exploit the 2008 financial crisis to test whether the crisis had an effect similar to that of an increase in competitive pressure and similar for family and non-family CEOs.

Our main results can be summarized as follow. Overall, CEO compensation is positively related to firm performance. Sensitivity is higher in competitive sectors and the difference between family and non-family CEOs disappears when competition is tough, consistent with our prediction that competition levels differences out. Family CEOs receive a significantly lower pay than non-family CEOs, but their pay is related to firm performance similarly to non-family CEOs, a result in contrast with the traditional agency view. Therefore, we further explore the family issue by investigating two possible alternative explanations of the results, involving two "camouflage" activities, i.e., asymmetric sensitivity of pay to performance and "pay for luck". We find that the response of family CEO pay to firm performance changes is symmetric, particularly so in competitive industries. In contrast, non-family CEOs report a symmetric unresponsiveness of pay to performance in less competitive industries, which turns into a significant symmetric sensitivity under tough competitive conditions. The evidence from the analysis of pay for luck suggests that family CEOs may be rewarded for luck but only if they operate in less competitive industries. Hence, also the analysis of possible camouflage activities shows that competition leaves no room for rent extraction, and that if family firms wish to obtain private benefits of control they have to rely on other methods [REF, Tunneling Johnson, La Porta, Lopez-de-Silanes Shleifer, 2000 AER, PBC Dick and Zingales?] and do it possibly in protected industries.[31]

Finally, we find that the 2007 financial crisis, has reduced the difference between family and non-family CEO by lowering the level of compensation of non-family CEOs and by increasing its responsiveness to performance in highly competitive industries. 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 Italy. On contrary, it suggests that expropriation

[31] For example, Bandiera et al. (2015) find that small-medium, unlisted Italian family firms that operate in the service industry hire less talented managers and are less likely to offer pay schemes related to performance and to reward executives on the basis of formal evaluations.

based on the compensation policy may take place in non-competitive industries. As such, our analysis suggests that minority shareholders and institutional investors should pay more attention to monitor CEOs and their pay packages in firms operating in protected industries than in family firms.

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Table 1

Summary Statistics

	Mean	Std.Dev.	Min	25th Perc.	50th Perc.	75th Perc.	Max	N. Obs.
Total Compensation (000 €)	907.7	1834.4	92.5	251.1	433.2	904	36720	1024
Market Capitalization (000 €)	2284312.1	8105891.2	5331.5	84726.6	278891.6	1031256.1	88830072	1018
ROA	0.100	0.067	-0.11	0.06	0.09	0.13	0.52	1024
Firm Sales (000 €)	2850042.5	9705624.4	4367.6	132578.4	334373.4	1166813.5	88864424	1024
Ceo tenure	7.046	5.642	1.00	3.00	6.00	9.00	31.00	1024
Ceo age	55.341	9.612	35.00	48.00	55.00	61.00	86.00	1022
Family dummy	0.716	0.451	0.00	0.00	1.00	1.00	1.00	1024
Family CEO dummy	0.435	0.496	0.00	0.00	0.00	1.00	1.00	1024
High R&D and Advertising (Type) dummy	0.563	0.496	0.00	0.00	1.00	1.00	1.00	1024
High Import Penetration (Imp_Pen) dummy	0.484	0.500	0.00	0.00	0.00	1.00	1.00	1024

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

Table 2

Family Firms and Profitability by intensity of competition and family status of CEOs

Type 1 denotes industries with homogeneous products and Type 2 denotes research- and advertising- intensive industries (differentiated products); High and Low Imp_Pen (HIP and LIP) denote industries with above or below average import penetration. *ROA* is the EBITDA/Total Asset ratio. 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.

Panel A: Percentage Share of Family Firms and Family CEOs in high/low competitive industries						
	Type 1 **N = 481**	**Type 2** **N = 607**	**Mean Difference Type 1 - Type 2** **p-value**	**Low Import Penetration** **N = 569**	**High Import Penetration** **N = 519**	**Mean Difference Low - High 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**

Panel B: Mean ROA by product differentiation / import penetration and family control							
	Total obs. **N = 1071**	**Type 1** **N = 470**	**Type 2** **N = 601**	**Type 1 - Type 2** **p-value**	**LIP** N = 556	**HIP** N = 515	**LIP-HIP** **p-value**
		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 3 –CEO compensation and tenure by competition and control. Mean values.

CEO compensation is in thousands of 2000 Euros. Type 1 denotes industries with homogeneous products and Type 2 denotes research- and advertising- intensive industries (differentiated products); High and Low Imp_Pen (HIP and LIP) denote industries with above or below average import penetration. 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 or CEO tenure 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 1** N = 457	**Type 2** N = 580	**Type 1 - Type 2 p-value**	**LIP** N = 539	**HIP** N = 498	**LIP-HIP 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: Tenure by product differentiation / import penetration and family control							
	Total observations N = 1088	**Type 1 N =**	**Type 2 N =**	**Type 1 - Type 2 p-value**	**LIP** N =	**HIP** N =	**LIP-HIP p-value**
Total observations		**7.47 N=481**	**6.74 N=607**	**0.73 p=0.035**	**7.22 N=569**	**6.89 N=519**	**0.33 p= 0.344**
Non-Family CEO N=613	**5.45**	5.85 N=315	5.03 N=298	**0.82 p=0.028**	5.37 N=350	5.57 N=263	**-.20 p=0.587**
Family CEO N=475	**9.15**	10.55 N=166	8.39 N=309	**2.16 p=0.000**	10.19 N=219	**8.25 N=256**	**1.47 p=0.000**
Difference p-value	**-3.69 p=0.000**	-4.69 p=0.000	-3.36 p=0.000		-4.82 p=0.000	-2.68 p=0.000	

Table 4

Pay-Performance Sensitivity and Competition by Industry Type and Family Status of the CEO.

			Type 1 vs. Type 2		High vs. Low Imp_Pen.		Fam. Vs. No-Fam CEOs	
	ROA	MktCap	ROA	MktCap	ROA	MktCap	ROA	MktCap
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Performance	0.980***	0.122**						
	(0.373)	(0.050)						
Performance*High_Comp			1.314***	0.156***	1.059**	0.184***		
			(0.499)	(0.057)	(0.523)	(0.057)		
Performance*Low_Comp			0.556	0.091	0.905*	0.077		
			(0.543)	(0.068)	(0.520)	(0.067)		
Performance* Fam_CEO							1.300***	0.122**
							(0.490)	(0.050)
Performance* No-FamCEO							0.732	0.122**
							(0.468)	(0.050)
Log(sales)	0.366***	0.336***	0.369***	0.333***	0.366***	0.333***	0.365***	0.337***
	(0.071)	(0.072)	(0.071)	(0.071)	(0.071)	(0.072)	(0.070)	(0.074)
CEO tenure	0.021*	0.021*	0.021*	0.022*	0.021*	0.022*	0.021*	0.021*
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
CEO_Age	-0.078	-0.066	-0.073	-0.067	-0.077	-0.068	-0.084	-0.067
	(0.059)	(0.059)	(0.059)	(0.059)	(0.059)	(0.060)	(0.059)	(0.061)
Firm dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,024	1,018	1,024	1,018	1,024	1,018	1,024	1,018
Number of firms	115	114	115	114	115	114	115	114
R2	0.197	0.197	0.198	0.199	0.197	0.201	0.198	0.197

Notes. Fixed effects estimates. The dependent variable is the log of total compensation in thousands of 2000 constant Euros. "Performance" is ROA (Return on Assets) in columns 1, 3, 5, and 7 and log of Market Capitalization in columns 2, 4, 6 and 8. The dummies High_Comp and Low_Comp indicate high and low competition industries based on Type 1/Type 2 and High/Low Imp_Pen. Type 1 denotes industries with homogeneous products and Type 2 denotes research- and advertising- intensive industries (differentiated products); High and Low Imp_Pen denote industries with above or below average import penetration. FamCEO (No-FamCEO) is a dummy which is 1 when the CEO is (not) a member of the controlling family.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 *Panel A - Full sample*

	Full sample				Manufacturing firms			
	Type 1 vs. Type 2		High vs. Low Imp_Pen		Type 1 vs. Type 2		High vs. Low Imp_Pen	
VARIABLES	ROA	MktCap	ROA	MktCap	ROA	Mktcap	ROA	MktCap
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Perf*Low_Comp*FamCEO	1.683**	0.089	1.988***	0.075	2.410***	0.119	2.603***	0.068
	(0.692)	(0.066)	(0.585)	(0.066)	(0.868)	(0.089)	(0.651)	(0.092)
Perf*Low_Comp*No-FamCEO	0.126	0.077	0.406	0.068	-0.675	0.094	-0.011	0.051
	(0.656)	(0.066)	(0.607)	(0.065)	(1.290)	(0.088)	(1.469)	(0.089)
Perf*High_Comp*FamCEO	1.237**	0.145**	0.997	0.178***	1.410**	0.156**	1.207*	0.204***
	(0.616)	(0.059)	(0.661)	(0.059)	(0.604)	(0.062)	(0.653)	(0.060)
Perf*High_Comp*No-FamCEO	1.442**	0.153***	1.151*	0.182***	1.548**	0.162***	1.292*	0.207***
	(0.672)	(0.057)	(0.675)	(0.058)	(0.731)	(0.060)	(0.695)	(0.059)
Log(sales)	0.363***	0.343***	0.362***	0.339***	0.307***	0.283***	0.303***	0.284***
	(0.071)	(0.075)	(0.071)	(0.076)	(0.103)	(0.101)	(0.104)	(0.104)
CEO tenure	0.021*	0.022*	0.021*	0.022*	0.014	0.014	0.014	0.014
	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
CEO_Age	-0.076	-0.064	-0.082	-0.067	-0.068	-0.055	-0.069	-0.053
	(0.059)	(0.060)	(0.058)	(0.061)	(0.056)	(0.056)	(0.056)	(0.058)
Firm and Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$H0_{Perf*Low\ Comp}$: FCEO=NFCEO *(p-value)*	*0.054*	*0.244*	*0.028*	*0.453*	*0.019*	*0.047*	*0.069*	*0.514*
$H0_{Perf*High\ Comp}$: FCEO=NFCEO *(p-value)*	*0.800*	*0.320*	*0.855*	*0.569*	*0.871*	*0.422*	*0.921*	*0.697*
Observations	1,024	1,018	1,024	1,018	747	747	747	747
Number of firms	115	114	115	114	77	77	77	77
R2	0.202	0.202	0.201	0.202	0.211	0.214	0.210	0.216

Notes. Fixed effects estimates. The dependent variable is the log of total compensation. "Perf" denotes the performance variable, i.e. ROA or log of Market Capitalization. Type 1 denotes industries with homogeneous products, Type 2 denotes R&D- and advertising- intensive industries (differentiated products); High and Low Imp_Pen denote industries with above or below average import penetration. The dummies High and Low_Comp indicate high and low competition industries based on Type 1/Type 2 and High/Low Imp_Pen. FamCEO (No-FamCEO) is a dummy which is 1 when the CEO is (not) a member of the controlling family.. 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 Type of Competition

VARIABLES	Full Sample (1)	Type 1 (2)	Type 2 (3)	Low Imp_Pen (4)	High Imp_Pen (5)
Positive ΔROA*FamCEO	1.268**	1.223	1.413**	1.914**	1.071*
	(0.510)	(0.967)	(0.583)	(0.762)	(0.639)
Positive ΔROA*No-FamCEO	1.000**	0.328	1.361*	0.853	0.793
	(0.495)	(0.663)	(0.727)	(0.614)	(0.728)
Negative ΔROA*FamCEO	1.488***	1.250	1.583**	1.999**	1.202*
	(0.567)	(0.899)	(0.685)	(0.755)	(0.723)
Negative ΔROA*No-FamCEO	1.097*	-0.132	1.736**	0.389	1.339*
	(0.554)	(0.830)	(0.709)	(0.718)	(0.771)
Log(sales)	0.310***	0.313***	0.279***	0.306***	0.282**
	(0.069)	(0.101)	(0.103)	(0.094)	(0.117)
CEO tenure	0.020*	0.046**	0.009	0.047***	0.005
	(0.011)	(0.019)	(0.013)	(0.017)	(0.013)
CEO_Age	-0.046	-0.005	-0.057	-0.001	-0.087
	(0.061)	(0.085)	(0.073)	(0.085)	(0.072)
Constant	2.008**	1.463	2.702**	1.609	2.710*
	(0.896)	(1.304)	(1.329)	(1.257)	(1.470)
Firm dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Observations	926	400	526	474	452
Number of firms	115	56	59	64	51
R2	0.181	0.179	0.228	0.196	0.216

Notes. Fixed-effects estimates. The dependent variable is the log of total compensation in thousands of 2000 constant Euros. Type 1 denotes industries with homogeneous products, Type 2 denotes R&D- and advertising- intensive industries (differentiated products); High and Low Imp_Pen denote industries with above or below average import penetration. FamCEO (No-FamCEO) is a dummy which is 1 when the CEO is (not) a member of the controlling family. Robust standard errors in parentheses are clustered by firms. ***, **, * denote significance at 1%, 5% and 10%

Table 7

Analysis of Camouflage: Pay-"Merit" sensitivity by family ties and type of competitio. "Merit" is the difference between Firm ROA and Industry ROA.

VARIABLES	(1) Full sample	(2) Manufacturing	(3) Family Firms
Merit	0.574	1.058*	1.105
	(0.496)	(0.611)	(0.724)
FamCEO	0.002	0.009	-0.017
	(0.083)	(0.087)	(0.084)
Merit*FamCEO	-1.051	-1.683	-1.618*
	(0.836)	(1.113)	(0.984)
Merit*FamCEO*Type2	1.667*	2.019	1.890*
	(0.997)	(1.286)	(1.030)
Log(sales)	0.389***	0.335***	0.372***
	(0.071)	(0.095)	(0.090)
CEO Tenure	0.020*	0.012	0.012
	(0.012)	(0.012)	(0.014)
CEO Age	-0.078	-0.049	-0.011
	(0.061)	(0.058)	(0.068)
Constant	0.956	1.737	1.286
	(0.918)	(1.199)	(1.150)
Firm dummies	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Observations	1,024	747	733
Number of firm	115	77	81
R2	0.195	0.199	0.203

Notes. Fixed effects estimates. The dependent variable is the log of total compensation in thousands of 2000 constant Euros. "Merit" is the difference between Firm and Industry ROA. Type 2 denotes research- and advertising- intensive industries (differentiated products); FamCEO is a dummy which is 1 when the CEO is a member of the controlling family. Robust standard errors in parentheses are clustered by firms. *** p<0.01, ** p<0.05, * p<0.10

Table 8 - Pay-performance sensitivity and the recent crisis by family control

	Family CEOs				Non-Family CEOs			
Dep. Var.:	Competition=Type 2		Competition =High Imp-Pen		Competition=Type 2		Competition =High Imp-Pen	
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)
High_Comp*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)
Perf*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*HighComp*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. The dependent variable is the log of total compensation. "Performance" denotes the performance variable, i.e. ROA or log of Market Capitalization. Type 1 denotes industries with homogeneous products, Type 2 denotes R&D- and advertising- intensive industries (differentiated products); High and Low Imp_Pen denote industries with above or below average import penetration. The dummies High and Low_Comp indicate high and low competition industries based on Type 1/Type 2 and High/Low Imp_Pen. FamCEO (No-FamCEO) is a dummy which is 1 when the CEO is (not) a member of the controlling family. Post07 is a dummy equal to 1 from 2008 to 2011. Robust standard errors in parentheses are clustered by firms. *** p<0.01, ** p<0.05, * p<0.10.

Table 9
Robustness Analysis: Sensitivity of *Bonus* to Firm Performance

	(1)	(2)	3)	(4)
VARIABLES	*bonus* ROA	*bonus* ROA	*bonus* MKTCAP	*bonus* MKTCAP
FamCEO	-1.995***	-1.899***	-8.404***	-9.217***
	(0.580)	(0.552)	(2.543)	(2.423)
Performance	-1.120		0.145	
	(1.745)		(0.108)	
Performance*FamCEO	12.275***	11.233***	0.625***	0.691***
	(3.567)	(3.036)	(0.201)	(0.192)
Log(sales)	0.464***	0.452***	0.249**	0.383***
	(0.074)	(0.070)	(0.125)	(0.063)
CEO Tenure	0.003	0.002	-0.018	-0.019
	(0.034)	(0.033)	(0.029)	(0.031)
CEO Age	-0.297	-0.289	-0.173	-0.216
	(0.251)	(0.252)	(0.240)	(0.239)
Observations	347	347	347	347
R2	0.477	0.476	0.513	0.508

Notes. Limited number of observations available for the dependent variable Bonus; *Bonus* is the *Bonus to Total Pay* ratio; "Performance" denotes the performance variable, i.e. ROA or log of Market Capitalization. FamCEO (No-FamCEO) is a dummy which is 1 when the CEO is (not) a member of the controlling family. Robust standard errors in parentheses are clustered by firms. *** p<0.01, ** p<0.05, * p<0.10.