C.I.R.P.É.E

Centre Interuniversitaire sur le Risque,
les Politiques Économiques et l'Emploi

Cahier de recherche/Working Paper **12-38**

Does Competition Matter for Corporate Governance ? The Role of Country Characteristics

Jean-Claude Cosset
Hyacinthe Y. Somé
Pascale Valéry

Octobre/October 2012

Cosset: HEC Montréal, Québec, Canada H3T 2A7; and CIRPÉE
jean-claude.cosset@hec.ca
Somé: HEC Montréal, Québec, Canada H3T 2A7
yirlier-hyacinthe.some@hec.ca
Valéry: HEC Montréal, Québec, Canada H3T 2A7; and CIRPÉE
pascale.valery@hec.ca

We appreciate helpful comments and suggestions from Claudia Champagne, Alain Coën, Claude Fluet, Gilles Lambert, Ahmed Marhfor, Dalibor Stevanovic, Nicolas Vincent, and Pierre-Yves Yanni on previous versions of this paper. We also received valuable comments from seminar participants at the 2012 Administrative Sciences Association of Canada (ASAC) Conference, the 2012 CIRPÉE Conference, the 2012 IFM2 Mathematical Finance Days and Université de Sherbrooke.

Abstract:
We investigate the empirical relation between competition and corporate governance and the effect of country characteristics on this relation. We find that competition is associated with strong corporate governance, but only in less developed countries. We next examine the impact of corporate governance on firm value given the level of competition. We find that competition and corporate governance appear to be complements in explaining firm value in developing countries, while in developed countries they are substitutes.

Keywords: Product Market Competition, Corporate Governance, Economic and Financial Development, Investor Protection

JEL Classification: G30, L00, O16

Does competition matter for corporate governance? The role of country characteristics

1. Introduction

Considerable evidence indicates that corporate governance affects firm performance (e.g., Gompers, Ishii, and Metrick, 2003; Cremers and Nair, 2005; Bebchuk, Cohen, and Ferrell, 2009). What factors influence corporate governance is thus an important question in corporate finance. An extensive literature investigates the firm- and country-level determinants of corporate governance (e.g., La Porta, Lopez-De-Silanes, Shleifer, and Vishny, 2000; Klapper and Love, 2004; Durnev and Kim, 2005; Doidge, Karolyi, and Stulz, 2007). This literature documents that firm-level growth opportunities and external financing needs are relevant for corporate governance, as well as the level of investor protection in a country and a country's level of economic and financial development.

While the above firm- and country-level determinants of corporate governance have gained much attention over the last two decades, recent empirical studies consider the role of industry characteristics, particularly the extent of product market competition, in influencing corporate governance. Evidence from the U.S. (Giroud and Mueller, 2011) and other developed countries from the European Union (Ammann, Oesch, and Schmid, 2011) suggests that firms in less competitive industries benefit more from good governance than do firms from competitive industries. These studies show that agency costs such as lower labour productivity, higher administrative expenses, and more value-destroying acquisitions are higher in less competitive industries. In competitive industries, in contrast, competition reduces these agency costs and increases firm efficiency.

The evidence that corporate governance matters more in less competitive industries does not necessarily mean that firms from these industries are associated with better governance than firms from competitive industries. Using the 48 industry classification scheme of Fama and French (1997) and dividing their sample into competition quintiles, Giroud and Mueller (2011) find similar corporate governance ratings across the five quintiles. However, using the North American industry classification system's (NAICS) 1,170 industries, Chhaochharia, Grinstein, Grullon, and Michaely (2009) find that U.S.

firms from less competitive industries implement more governance mechanisms (e.g., fewer antitakeover restrictions and more independent boards) than U.S. firms from competitive industries. This conflicting evidence suggests that the empirical relation between competition and corporate governance has yet to be understood.

Common to most empirical studies on competition and corporate governance is a focus on countries that are economically developed such as the U.S. Yet a country's level of economic development influences firms' corporate governance (Doidge et al., 2007), and thus could affect the relation between competition and corporate governance. Unlike studies on developed countries, however, research on developing countries has had to little to say about whether competition matters for corporate governance. Indeed, to the best of our knowledge no prior study has examined whether country factors influence the relation between competition and corporate governance, and whether the governance irrelevance documented in competitive industries in developed countries extends to competitive industries in developing countries. The objective of this paper is to fill this gap in the literature by examining these relations.

We investigate the empirical relation between competition (weak, soft, and strong) and S&P corporate governance ratings for a large sample of firms from 38 countries. Partitioning the sample into developed and developing countries and controlling for other country variables such as investor protection and stock market capitalization, we find that firms from softly or weakly competitive industries have higher corporate governance ratings than firms from strongly competitive industries, but only in developed countries. In developing countries, competition is positively associated with corporate governance ratings. Moreover, firms from softly and weakly competitive industries have lower governance ratings than firms from strongly competitive industries.

We attribute our findings above to two simultaneous effects of competition on corporate governance. On the one hand, competition reduces firm profits and in turn the internal capital available to finance new investments; in such a context, a firm that seeks external capital should improve its corporate governance as investors require protection in exchange for their capital (external financing effect). This effect is likely to be less pronounced if the country's capital market is developed (as firms can access external

capital at a reasonable cost) or if the country has strong investor protection. In developing countries, however, where the capital market is narrow and external capital is expensive (Doidge et al., 2007), firms need to improve their governance to attract investors, particularly when their survival is threatened by intense competition. On the other hand, competition acts as a disciplinary mechanism by increasing managerial effort (Hart, 1983) and hence investors should not require strong governance to monitor the managers of firms from competitive industries (managerial discipline effect). Our empirical results suggest that the disciplinary effect is dominant in developed countries, while the external financing effect dominates in developing countries. This evidence complements recent empirical studies on competition and governance for the U.S. (see Chhaochharia et al., 2009) by showing that their results extend to a larger sample of developed countries but not to a sample of developing countries.

We next examine the impact of the relation between competition and governance ratings on firm value. For developed countries, we find that firms from softly and weakly competitive industries benefit more from good governance than firms from strongly competitive industries. This evidence is consistent with the results of Giroud and Mueller (2011) for the U.S. and Ammann et al. (2011) for developed countries in the European Union, who also show that corporate governance is more valuable for firms in less competitive industries than for firms in competitive industries. As Giroud and Mueller (2011) suggest, this evidence supports the view that corporate governance and competition are substitutes. For developing countries, we find that corporate governance significantly increases firm value not only in softly and weakly competitive industries but also (indeed, mostly) in strongly competitive industries, suggesting that competition complements corporate governance.

We contribute to the growing literature on competition and governance in several ways. First, while most studies in this literature focus on a single country (Januszewski, Köke, and Winter, 2001; Giroud and Mueller, 2010, 2011; Chhaochharia et al., 2009; Karuna, 2010) or on a handful of developed countries from the European Union (Ammann et al., 2011), we provide evidence for a wide set of firms from developed and developing countries. Further, we highlight the role that the level of economic development plays in

the relation between competition and governance. Finally, for a given level of competition, we show how the effect of corporate governance on firm value varies with the level of economic development. We also contribute to the literature on developing economies by extending this literature to the context of competition and governance. To the best of our knowledge, our study is the first to investigate the impact of the relation between competition and governance on firm value for a wide set of developed and developing countries.

The paper proceeds as follows. In Section 2, we provide a brief review of the literature on competition, managerial incentives, and governance, and we develop our hypotheses. In Section 3, we describe our sample construction and empirical measures. In Section 4, we investigate both the relation between competition and governance and the influence of country characteristics on this relation. In Section 5, we examine the impact of this relation on firm value. Section 6 concludes.

2. Literature review and hypotheses

In a recent paper, Giroud and Mueller (2011) review the theoretical literature on the implications of product market competition for managerial slack and the need to give managers monetary incentives. The authors conclude that the theorized effect of competition on managerial incentives is ambiguous and thus the benefits of incentivizing managers through good governance may be either weaker or stronger in competitive industries.

Recently, financial economists have empirically examined the relation between competition and corporate governance. Using U.S. data, Giroud and Mueller (2011) show that agency costs (lower labour productivity, higher input costs, and value-destroying acquisitions) are higher in less competitive industries but that good governance helps reduce these costs, increasing firm value in these industries. Chhaochharia et al. (2009) further document that the Sarbanes-Oxley Act of 2002, which aimed to enhance internal corporate governance, led to an increase in firm efficiency, but mostly in less competitive

industries, suggesting that corporate governance does indeed mitigate agency costs in these industries.[1]

While prior work has established that increased competition reduces agency costs, the impact of competition on the quality of corporate governance remains a puzzle. If competition reduces agency costs, the need to provide managers with incentives through good governance should be lower. Giroud and Mueller (2011) show that the distributions of corporate governance ratings are similar across competitive and less competitive industries. But Chhaochharia et al. (2009) find that firms in less competitive industries have better corporate governance ratings. This suggests that further research is required to establish the empirical relation between competition and corporate governance.

In this study, we argue that country characteristics can influence the relation between competition and corporate governance. This argument is motivated by the view that countries matter for firms' decision to invest in corporate governance. Doidge et al. (2007, p. 3), for example, argue that

> "countries matter because they influence the costs that firms incur to bond themselves to good governance and the benefits from doing so…. However, mechanisms to do so could be unavailable or prohibitively expensive in countries with poor state investor protection or poor economic and financial development…. Perhaps, the most important benefit of good governance is access to capital markets on better terms. But this benefit is worth less to a firm in a country with poor financial development because that firm will obtain less funding from the capital markets and hence will benefit less from any governance-related reduction in the cost of funds. Consequently, firms in countries with low financial and economic development will find it optimal to invest less in governance and the rights of minority shareholders will be mostly determined at the country level rather than at the firm level."

[1] Karuna (2010) finds a more complex relation: corporate governance ratings increase and then decrease as competition (measured using 4-digit SIC codes) increases, suggesting a non-linear relation.

Doidge et al. (2007) show that country characteristics explain more of the cross-sectional variation in governance ratings than observable firm characteristics. In addition, they find that while firm characteristics are relevant in developed countries, they do not explain corporate governance ratings in developing countries. In this study we investigate whether product market competition, an industry characteristic, is a relevant determinant of firm-level governance. We also investigate what role, if any, country characteristics play in the relation between competition and corporate governance.

Following Alchian (1950), Stigler (1958), and Machlup (1967), we expect that competition reduces firm profits and induces more effort from managers to minimize costs. The reduction in profits has two effects on corporate governance. On the one hand, it reduces the amount of internal financing available to invest in new projects, and hence increases the need for external financing. But the main reason outside investors provide external financing to firms is to receive control rights in exchange (Shleifer and Vishny, 1997), which increases the need for good governance. On the other hand, the reduction in profits increases managers' effort to maximize firm value (or minimize costs), which decreases the need for good governance.

The first argument above is that competition affects corporate governance through external financing needs. Consistent with Doidge et al. (2007), who argue that the benefit of good governance is access to stock markets on better terms, a firm with good governance should be able to access external financing at lower cost and thus not need stronger governance. Consequently, in countries with good governance, firms should have lower need for stronger governance when they face more intense competition. In contrast, in countries with weak governance, firms should have greater need for stronger governance in the face of more intense competition. This latter effect corresponds largely to developing countries, where firms invest less in corporate governance, while the former effect is more characteristic of developed countries.[2] This leads to our first hypothesis:

[2] This argument does not necessarily mean that firms in developing countries will have better governance than those in developed countries. Rather, it suggests that if firms are in need of external finance, improvements in corporate governance will be more pronounced for firms in developing countries than for

Hypothesis I: The impact of competition on corporate governance is strong (weak) in developing (developed) countries, ceteris paribus.

The second argument discussed above is that competition increases managerial effort and thus acts as a disciplinary mechanism encouraging value-maximization. Therefore, the governance of firms from competitive industries will not need to be strong (Giroud and Mueller, 2011), while the governance of firms in less competitive industries, where the lack of competition fails to discipline managers, should be stronger. This argument runs counter to the argument of the external financing effect, which holds that competition may induce good governance through external financing needs. Depending on which effect (external financing or managerial discipline) dominates, firms from competitive industries may have stronger or weaker governance. For developed countries, we expect the external financing effect to be lower than the managerial discipline effect since, on average, firms have good governance and external financing is available at lower cost. Our second hypothesis is thus as follows:

Hypothesis II: In developed countries, firms from less competitive industries have stronger governance than firms from competitive industries (managerial discipline effect dominates), ceteris paribus.

For developing countries, the reduction in profits due to competition and the increased need for external financing that results induce the firm to implement good governance. However, the managerial discipline effect reduces the need for good governance. Therefore, a priori it is not clear whether firms from competitive industries will have weaker or stronger governance than firms from less competitive industries. We argue that in developing countries the external financing effect dominates the managerial discipline effect. The greatest benefit of good corporate governance is access to external capital at lower cost. Therefore, firms in competitive industries that need to raise external capital should improve their corporate governance. In contrast, when competition is weak,

---

firms in developed countries. The initial level of corporate governance is determined by country attributes, which on average induce stronger corporate governance in developed countries than in developing countries (Doidge et al., 2007).

corporate governance should improve (disciplinary effect); but firms will not have incentives to improve their governance because strong governance mechanisms are costly to implement (Doidge et. al., 2007), and these firms face less pressure to raise external capital since they generate profits/internal financing. As a result, firms in less competitive industries will have weaker corporate governance. This discussion leads to our third hypothesis:

Hypothesis III: In developing countries, firms from competitive industries will have stronger governance than firms from less competitive industries (external financing effect dominates), ceteris paribus.

If competition induces better governance in developing countries, as stated in Hypothesis III, then firms from competitive industries should benefit from an increase in competition-related governance. Indeed, if good corporate governance is associated with greater firm value (Gompers et al., 2003), and if competition induces stronger governance, then firms in competitive industries domiciled in developing countries should benefit from good governance. In developed countries, however, competition has a limited impact on governance (Hypothesis II) and hence a firm may not benefit from competition-related governance, in which case governance will be most valuable for weakly competitive firms that have stronger governance. Our fourth hypothesis is thus as follows:

Hypothesis IV: In developing countries corporate governance increases firm value primarily in competitive industries (higher external financing effect), while in developed countries corporate governance increases firm value primarily in less competitive industries (lower managerial discipline effect), ceteris paribus.

Hypothesis IV suggests that in developing countries competition and corporate governance are complements in explaining firm performance, while in developed countries they are substitutes. In the following sections, we investigate whether any of the four hypotheses above find empirical support.

3. Data and variables

Our data collection begins with firms included in the S&P Transparency and Disclosure ratings. We collect firm-level data from Worldscope. Industry concentration measures come from Bureau van Dijk ORBIS, and country variables come from the World Development Indicators database. Variables are described in Table I.

[Insert Table I about here]

3.1 Corporate governance sample

To investigate the relation between competition and corporate governance, we use the S&P Transparency and Disclosure ratings. These ratings were issued in 2001 for 1,443 firms from around the world. The ratings were compiled through examination of year 2000 annual reports and SEC filings. A firm receives a value of one each time it meets one of 98 disclosure requirements and zero otherwise. The requirements are divided into three categories: 28 requirements on ownership structure and investor rights, 35 requirements on board structure and process, and 35 requirements on financial transparency and information disclosure. The summed scores are then converted into a percentage, with a higher percentage indicating better disclosure. These ratings have recently been used in the financial economics literature. For example, Khanna, Palepu, and Srinivasan (2004) evaluate whether foreign companies' interaction with U.S. product, labor, and financial markets are related to their disclosure and governance practices. Durnev and Kim (2005) investigate how firm characteristics and country legal environment affect disclosure practices. Doidge et al. (2007) examine the effect of country characteristics on corporate governance.

We exclude U.S. firms because the S&P Transparency and Disclosure ratings "use US disclosure standards as an implicit benchmark; therefore, they measure the degree of similarity of a company's disclosure practices to US practices" (Khanna et al., 2004, p. 503). Throughout the paper, we refer to the S&P Transparency and Disclosure ratings as *corporate governance ratings* or simply *ratings* for the sake of simplicity. After excluding financial firms, our final sample comprises 682 firms from 38 developed and developing countries. Table II reports descriptive statistics for the S&P corporate governance ratings. Firms with the highest ratings are from Finland (75.69), Ireland

(75.25), and the United Kingdom (71.22) while firms with the lowest ratings are from Colombia (19.15), Taiwan (21.63), and Peru (23.26). The sample standard deviation is 16.54, with minimum and maximum ratings of 5.21 and 88.78, respectively. Taken together, these statistics indicate that there are important cross-country variations in corporate governance ratings.

[Insert Table II about here]

3.2 Product market competition

To examine whether industry characteristics explain corporate governance ratings, we collect data on sales from Bureau van Dijk ORBIS, which covers public and private companies worldwide. Our main measure of competition relies on the Herfindahl-Hirschman index (HHI), a measure of industry concentration that is defined as the sum of squared firms' market shares in industry *i* and year *t*,

$$HHI_{it} = \sum_{j=1}^{N_i} s_{jit}^2, \quad (1)$$

where N_i is the number of firms (j) in the industry. HHIs are computed at the two-digit SIC code level. We exclude observations with negative or missing values on sales. Recent multinational studies consider firm clustering at the two-digit SIC code level (see, e.g., Guadalupe and Pérez-González, 2010; Ammann et al., 2011). In robustness checks, we consider HHI clustering at the three-, and four-digit SIC code level. To obtain our measure of competition, we subtract HHI from one (i.e., 1-HHI) so that high values indicate strong competition.

To evaluate the effect of competition on corporate governance for various competition levels, we follow Giroud and Mueller (2010, 2011) and divide our sample by competition terciles. We define strongly, softly, and weakly competitive industries as industries with (1-HHI) in the highest, middle, and lowest terciles of the empirical (1-HHI) distribution.[3]

[3] Generally, markets with HHI below 0.1 are considered more competitive, while markets with HHI above 0.18 are less competitive (Bergh and Camesasca, 2001). The HHI tercile cut-offs in our sample are 0.08 and 0.21, which are below and above 0.1 and 0.18, respectively. Thus, we believe that our competition levels are accurate.

3.3 Country characteristics

We measure economic development using the logarithm of gross national product per capita from the World Development Indicators database. As a measure of stock market development, we use a country's stock market capitalization scaled by its gross domestic product. This variable comes from Beck and Demirgüç-Kunt (2009) and is available on the World Bank website.

To capture a country's investor protection, we multiply shareholder rights by law and order (Durnev and Kim, 2005; Doidge et al., 2007). Our shareholder rights measure is the revised anti-director rights index from Djankov, La Porta, Lopez-de-Silanes, and Shleifer (2008) and our law and order measure comes from International Country Risk Guide (ICRG). Following Doidge et al. (2007), we split our sample into developed and developing countries, with developed (developing) countries comprising those countries that have gross national product per capita above (below) the sample median.

Panel A of Table III presents the distribution of corporate governance ratings across levels of economic development. On average developed countries have a corporate governance rating of 60.17, while developing countries have a governance rating of 40.21. Among developing countries, corporate governance ratings decline, on average, from 45.51 in strongly competitive industries to 36.96 in weakly competitive industries. We observe a different pattern among developed countries, with corporate governance ratings increasing, on average, from 56.35 in strongly competitive industries to 62.82 in softly competitive industries before decreasing slightly to 60.77 in weakly competitive industries.

Results of mean difference tests suggest that firms from developed countries have, on average, higher corporate governance ratings than firms from developing countries, and that this difference does not change across levels of competition. This evidence supports Doidge et al.'s (2007) finding that firms in developing countries invest less in corporate governance than firms in developed countries. Panel B of Table III shows that this evidence does not stem from a higher level of competition and in turn a stronger disciplinary effect since the means of our competition measure across levels of economic development do not differ significantly. The mean difference in competition between

developed (0.81) and developing (0.80) countries is not statistically significant, which indicates that industries are not less competitive in developed than in developing countries. This suggests that country characteristics account for the distribution of corporate governance across competition levels, as shown in Panel A of Table III.

[Insert Table III about here]

3.4 Firm and industry characteristics

We control for firm-specific determinants of corporate governance such as sales growth, ownership concentration, firm size, cash holdings, and foreign sales (Durnev and Kim, 2005; Doidge et al., 2007). We obtain firm-level data from Worldscope /Datastream and for 2000, the year of the corporate governance ratings.

Sales growth is measured as the two-year geometric average of annual inflation-adjusted growth in net sales. We winsorize sales growth at the 1^{st} and 99^{th} percentiles to reduce the impact of outliers. We expect this variable to positively affect corporate governance ratings (Durnev and Kim, 2005; Doidge et al., 2007).

Note that sales growth, a proxy for firm growth opportunities, may be affected by a country's institutions and business conditions. We therefore use the dependence on external finance as an alternative measure of growth opportunities, as it is computed from U.S. data and thus unrelated to country business conditions (Doidge et al., 2007). More specifically, using data for U.S. firms from Compustat, we first compute firm-level dependence on external finance as the five-year sum of capital expenditures minus the five-year sum of cash flows divided by the five-year sum of capital expenditures. We then construct the dependence on external finance as the median across all firms in the same industry (defined at the two-digit SIC code level). Next, we match U.S. and foreign firms at the industry level. Finally, we assign the industry median (from U.S. industries) to each of our sample firms with the same two-digit SIC code. The dependence on external finance should be positively related to corporate governance ratings.

The ownership concentration variable is the number of closely held shares divided by common shares outstanding. In Worldscope, closely held shares comprise (1) shares held by insiders, including senior corporate officers, directors, and their immediate families,

(2) shares held in trusts, (3) shares held by another corporation (except shares held in a fiduciary capacity by financial institutions), (4) shares held by pension/benefit plans, and (5) shares held by individuals who hold 5% or more of shares outstanding. Controlling shareholders divert less of the firm's cash flows when their ownership in the firm is high (Doidge et al., 2007; Lombardo and Pagano, 2002; Shleifer and Wolfenzon, 2002). Therefore, ownership concentration is likely to be negatively related to governance ratings. Doidge et al. (2007) use closely held shares to proxy for ownership concentration and find that it is significantly negatively related to the S&P corporate governance ratings in developed countries but unrelated to the S&P corporate governance ratings in developing countries.

We measure firm size using the logarithm of total assets. We scale cash holdings by total assets to control for firm size because larger firms are likely to have larger cash holdings. Generally, the literature expects the relations between corporate governance ratings and firm size and cash holdings to be positive because large firms and firms with a large amount of cash can more easily meet the costs of implementing corporate governance. However, firms that have just raised external capital to finance growth opportunities would have higher cash holdings, in which case cash holdings should be positively related to governance ratings, while firms with greater cash holdings are less likely to raise external finance, in which case cash holdings could be negatively related to governance ratings (Doidge et al., 2007). We measure international competition as foreign sales/total sales. We expect foreign sales/total sales to be positively related to corporate governance because more global companies may feel more compelled to adopt global governance standards (Durnev and Kim, 2005; Khanna, Kogan, and Palepu, 2006).

We also include a dummy variable (ADR) to control for cross-listing because ADR firms are likely to have higher corporate governance ratings. ADR takes the value of one if the firm is listed on a major U.S. exchange (that is, ADR levels II and III) and zero otherwise. The ADR variable excludes firms listed through Rule 144A and over-the-counter listings since these listed ADR programs are exempt from U.S. reporting requirements (unlike ADR levels II and III). Information on cross-listing comes from the Bank of New York, Citibank, NYSE, NASDAQ, and JP Morgan.

4. Empirical relation between product-market competition and corporate governance

In this section, we report regression results on the relation between competition and corporate governance and we examine how country characteristics affect this relation. We then report results on the nonlinearity of this relation. Finally, we present results for a series of robustness tests.

4.1 Does competition matter for corporate governance?

We consider the following econometric specification:

$$CG_j = \beta'\left(dev \times competition_j\right) + \theta' F_j + \delta' C_k + \varepsilon_j, \quad (2)$$

where CG_j is the S&P corporate governance rating for firm j, competition is calculated as one minus HHI, where HHI is the Herfindahl-Hirschman Index for firm j's industry and measures industry concentration, dev is a (2×1) vector of development dummies whose first and second rows pertain to developed and developing countries, respectively, F_j is a vector of firm-level variables (sales growth, dependence on external finance, the logarithm of assets, ownership concentration, cash holdings to assets, the ratio of foreign sales to total sales), and C_k is a vector of country-level variables (stock market capitalization, investor protection, developed countries dummy).[4] The developed countries dummy is included to control for any direct effect of economic development. If firms in developed countries have stronger incentives to practice good governance as discussed in Section 2, then the developed countries dummy should have a positive coefficient.

The results in column (1) of Table IV show that competition has a significant effect on corporate governance ratings only in developing countries. Each standard deviation increase in competition raises corporate governance ratings by 1.89, a 3.63% increase over a sample mean of 51.81. These results suggest that competition has a different impact on governance ratings depending on whether the country is developed or developing. In Section 2, we identify two possible effects of competition on corporate

[4] For an example of such an econometric specification, see Giroud and Mueller (2011), who evaluate the impact of corporate governance on firm value in competitive and less competitive industries.

governance: while competition increases the need for stronger governance through the demand for *external financing*, it reduces the need for stronger governance through *managerial discipline*. The evidence in Table IV suggests that the first effect dominates in developing countries, while no effect seems to prevail in developed countries. These findings support Hypothesis I, which posits that the impact of competition on corporate governance is strong in developing countries, while in developed countries its impact is weak. As our list of country-level variables is unlikely to be exhaustive, in column (2) of Table IV we report results of country fixed effects regressions. We find that the impact of competition on corporate governance ratings continues to be strong in developing countries and weak in developed countries.

The results reported in columns (1) and (2) of Table IV further suggest that firms in developed countries have higher corporate governance ratings than those in developing countries. This finding is consistent with the view that developed countries invest more in corporate governance than developing countries (Doidge et al., 2007; Aggarwal, Erel, Stulz, and Williamson, 2009). Indeed, we find that the ratings of firms in developed countries exceed those of firms in developing countries by 10.85. This result continues to hold in country fixed effects regressions. All the control variables display the expected signs. In particular, corporate governance ratings increase with the log of assets, foreign sales/total sales, country-level investor protection, and country-level stock market capitalization, but decrease with ownership concentration.

Overall, the above results support our hypothesis that competition matters for corporate governance, particularly in developing countries (Hypothesis I). One explanation for the insignificant effect of competition on corporate governance in developed countries is that the competition measure captures two opposing effects – the *external financing effect* and the *managerial discipline effect* – which are not expected to work equally in competitive and less competitive industries. Indeed, the descriptive statistics shown in Panel A of Table III suggest that the relation between competition and corporate governance might be non-linear. We investigate this possible explanation in the following section.

[Insert Table IV about here]

4.2 Is the relation between competition and corporate governance non-linear?

In this section, we investigate whether the relation between competition and corporate governance varies with the degree of competition. We begin by dividing the sample into competition terciles (strongly, softly, and weakly competitive). We then estimate the following regression equation:

$$CG_j = \beta_1 softly\ competitive + \beta_2 weakly\ competitive + \gamma' F_j + \delta' C_k + \varepsilon_j, \qquad (3)$$

where CG_j, F_j, and C_k are the same as in equation (2); $softly\ competitive$ and $weakly\ competitive$ are dummy variables that take the value of one if the firm's industry is softly or weakly competitive, and 0 otherwise. All variables are defined in Table I.

Hypothesis II posits that for developed countries, firms in less competitive industries will have higher corporate governance ratings than firms in competitive industries; Hypothesis III on developing countries states the opposite. Hence, we expect the competition dummy coefficients to be positive (negative) for developed (developing) countries.

Columns (1) and (2) of Table V report the results for developed countries. On average, firms from softly competitive industries have 3.68 higher corporate governance ratings than firms from strongly competitive industries; however, the regression coefficient on the dummy for weakly competitive industries is not significant (see column (1)). When we include country fixed effects (column (2)), the coefficient on the softly competitive dummy remains significant and the coefficient on the weakly competitive dummy becomes marginally significant. This finding suggests that the link between competition and corporate governance varies with the level of industry competition.

Columns (3) and (4) of Table V report the estimates of equation (3) for developing countries. The competition dummy coefficients are all negative. On average, firms from softly and weakly competitive industries have respectively 14.63 and 10.56 lower corporate governance ratings than firms from strongly competitive industries (column (3)). The coefficients on the competition dummies increase from softly to weakly competitive industries, indicating that corporate governance ratings decrease from strongly to softly competitive industries and then increase slightly to weakly competitive

industries. In column (4), the inclusion of country fixed effects strongly reduces the *t*-statistics and coefficients on the competition dummies, but the coefficient on softly competitive dummy remains (weakly) significant. This result suggests that a non-linear relation between competition and corporate governance also holds for developing countries. Furthermore, we note that the adjusted R^2 is now four times greater than that in the specification without country fixed effects in column (3), suggesting that unobservable country characteristics are important in developing countries.

In summary, the evidence from Table V support Hypothesis III, which posits that in developing countries firms from competitive industries have better corporate governance than firms from less competitive industries. The evidence also supports Hypothesis II, which posits that in developed countries firms from competitive industries have weaker governance ratings than firms from less competitive industries.

The results from Table V are consistent with prior studies that find different evidence for developed and developing countries. Doidge et al. (2007) show that firm characteristics are not useful in explaining corporate governance ratings for developing countries, but are relevant for developed countries. Corporate governance ratings are negatively related to ownership and positively related to firm size, cash holdings, foreign sales, and the need for external finance (an industry characteristic), but only for developed countries. For developing countries, none of the firm variables significantly explains corporate governance ratings.

While firm-level variables appear to be irrelevant for corporate governance ratings in developing countries, country-level variables explain corporate governance ratings in both developed and developing countries. The results suggest that incentives to invest in firm-level governance are greater with better country investor protection whatever the level of economic development. Stock market capitalization/GDP is positively associated with corporate governance ratings, but only in developing countries. These results support the view that the benefit of a governance-related reduction in the cost of capital increases with financial development and investor protection (Doidge et al., 2007). For developed countries, GNP per capita has a negative and significant coefficient. As noted by Doidge et al. (2007), this evidence is puzzling since we would expect incentives to

invest in firm-level governance to increase with economic development (see the developed countries dummy in Table IV). However, in corporate governance systems that focus more on large shareholders (e.g., business groups[5]) and less on investors' rights, firms finance internally and the rights of minority shareholders could be weaker (Shleifer and Vishny, 1997). The presence of such countries can influence our results only if they contribute heavily to the sample size. This is the case for Japan, which accounts for almost one-fourth of the sample (125 out of 416 firms). In unreported results (available from the authors), we find that when we exclude Japan from the sample, GNP per capita becomes insignificant and our findings on competition and other firm-level variables remain qualitatively similar.

[Insert Table V about here]

4.3 Robustness tests

In the following subsections we provide results from robustness tests on the relation between competition and corporate governance. [6]

4.3.1 Alternative measures of competition

In this section, we test whether our evidence continues to hold when we use two alternative measures of competition. First, we use a firm's price-cost margin (PCM), an empirical proxy for the Lerner index, which measures the extent to which a firm can set prices above its marginal costs (see Giroud and Mueller, 2010). We construct PCM as net income before extraordinary items scaled by total assets. We trim the PCM to ensure that all values fall inside the theoretical bounds of zero and one. A PCM close to one indicates that the firm faces weak competition, while a firm that faces strong competition would have a PCM near zero.

Panel A of Table VI presents results for PCM terciles constructed following the same method that we use to construct competition terciles: strongly, softly, and weakly competitive firms are firms with a PCM in the lowest, middle, and highest PCM terciles.

[5] In Japan, business groups are organized into keiretsus, groups of firms that own control blocks in each other and allow the keiretsu bank to play a major role in corporate financing and managerial enforcement (Berglof and Perotti, 1994; Morck, Wolfenzon, and Yeung, 2005).

[6] The unreported results mentioned in this section are available from the authors upon request.

The results for the competition dummies based on the PCM results are similar to those obtained using the concentration measure (i.e., 1-HHI) although the coefficients on the dummies are smaller.

Our second alternative measure of competition is the four-firms concentration ratio (CONC), computed as the total market share of the four largest firms in each two-digit SIC code industry. Like HHI, CONC measures the extent of market control by larger firms. However, CONC gives less weight to larger firms than HHI. This measure has been used in recent studies (e.g., Giroud and Mueller, 2011; Karuna, 2010). As with the other measures, we split the sample into terciles according to the empirical CONC distribution. The results using CONC, reported in Panel B of Table VI, are comparable to those based on HHI. For developed countries (column (3)), only softly competitive firms have significantly higher corporate governance ratings than strongly competitive firms. For developing countries (column (4)), corporate governance ratings are significantly lower for softly and weakly competitive firms. The evidence in Panels A and B of Table VI provides further support for our predictions, and suggests that our findings are not driven by the choice of competition measure.

[Insert Table VI about here]

4.3.2 Alternative corporate governance ratings

To assess whether our findings are particular to the S&P measure, we consider alternative corporate governance ratings drawn from Institutional Investor Services (ISS) and Credit Lyonnais Security Asia (CLSA).

ISS started providing corporate governance ratings in 2002 for U.S. companies and in 2003 for non-U.S. companies. ISS compiles ratings by examining firms' annual reports, regulatory filings, and websites. The ratings are based on 64 governance attributes for U.S. firms and 55 attributes for firms outside the U.S. For each attribute, a firm receives a one if it meets the attribute's implementation threshold, and zero otherwise[7]. We follow Aggarwal et al. (2009) and retain only the 44 attributes that are common to both U.S. and foreign firms. The 44 attributes cover four categories: Board (25 attributes), Audit (3

[7] For more details on the ISS ratings, see Aggarwal et al. (2009).

attributes), Anti-takeover (6 attributes), and Compensation and Ownership (10 attributes). We focus on 2005 because this year is associated with more firms and fewer missing firm attributes than earlier years (Aggarwal et al., 2009). The ISS ratings mostly cover developed countries.[8]

The CLSA corporate governance ratings, for 2000, were issued in 2001 for firms across global emerging markets (Gill, 2001). Selection criteria were firm size and investor interest, and firm ratings were based on responses by financial analysts to 57 questions divided into seven categories: management discipline, transparency, independence, accountability, responsibility, fairness, and social responsibility. The first six categories were given a weight of 15% in the corporate governance index and the last was given a weight of 10%.

We report the results using the alternative measures of corporate governance in Panel C of Table VI. The results for the ISS sample (column (5)) are consistent with both Hypothesis II and the results above for developed countries in the S&P sample. The competition dummies indicate that on average firms from softly and weakly competitive industries have respectively 2.91 and 5.14 larger ISS governance ratings than those of firms from strongly competitive industries. For the CLSA sample (column (6)), the regression coefficients on the competition dummies suggest that firms from less competitive industries generally have lower corporate governance ratings than firms from competitive industries. Firms from weakly competitive industries exhibit CLSA governance ratings that on average are 6.32 lower than those of firms from strongly competitive industries. The dummy for softly competitive industries takes the expected negative coefficient, but is not statistically significant. Overall, the evidence from the CLSA sample is similar to that reported in Table V for developing countries in the S&P sample.

For the ISS sample, ownership concentration, cash to assets, foreign sales, and country investor protection are significantly related to the ratings, but the dependence on external

[8] The ISS corporate governance ratings are used in recent empirical studies (e.g., Aggarwal et al., 2009; Aggarwal, Erel, Ferreira, and Matos, 2011). For other uses of the CLSA ratings, please see Durnev and Kim (2005) and Doidge et al. (2007).

finance and log of assets are not. In unreported regressions, we control for country fixed effects. The results are similar, but cash to assets becomes insignificant while the log of assets now takes a positive and significant coefficient, and the adjusted R^2 rises to 0.66. For the CLSA sample, firm characteristics such as sales growth, the dependence on external finance, and foreign sales help explain governance ratings. Further, at the country level, stock market capitalization is not significant. When we control for country fixed effects (results are not reported), all firm variables that were significant lose their explanatory power; however, we obtain similar results for the competition dummies, and the adjusted R^2increases from 0.22 to 0.49.

4.3.3 Other robustness tests

One important concern with our analysis above is that the construction of the governance data might introduce endogeneity in the regressions. The S&P corporate governance ratings were reported in 2001 for year 2000. It could be the case that corporate governance provisions implemented before 2000 already affected some firm characteristics when the ratings were constructed. To address this concern, we re-run regression equation (3) for developed and developing countries using firm-, industry-, and country-level variables dating back to 1999. In doing so, we control for the possible influence of corporate governance provisions on the explanatory variables. We report the results in Panel D of Table VI. In short, our inferences remain the same. Firms in softly and weakly competitive industries have higher (lower) governance ratings in developed (developing) countries, and coefficients on the firm and country variables exhibit similar coefficients to those based on the data for 2000.

Another concern is that competition measures built at the two-digit SIC code level may include too many unrelated firms in the same industry.[9] To examine the robustness of our results to the choice of industry classification, we investigate the relation between competition and corporate governance ratings using industries classified at the three-digit

[9] Constructing competition measures for small industries poses several challenges. Competition intensity may not be treated as exogenous since one firm's action can affect the rivalry in the product market. This is likely the case in economically less developed countries with only a few firms in several industries. Further, in narrow industry classifications some firms that are related may be classified into different industries. For example, at the four-digit SIC code level, cane sugar except refining (SIC 2061) and cane sugar refining (SIC 2062) are treated as unrelated although they might actually compete with each other.

and four-digit SIC code levels. We also construct the dependence on external finance, which is an industry measure, at the three-digit and four-digit SIC code levels. We report the results of our estimation of equation (3) in Panels E and F of Table VI. We find that we obtain qualitatively similar results for all three industry classifications (three-digit, four-digit, and two-digit SIC code levels), and thus our results are not driven by the choice of industry classification scheme.

We next examine whether other firm characteristics often used in the literature could influence the relation that we document between competition and corporate governance ratings. Research and development is often used as a measure of capital intangibility. Intangibles are harder to monitor, and firms with a higher proportion of intangible capital tend to implement stronger corporate governance (Durnev and Kim, 2005). Research and development data are missing for several firms in 2000. Since companies with a higher proportion of intangibles may have different characteristics (e.g., they may be growth companies), omitting them may introduce a bias in the sample. We follow Durnev and Kim (2005) by replacing the missing values with zero. We also include two variables used in the governance literature (Lins, 2003; Aggarwal et al., 2011), namely, capital expenditures and leverage. Capital expenditures capture the funds used to acquire fixed assets other than those related to acquisitions. In Worldscope, capital expenditures include additions to property, plant, and equipment (PPE) and investment in machinery and equipment. Investment in fixed capital that has been financed through external capital should be positively related to corporate governance. As a measure of leverage, we use total debt to assets to account for the fact that creditors may act as external monitors (Lins, 2003). When we estimate equation (3) including the three variables above, our evidence, reported in Panel G of Table VI, remains unchanged. (Note that in this regression, industries are classified at the two-digit SIC code level.) Research and development is positively related to governance ratings in developed countries but not in developing countries. Capital expenditures and total debt do not appear to be related to corporate governance in developed or developing countries. More importantly, the competition dummies are not affected by the inclusion of these variables in the regression.

Our next test investigates whether our argument that the relation between competition and corporate governance is non-linear holds when we employ an alternative econometric specification. In particular, we estimate equation (3) by replacing the competition dummies with the competition variable and its square.[10] The results in Panel H of Table VI show that the effect of a change in competition on governance ratings is greater at higher levels of competition than at lower levels. The competition variable is always significant at the 10% level while its square is significant at the 5% level. In developed countries stronger competition is associated with lower governance ratings (the marginal impact of competition is -14.40, evaluated at the mean level of competition for developed countries of 0.81), whereas in developing countries stronger competition is related to higher governance ratings (the marginal impact is 27.01 evaluated at the mean of 0.80). While these findings provide support for a non-linear relation, they highlight the difference in dynamics across development levels: for developed countries, the negative managerial disciplinary effect dominates, which explains the concavity of the relation, while for developing countries the positive external financing effect is responsible for the convexity of the relation.

In summary, the results of this section suggest that our findings are robust to the use of alternative measures of competition and alternative corporate governance ratings. Moreover, our results continue to hold if we classify industries at the three-digit and four-digit code levels, if we include other firm characteristics, and if we use a different econometric specification.

5. Product market competition, corporate governance, and firm valuation

In previous sections, we establish that the impact of product market competition on corporate governance varies with the level of economic development. We show that competition positively affects governance in developing countries, while it negatively affects governance in developed countries. However, the finding that competition improves governance in developing countries does not necessarily mean that competition-related governance will be relevant for firm value. Using U.S. data, Giroud and Mueller (2011) find that corporate governance is more valuable for firms in less

[10] See Karuna (2010) for a similar econometric specification.

competitive industries than for firms in competitive industries. Our Hypothesis IV posits that in developing (developed) countries, firms from competitive (less competitive) industries will benefit more from good governance. In this section, we investigate whether the data support this hypothesis.

We measure firm value using Tobin's Q, which we define as the market value of equity minus the book value of equity plus total assets divided by total assets. To reduce possible endogeneity related to firms with a good valuation having higher governance ratings, we calculate Tobin's Q for 2001, in contrast to the explanatory variables based on 2000 (Durnev and Kim, 2005). Following Giroud and Mueller (2010, 2011), we estimate the following equations:

$$Q_j = \alpha + \sum_{i=1}^{I-1} d_i + \beta'\left(I_i^{HHI} * CG_j\right) + \gamma' F_j + \delta' C_k + \varepsilon_j, \quad (4)$$

$$Q_j = \alpha + \sum_{i=1}^{I-1} d_i + \sum_{k=1}^{K-1} \tau_k + \beta'\left(I_i^{HHI} * CG_j\right) + \gamma' F_j + \varepsilon_j, \quad (5)$$

where d_i and τ_k are industry and country fixed effects, respectively, I and K are the number of industries and countries, respectively, Q_j is firm j's Tobin's Q, CG_j is the (S&P, CLSA, or ISS) corporate governance rating; F_j is a set of firm-specific control variables (sales growth, total assets, capital expenditures, ownership, leverage, cash holdings, PPE, foreign sales, and research and development; see, e.g., Durnev and Kim, 2005; Aggarwal et al., 2009); C_k is a set of country-level control variables (GNP per capita, stock market capitalization, and investor protection), and I_i^{HHI} is a $(3 * 1)$ vector of competition dummies (strongly, softly, and weakly competitive industries). All variables are described in Table I.

In Table VII, we report the estimates of equations (4) and (5). For developed countries, the relation between the corporate governance ratings and Tobin's Q is positive and significant in softly and weakly competitive industries. For example, the coefficient on *CG*softly competitive* indicates that a one standard deviation increase in corporate governance rating in softly competitive industries is associated with a 0.43 increase in Tobin's Q, a 22.10% increase over a developed countries sample mean of 1.93 (see

column (1) of Table VII). For strongly competitive industries from developed countries, we find no significant relation between corporate governance ratings and Tobin's Q. These results extend to a wide set of developed countries the findings of Giroud and Mueller (2011), who show that U.S. firms that benefit from good governance are from less competitive industries, which correspond to softly and weakly competitive industries in our setting.

For developing countries, the corporate governance ratings are positively related to Tobin's Q in all industries. However, firms that benefit more from higher ratings are located in strongly and softly competitive industries. In column (3) (see C*G*strongly competitive*), a one standard deviation increase in corporate governance rating in strongly competitive industries is associated with a 0.92 increase in Tobin's Q, a 60.45% increase over the developing countries sample mean of 1.51. The magnitude of the impact of corporate governance ratings in softly competitive industries is lower; for one standard deviation increase in rating, Tobin's Q increases by 0.65, a 43.17% increase over the developing countries sample mean. For weakly competitive industries, each standard deviation increase in corporate governance rating is associated with a 34.54% increase in Tobin's Q over the sub-sample mean. The evidence suggests that the economic impact of good corporate governance increases with the level of competition in developing countries.

[Insert Table VII about here]

We next present the results using the ISS and CLSA samples in Table VIII.[11] Panel A shows that the ISS governance ratings help explain Tobin's Q only in weakly competitive industries. For a 9.54 increase in ISS rating (which is one standard deviation of the ISS governance ratings), Tobin's Q increases by 0.19, a 10.54% increase over the sample mean of 1.81. The coefficients on the interaction terms between ISS governance ratings and competition dummies for strongly and softly competitive industries are not statistically significant. Further, the size of these coefficients is close to zero, which indicates that the impact is not economically significant in these industries either. The

[11] As in the regressions based on the S&P sample, we lead Tobin's Q by one year to reduce endogeneïty in the regressions based on the ISS and CLSA samples.

ISS results, which are similar to those reported using the S&P governance ratings, are consistent with Hypothesis IV for developed countries; that is, firms in less competitive industries benefit more from good governance than firms in strongly competitive industries.

Panel B reports the results for the CLSA sample. For developing countries in the S&P sample, firms that benefit more from good governance are in strongly and softly competitive industries. For strongly (softly) competitive industries, a one standard deviation (i.e., 13.37) increase in CLSA governance rating is associated with a 3.60 (3.20) increase in Tobin's Q, a 184% (164%) increase over a sample mean of 1.96. For weakly competitive industries: each standard deviation increase in CLSA governance rating increases Tobin's Q by only 47.75% over the sample mean (column (3)). These results are consistent with Hypothesis IV, which posits that for developing countries, the impact of corporate governance on firm value is greater in competitive industries.

[Insert Table VIII about here]

Endogeneity

Above we address potential endogeneity of corporate governance using lagged values of the independent variables in the valuation regressions. To alleviate any further endogeneity concerns, we employ a system of simultaneous equations using three-stage least squares (3SLS) that allows for endogeneity between corporate governance and firm value. To do so, we need to identify an instrument for corporate governance that is unrelated to firm value. We use firms' alpha and beta as instruments for corporate governance (Durnev and Kim, 2005). The values for alpha and beta come from Worldscope, and are computed using between 23 and 35 consecutive month-end percentage price changes relative to a local market index.

Alpha captures the amount of returns not related to market factors, and therefore proxies for future expected excess returns. Higher values of alpha may induce a controlling shareholder to implement good corporate governance (Durnev and Kim, 2005). Hence, alpha should be positively related to corporate governance. Beta captures market risk, that is, the relation between the volatility of the stock and the volatility of the market. The

literature suggests that higher market risk indicates more opportunities for insiders (managers and/or controlling shareholders) to profit from inside information (Demsetz and Villalonga, 2001; Durnev and Kim, 2005). We therefore expect beta to be negatively associated with corporate governance.

We estimate the following system of equations:

$$\begin{cases} CG_j = \alpha_1 + \beta_1 Q_j + \theta_{1,1} competition_j + \theta_{1,2} alpha_j + \theta_{1,3} beta_j \\ \qquad + \theta_{1,4} external\ finance_j + \gamma_1' F_j + \delta_1' C_k + \varepsilon_{1,j} \\ Q_j = \alpha_2 + \sum_{i=1}^{I-1} d_i + \beta_2 CG_j + \gamma_2' F_j + \delta_2' C_k + \varepsilon_{2,j} \end{cases}, \qquad (6)$$

where CG_j is the S&P corporate governance rating, Q_j is firm j's Tobin's Q; d_i represents industry i fixed effects, I is the number of industries, F_j is a set of firm-specific control variables (sales growth, total assets, ownership, cash holdings, foreign sales, research and development), and C_k is a set of country-level control variables (GNP per capita, stock market capitalization, and investor protection). For the governance equation, we include alpha, beta, the competition measure, and the dependence on external finance computed at the industry level.[12] We do not include industry dummies in the governance equation since the dependence on external finance is constructed at the industry level and thus controls for industry characteristics. Furthermore, once included in the regressions, the coefficients on the industry dummy variables are not jointly significant (unreported results). This evidence suggests that the dependence on external finance and firm characteristics such as total assets, research and development, and foreign sales control for other industry characteristics that could explain corporate governance (see also Durnev and Kim, 2005).

We report the results for the S&P corporate governance ratings in Table IX.[13] Unlike in the previous estimations, in this analysis we divide the sample into two levels of competition to ensure we have enough observations in each regression as the inclusion of alpha and beta in the regressions reduces the sample of firms to 113 for developing countries and 288 for developed countries. Competitive (less competitive) industries are

[12] We exclude capital expenditures and debt because they are not significant (see Table VI, Panel F).
[13] We obtain qualitatively similar results with the ISS and CLSA corporate governance ratings.

industries with competition measures above (below) the sample median of the empirical distribution for competition. The results, which are consistent with those in Tables V through VIII, show that competition is positively associated with governance ratings, but mostly in developing countries. Further, corporate governance is positively related to Tobin's Q in competitive and less competitive industries in developing countries (see columns (6) and (8)), but only in less competitive industries in developed countries (columns (2) and (4)). Overall, addressing possible endogeneity through three-stage least squares regressions does not affect the evidence presented in this paper.

[Insert Table IX about here]

Sample selection bias

The corporate governance ratings that we use in this study may induce several biases in the results. First, firms in countries with low economic and financial development or with weak investor protection may be less covered by the ratings because the ratings institutions (S&P, ISS and CLSA) could not finance their surveys in these countries (Doidge et al., 2007). In countries with less ratings covered (particularly developing countries), the relation between competition and corporate governance may be different than that reported here. However, our sample includes a balanced sample of countries from developed and developing countries.

Second, larger firms are more likely to be covered by the S&P and CLSA ratings (Durnev and Kim, 2005; Doidge et al., 2007) as well as the ISS ratings (Doidge et al., 2007). This subjects the results in this paper to sample selection bias. To investigate whether this bias affects our findings, we estimate Heckman two-step selection models for firms in developed and developing countries. We collect data on all non-financial firms covered in Worldscope that are in countries covered by the ratings. We identify 9,477, 9,453, and 5,561, firms for countries surveyed by S&P, ISS and CLSA, respectively. We repeat the estimation of equations (2) through (5) with the new data. The results (not reported) are similar to those presented in Tables IV through VIII, suggesting that sample selection bias does not affect our findings.

Overall, we find that in developed countries, corporate governance ratings are associated with an increase in firm value only in less competitive industries. These results extend the evidence of Giroud and Mueller (2011) for U.S. firms and Ammann et al. (2011) for countries from the European Union to a wide set of developed countries. These results are consistent with competition increasing managers' effort to maximize firm value and thereby reducing the need for stronger governance (the managerial discipline effect), and with competition and corporate governance acting as substitutes. In developing countries, however, corporate governance ratings are related to an increase in firm value in competitive industries, suggesting that corporate governance might be an important issue in these countries, with competition and corporate governance acting as complements in encouraging value-maximization.

6. Conclusion

In this study, we empirically investigate the relation between competition and corporate governance ratings, how country characteristics influence this relation, and how this relation affects firm value. Using a multinational sample of firms domiciled in 38 countries, we first show that product market competition is significantly related to governance ratings, but in a non-linear way. Further, the non-linearities vary with the level of economic development. For developed countries, firms from strongly competitive industries exhibit lower governance ratings than firms from weakly competitive industries. In contrast, for developing countries, firms from strongly competitive industries have higher governance ratings than firms from weakly competitive industries.

We next investigate whether the effect of corporate governance on firm value depends on the level of product market competition. We find that corporate governance ratings are positively associated with firm value, but only in weakly competitive industries, and only for developed countries. For developing countries, the evidence suggests that corporate governance is valuable in strongly, softly, and weakly competitive industries. However, the magnitude of the impact of corporate governance on firm value appears to be greater in strongly competitive industries. This suggests that competition and corporate

governance complement each other in explaining firm value in developing countries, while they are substitutes in developed countries.

Our findings have implications for corporate governance and firm valuation in developing countries. First, governments may consider the benefits of strengthening product market competition rather than imposing costly governance mechanisms on firms. Second, given that firms in competitive industries have good governance that improves their value; developing countries may accelerate the convergence of firm governance towards that of firms in developed countries by focusing on policies that intensify competition in the product market.

References

Aggarwal R., I. Erel, M. Ferreira, and P. Matos, 2011. Does Governance Travel Around the World? Evidence from Institutional Investors. *Journal of Financial Economics* 100, 154-181.

Aggarwal R., I. Erel, R. Stulz and R. Williamson, 2009. Differences in Governance Practice between U.S. and Foreign Firms: Measurement, Causes, and Consequences. *Review of Financial Studies 22*. 3131-3169.

Alchian, A., 1950. Uncertainty, Evolution, and Economic Theory. *Journal of Political Economy* 58, 211-221.

Ammann M., D. Oesch, and M M. Schmid, 2011. Product Market Competition, Corporate Governance, and Firm Value: Evidence from the EU Area. *European Financial Management*, online publishing.

Bebchuk, L. A., A. Cohen, and A. Ferrell, 2009. What matters in corporate governance? *Review of Financial Studies* 22, 783-827.

Beck, T. and A. Demirgüç-Kunt, 2009. Financial Institutions and Markets Across Countries and over Time: Data and Analysis, World Bank Policy Research Working Paper No. 4943

Bergh, V.D.R.J., and P.D. Camesasca, 2001. *European Competition Law and Economics: A Comparative Perspective*. Intersentia: Antwerpen-Groningen, 598 pages

Berglof, E., and E. Perotti, 1994. The Governance Structure of the Japanese Financial Keiretsu. *Journal of Financial Economics* 36, 259-284.

Chhaochharia, V., Y. Grinstein, G. Grullon and R. Michaely, 2009. Product Market Competition and Agency Conflicts: Evidence from the Sarbanes Oxley Law, Temple University Working paper.

Cremers, K. J.M., and V.B. Nair, 2005. Governance mechanisms and equity prices. *Journal of Finance* 60, 2859-2894.

Demsetz, H. and B. Villalonga, 2001. Ownership structure and corporate performance. *Journal of corporate finance* 7, 209-233.

Djankov, S., R. LaPorta, F. Lopez-de-Silanes, and A. Shleifer, 2008. The law and economics of self-dealing. *Journal of Financial Economics 88*, 430-465.

Doidge, C., G. A. Karolyi, and R. Stulz, 2007. Why Do Countries Matter so Much for Corporate Governance. *Journal of Financial Economics* 86, 1–39.

Durnev, A., and H. Kim, 2005. To steal or not to steal: firm attributes, legal environment, and valuation. *Journal of Finance* 60, 1461–1493.

Fama, E.F., and K.R. French, 1997. Industry costs of capital. *Journal of Financial Economics* 43, 153-193.

Gill, A., 2001. Credit Lyonnais Securities Asia. Corporate Governance in Emerging Markets: Saints and Sinners, Who's got religion?, available at: /http://www.worldbank.org/wbi/banking/finsecpolicy/domestic2003/readings.htmlS.

Giroud, X., and H.M. Mueller, 2010. Does corporate governance matter in competitive industries? *Journal of Financial Economics* 95, 312-331.

Giroud, X., and H.M. Mueller, 2011. Corporate Governance, Product Market Competition, and Equity Prices. *Journal of Finance* 66, 563-600.

Gompers, P. A., J. L. Ishii, and A. Metrick, 2003. Corporate governance and equity prices. *Quarterly Journal of Economics 118*, 107-155.

Guadalupe, M., and F. Pérez-González, 2010. Competition and private benefits of control. Mimeo, Stanford University.

Hart, O. D., 1983. The market mechanism as an incentive scheme. *Bell Journal of Economics* 14, 366-382.

Januszewski, S.I, J. Köke, and J.K. Winter, 2001. Product Market Competition, Corporate Governance and Firm Performance: and Empirical Analysis for Germany. *Reseach in Economic* 56, 299-322.

Karuna, C., 2010. Industry Product Market Competition and Internal Corporate Governance. Unpublished Working Paper, University of California at Irvine.

Khanna, T., J. Kogan, and K. Palepu, 2006. Globalization and similarities in corporate governance: a cross-country analysis. *Review of Economics and Statistics* 88, 69–90.

Khanna, T., K. Palepu, and S. Srinivasan, 2004. Disclosure practices of foreign companies interacting with US markets. *Journal of Accounting Research* 42, 475–508.

Klapper, L., and I. Love, 2004. Corporate governance, investor protection and performance in emerging markets. *Journal of Corporate Finance* 10, 703–728.

La Porta, R., F. Lopez-De-Silanes, and A. Shleifer, 1999. Corporate ownership around the world. *Journal of Finance* 54, 471–517.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R. Vishny, 1998. Law and finance. *Journal of Political Economy* 106, 1113–1155.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer and R. Vishny, 2000. Investor Protection and Corporate Governance. *Journal of Financial Economics* 58, 3–27.

Lins, K, 2003. Equity ownership and firm value in emerging market. *Journal of Financial and Quantitative Analysis* 38, 159-184.

Lombardo, G., and M. Pagano, 2002. Law and equity markets: a simple model. In: McCahery, J., Moerland, P., Raaijmakers, T., Renneboog, L. (Eds.), *Corporate Governance Regimes: Convergence and Diversity*. Oxford University Press, Oxford, pp. 343–362.

Machlup, F., 1967. Theories of the firm: Marginalist, behavioral, managerial. *American Economic Review* 57, 1-33.

Morck, R., D. Wolfenzon, and B.Yeung, 2005. Corporate governance, economic entrenchment and growth. *Journal of Economic Literature* 43, 657–722.

Shleifer, A., and R. Vishny, 1997. A survey of corporate governance. *Journal of Finance* 1997 52, 737–783.

Shleifer, A., D. Wolfenzon, 2002. Investor protection and equity markets. *Journal of Financial Economics* 66, 3–27.

Stigler, G., 1958. The Economies of Scale. *Journal of Law and Economics* 1, 54-71.

Table I: Variable Definitions and Sources

Variables		Definition
Panel A: Corporate Governance Variables		
Corporate governance ratings	S&P	S&P Transparency and Disclosure ratings issued in 2001 for year 2000 based on an examination of 98 disclosure requirements. A firm receives a value of one each time it meets one of these requirements and zero otherwise. The results from this examination are then converted into a percentage for each firm.
	CLSA	Credit Lyonnais Security Asia (CLSA) governance ratings issued in 2001 for year 2000 for firms in emerging markets. The ratings are based on responses by financial analysts to 57 corporate governance questions. The responses are converted into a percentage for each firm.
	ISS	Institutional Shareholder Services (ISS) corporate governance quotients issued since 2003 for non-U.S. firms mostly in developed countries. The quotients are based on 55 governance attributes. For each attribute, a firm is given one or zero depending on whether it meets a threshold for the implementation of the attribute. We retain only 44 attributes that are common to both U.S. and non-U.S. coverage (Aggarwal et al., 2009). The results are converted into a percentage for each firm.
Pane B: Industry-level Variables (two-digit SIC codes)		
Herfindahl-Hirschman Index	HHI	Sum of squared firms' market shares based on sales, computed at the industry level. Firm sales are from Bureau van Dijk Orbis.
	Competition	Expressed as one minus HHI.
	Strongly competitive	Dummy variable set to one if competition lies in the highest tercile of the competition distribution, and zero otherwise.
	Softly competitive	Dummy variable set to one if competition lies in the middle tercile of the competition distribution, and zero otherwise.
	Weakly competitive	Dummy variable set to one if competition lies in the lowest tercile of the competition distribution, and zero otherwise.
Four firms' concentration ratio	CONC	Sum of the four largest firms' market shares, constructed using firms sales from Bureau van Dijk Orbis.
External financing	Dependence on external finance	Industry median of the five-year sum of capital expenditures minus the five-year sum of funds from operations divided by the five-year sum of capital expenditures, computed for U.S. firms included in COMPUSTAT from 1995 to 2000; non-U.S. firms and U.S. firms are matched by two-digit SIC codes.
Panel C: Country-level Variables		
Gross national product per capita	Log GNP/capita	Logarithm of annual gross national product per capita (World Bank Development Indicators, WDI).
Investor protection	Country investor protection	Product of anti-director rights index (Djankov et al., 2008) and the rule of law index from International Country Risk Guide (ICRG).
Stock market capitalization	Stock market capitalization/ GDP	Stock market capitalization scaled by gross domestic product (Beck and Demirgüç-kunt, 2009), available from the World Bank.

Panel D: Firm-level Variables		
Lerner Index	Price-cost margin	Net income before extraordinary items (Worldscope 01551) to total assets (Worldscope 02999); we delete values below and above zero and one, respectively.
Growth opportunities	Sales growth	Two-year geometric average of annual inflation-adjusted growth in net sales (Worldscope 01001), trimmed at the 1% level.
Total assets	Log(Assets)	Logarithm of total assets (Worldscope 02999).
Ownership	Ownership	Proportion of shares held by insiders (Worldscope 08021).
Cash holdings	Cash/Assets	Cash and short-term investments (Worldscope 02001) divided by total assets (Worldscope 02999).
International competition	Foreign sales/ Total sales	Foreign sales (Worldscope 07101) scaled by net sales (Worldscope 01001).
Research and development	R&D/Total sales	Research and development (Worldscope 01201) normalized by net sales (Worldscope 01001); we replace with zero when missing.
American Depositary Receipt dummy	ADR	U.S. cross-listing dummy, which equals one if the firm is cross-listed on a major U.S. exchange (level 2 or 3 ADR); source: Bank of New York, Citibank, NYSE, NASDAQ, and JP Morgan.
Excess returns	Alpha	A stock excess returns proxy (alpha, Worldscope item 09803) and a stock market risk proxy (beta, Worldscope item 09802) computed over 23 to 35 consecutive month-end percentage price changes relative to a local market index.
Market risk	Beta	
Capital expenditures	Capital expenditures/Assets	Capital expenditures (Worldscope 04601) divided by total assets (Worldscope 02999).
Leverage	Debt/Assets	Total debt (Worldscope 03255) over total assets (Worldscope 02999).
Property, plant, and equipment	Property/Assets	Property, plant, and equipment (Worldscope 02501) scaled by total assets (Worldscope 02999).
Firm valuation	Tobin's Q	Total assets (Worldscope 02999) plus market value of equity (Worldscope 08001) minus book value of equity (Woldscope 03501) over total assets (Worldscope 02999), trimmed at the 1% level.

Table II
Summary Statistics for S&P Corporate Governance Ratings and the Herfindahl-Hirschman Index
This table reports summary statistics for the S&P corporate governance ratings and the Herfindahl- Hirschman Index, HHI, our primary competition measure. N, SD, Min, and Max are the number of sample firms, the standard deviation, the minimum, and the maximum, respectively. The data are for year 2000.

Country	N	Corporate Governance Ratings				Herfindahl-Hirschman Index (HHI)			
		Mean	SD	Min	Max	Mean	SD	Min	Max
Argentina	5	28.19	5.83	23.40	37.23	0.22	0.07	0.10	0.25
Australia	20	61.14	7.25	44.90	71.28	0.38	0.25	0.08	0.99
Austria	1	43.01	.	43.01	43.01	0.42	.	0.42	0.42
Belgium	3	51.42	14.36	37.23	65.96	0.12	0.08	0.06	0.21
Brazil	25	33.78	11.92	21.28	59.18	0.15	0.12	0.09	0.56
Chile	16	31.09	10.96	15.22	54.26	0.39	0.17	0.17	0.66
China	16	48.58	11.31	28.72	63.44	0.11	0.15	0.00	0.43
Colombia	1	19.15	.	19.15	19.15	0.41	.	0.41	0.41
Danemark	5	52.16	17.37	24.47	67.35	0.42	0.22	0.25	0.78
Finland	4	75.69	5.87	70.65	84.04	0.33	0.22	0.18	0.66
France	39	67.91	8.87	47.87	85.11	0.14	0.11	0.02	0.58
Germany	24	55.90	9.66	38.78	73.12	0.24	0.19	0.02	0.63
Greece	1	68.04	.	68.04	68.04	0.32	.	0.32	0.32
Hong Kong	8	47.64	3.26	43.62	52.13	0.57	0.31	0.33	0.99
India	36	38.65	10.36	20.21	62.37	0.13	0.11	0.02	0.60
Indonesia	9	36.68	6.10	26.60	48.94	0.48	0.17	0.22	0.83
Ireland	3	75.25	3.25	71.88	78.35	0.65	0.10	0.57	0.76
Italy	14	58.58	10.41	42.55	73.47	0.18	0.13	0.02	0.35
Japan	125	54.15	3.36	48.39	67.39	0.07	0.07	0.01	0.30
Luxemburg	1	38.30	.	38.30	38.30	0.93	.	0.93	0.93
Malaysia	36	45.34	7.16	35.11	62.77	0.21	0.17	0.04	0.63
Mexico	15	24.36	9.03	15.22	51.61	0.26	0.14	0.10	0.67
Netherlands	21	62.80	10.20	43.88	80.00	0.22	0.16	0.07	0.53
New Zealand	1	55.91	.	55.91	55.91	0.92	.	0.92	0.92
Norway	3	58.83	15.06	45.16	78.72	0.49	0.28	0.27	0.80
Pakistan	8	39.76	6.55	32.98	48.94	0.42	0.26	0.24	0.94
Peru	6	23.26	4.28	18.68	30.85	0.28	0.06	0.21	0.35
Phillipines	3	29.85	11.94	12.24	37.76	0.48	0.27	0.27	0.79
Portugal	5	55.00	9.83	41.49	64.95	0.22	0.18	0.04	0.51
Singapore	6	59.80	5.86	50.00	65.31	0.32	0.25	0.12	0.65
South Korea	32	46.92	12.98	5.21	62.89	0.12	0.09	0.01	0.33
Spain	13	52.67	12.12	32.98	72.34	0.10	0.10	0.00	0.38
Sweden	13	61.52	8.98	45.74	75.51	0.18	0.10	0.04	0.32
Switzerland	11	53.84	12.45	38.04	71.28	0.42	0.28	0.18	0.83
Taiwan	34	21.63	7.15	14.89	38.14	0.09	0.07	0.02	0.27
Thailand	15	51.63	9.45	27.17	65.98	0.34	0.30	0.08	0.99
United Kingdom	102	71.22	6.37	56.52	88.78	0.25	0.19	0.10	0.88
Venezuela	2	30.65	17.49	18.28	43.01	0.89	0.14	0.79	0.99
Full sample	682	51.81	16.54	5.21	88.78	0.20	0.20	0.00	0.99

Table III

Distribution of S&P Corporate Governance Ratings and the Herfindahl-Hirschman Index

This table reports the distributions of the S&P corporate governance ratings and our primary measure of competition, which is expressed as 1-HHI, where HHI is the Herfindahl-Hirschman Index computed as the sum of squares of firms' industry market shares based on sales; firm sales come from Bureau van Dijk ORBIS. We identify an industry by its two-digit SIC code. Strongly, softly, and weakly competitive are subsamples of firms in industries with competition in the highest, middle, and lowest terciles of the empirical competition distribution. N, Mean, Min, and Max are the number of firms, the mean, the minimum, and the maximum of the variable, respectively. Mean Difference is the mean difference in S&P corporate governance ratings or competition between developing and developed countries. Developed (developing) countries comprise countries with GNP/capita above (below) the sample median, where GNP/capita is gross national product per capita and is from WDI. *, **, and *** reflect significance at the 10%, 5%, and 1% levels, respectively.

Panel A: Corporate governance ratings (by competition terciles)

		Strongly competitive	Softly competitive	Weakly competitive	Full sample
Developed	N	129	156	131	416
	Mean	56.35	62.82	60.77	60.17
	[Min Max]	[32.97 78.72]	[37.23 85.10]	[24.46 88.78]	[24.46 88.78]
Developing	N	64	84	118	266
	Mean	45.51	40.73	36.96	40.21
	[Min Max]	[13.82 61.29]	[5.21 65.97]	[12.24 68.04]	[5.21 68.04]
	Mean Difference	10.84***	22.08***	23.81***	19.96***

Panel B: Competition (1-HHI)

		Strongly competitive	Softly competitive	Weakly competitive	Full sample
Developed	N	129	156	131	416
	Mean	0.96	0.87	0.58	0.81
	[Min Max]	[0.92 0.99]	[0.79 0.92]	[0.01 0.79]	[0.01 0.99]
Developing	N	64	84	118	266
	Mean	0.96	0.88	0.67	0.80
	[Min Max]	[0.92 0.99]	[0.79 0.92]	[0.01 0.79]	[0.01 0.99]
	Mean Difference	0.00	-0.01**	-0.09***	0.01

Table IV :
Product-market Competition and Corporate Governance

The dependent variable in each regression is the S&P corporate governance ratings. Competition is expressed as 1-HHI, where HHI is the Herfindahl-Hirschman Index computed as the sum of squares of firms' industry market shares based on sales; firm sales come from Bureau van Dijk ORBIS. We identify an industry by its two-digit SIC code. Firm-level variables are from Worldscope. Sales growth is inflation-adjusted sales growth winsorized at the 1% level; Dependence on external finance is from Compustat and is computed for U.S. firms in the same industry from 1995-2000 as capital expenditures minus cash flows from operations divided by capital expenditures; Log(Assets) is the log of total assets in U.S. dollars; Ownership is the proportion of shares held by insiders; Cash/Assets is cash holdings scaled by total assets; Foreign sales/Total sales is firm exports divided by net sales; ADR is a dummy variable set to one if the firm has a major U.S. exchange listing and zero otherwise; Country investor protection is the product of the anti-director rights index from Djankov et al. (2008) and the rule of law from ICRG; Stock market capitalization/GDP is a country's stock market capitalization divided by gross domestic product and is from Beck and Demirgüç-Kunt (2009); and Developed (Developing) countries comprise countries with GNP/capita above (below) the sample median, where GNP/capita is gross national product per capita and is from WDI. Standard errors are robust to within-country variation; numbers in parentheses are student-t. *, **, and *** reflect significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
Competition ×Developed countries	3.78	0.96
	(1.33)	(0.39)
Competition ×Developing countries	9.41	6.89
	(2.78)***	(3.17)***
Developed countries	10.85	8.55
	(2.95)***	(5.79)***
Sales growth	1.30	0.86
	(1.20)	(0.89)
Dependence on external finance	0.64	0.53
	(1.43)	(1.11)
Log(Assets)	1.50	1.74
	(3.54)***	(3.87)***
Ownership	-6.08	0.05
	(-2.56)**	(0.02)
Cash/Assets	2.31	5.57
	(0.50)	(1.37)
Foreign sales/Total sales	4.60	2.28
	(2.49)**	(1.18)
ADR	3.75	4.09
	(3.70)***	(3.30)***
Country investor protection	0.44	
	(4.13)***	
Stock market capitalization/GDP	3.40	
	(3.96)***	
Constant	4.77	0.99
	(0.65)	(0.14)
Country fixed effects	no	yes
Adjusted R^2	0.527	0.739
Observations	499	499

Table V :
Product Market Competition and Corporate Governance: The Impact of Country Characteristics
The dependent variable in each regression is the S&P corporate governance ratings. Softly competitive and Weakly competitive are dummy variables set to one if competition lies in the middle or lowest tercile of the empirical competition distribution, and zero otherwise. Competition is expressed as 1-HHI, where HHI is the Herfindahl-Hirschman Index computed as the sum of squares of firms' industry market shares based on sales; firm sales come from Bureau van Dijk ORBIS. We identify an industry by its two-digit SIC code. Firm-level variables are from Worldscope. Sales growth is inflation-adjusted sales growth winsorized at the 1% level; Dependence on external finance is from Compustat and is computed for U.S. firms in the same industry from 1995-2000 as capital expenditures minus cash flows from operations divided by capital expenditures; Log(Assets) is the log of total assets in U.S. dollars; Ownership is the proportion of shares held by insiders; Cash/Assets is cash holdings scaled by total assets; Foreign sales/Total sales is firm exports divided by net sales; ADR is a dummy variable set to one if the firm has a major U.S. exchange listing and zero otherwise; Country investor protection is the product of the anti-director rights index from Djankov et al. (2008) and the rule of law from ICRG; Stock market capitalization/GDP is the country's stock market capitalization divided by gross domestic product and is from Beck and Demirgüç-Kunt (2009); Log GNP/capita is the log of gross national product per capita and is from WDI; and Developed (Developing) countries comprise countries with GNP/capita above (below) the sample median, where GNP/capita is gross national product per capita and is from WDI. Standard errors are robust to within-country variation; numbers in parentheses are student-t. *, **, and *** reflect significance at the 10%, 5%, and 1% levels, respectively.

	Developed countries		Developing countries	
	(1)	(2)	(3)	(4)
Softly competitive	3.68	2.53	-14.63	-3.18
	(2.73)**	(2.46)**	(-4.45)***	(-1.84)*
Weakly competitive	1.23	2.30	-10.56	-2.31
	(0.83)	(1.87)*	(-3.29)***	(-0.73)
Sales growth	1.85	0.87	0.68	1.38
	(0.74)	(0.47)	(0.17)	(0.46)
Dependence on external finance	0.65	1.54	0.88	0.45
	(1.83)*	(3.75)***	(1.01)	(0.69)
Log(Assets)	1.99	1.61	0.95	0.45
	(4.57)***	(4.14)***	(1.03)	(0.62)
Ownership	-8.57	-1.52	5.97	0.68
	(-2.94)***	(-0.50)	(1.31)	(0.22)
Cash/Assets	8.72	3.90	8.61	3.45
	(1.94)*	(1.11)	(0.80)	(0.44)
Foreign sales/Total sales	5.86	2.46	4.71	4.35
	(3.35)***	(1.87)*	(0.93)	(0.89)
ADR	4.09	3.74	2.06	2.24
	(4.56)***	(4.83)***	(0.84)	(1.18)
Country investor protection	0.61		0.88	
	(5.06)***		(3.76)***	
Stock market capitalization/GDP	0.22		7.46	
	(0.21)		(3.01)***	
Log of GNP/capita	-14.61		0.34	
	(-4.33)***		(0.28)	
Constant	158.41	34.92	14.18	23.16
	(4.33)***	(5.87)***	(0.90)	(2.00)*
Country fixed effects	no	yes	no	yes
Adjusted R^2	0.418	0.711	0.116	0.485
Observations	339	339	160	160

Table VI :

Product Market Competition and Corporate Governance: Robustness Tests

The dependent variable in each regression is the S&P corporate governance ratings. Softly competitive and Weakly competitive are dummy variables set to one if competition lies in the middle or lowest tercile of the empirical competition distribution, and zero otherwise. Competition is expressed as 1-HHI, where HHI is the Herfindahl-Hirschman Index computed as the sum of squares of firms' industry market shares based on sales; firm sales come from Bureau van Dijk ORBIS. We identify an industry by its two-digit SIC code. Firm-level variables are from Worldscope. Sales growth is inflation-adjusted sales growth winsorized at the 1% level; Dependence on external finance is from Compustat and is computed for U.S. firms in the same industry from 1995-2000 as capital expenditures minus cash flows from operations divide by capital expenditures; Log(Assets) is the log of total assets in U.S. dollars; Ownership is the proportion of shares held by insiders; Cash/Assets is cash holdings scaled by total assets; Foreign sales/Total sales is firm exports divided by net sales; ADR is a dummy variable set to one if the firm has a major U.S. exchange listing and zero otherwise; R&D/Total sales is the value of research and development expenditures divided by net sales; Capital expenditures and total debt are scaled by total assets; Country investor protection is the product of the anti-director rights index from Djankov et al. (2008) and the rule of law from ICRG; Stock market capitalization/GDP is the country's stock market capitalization divided by gross domestic product and is from Beck and Demirgüç-Kunt (2009); Log GNP/capita is the log of gross national product per capita and is from WDI. DD and DG represent Developed and Developing countries, respectively; developed and developing countries comprise countries above and below the median GNP/capita, respectively. Panels A and B use alternative competition measures: the price-cost margin (i.e., Lerner index) and the four-firm concentration ratio. Panel C uses corporate governance ratings from Credit Lyonnais Security Asia (CLSA) and from Institutional Shareholders Services (ISS). Panel D uses firm and country data for year 1999. Panels E and F use firm data for year 2000 with industries defined at the three-digit and four-digit SIC code levels. Panel G includes as control variables R&D/Total sales (R&D), Capital expenditures/Assets (CAPEX), and Debt/Assets (DEBT). Panel H tests for a non-linear relation between competition and S&P corporate governance ratings using the raw competition measure. Standard errors are robust to within-country variation; numbers in parentheses are student-t. *, **, and *** reflect significance at the 10%, 5%, and 1% levels, respectively.

	Panel A		Panel B		Panel C	
	Price-cost margin		Four-firms concentration ratio		[?]Alternative governance ratings	
	DD	DG	DD	DG	ISS	CLSA
	(1)	(2)	(3)	(4)	(5)	(6)
Softly competitive	1.81	-6.13	2.71	-4.10	2.91	-2.17
	(2.37)**	(-2.55)**	(2.48)**	(-1.81)*	(2.90)***	(-1.01)
Weakly competitive	0.57	-5.27	0.31	-4.29	5.14	-6.32
	(0.41)	(-2.08)*	(0.24)	(-1.75)*	(4.55)***	(-2.39)**
Sales growth	1.62	-4.19	1.27	-3.55	0.65	0.53
	(0.63)	(-1.29)	(0.51)	(-1.06)	(0.95)	(1.86)*
Dependence on external finance	0.63	1.12	0.51	0.96	0.27	2.66
	(2.03)*	(1.27)	(2.01)*	(1.05)	(1.68)	(2.73)**
Log(Assets)	2.12	0.81	1.98	0.73	0.15	-0.75
	(5.13)***	(0.91)	(4.88)***	(0.81)	(0.29)	(-0.78)
Ownership	-9.99	3.90	-9.68	2.96	-0.08	0.02
	(-3.46)***	(1.01)	(-3.46)***	(0.76)	(-5.16)***	(0.43)
Cash/Assets	9.64	3.46	8.41	2.99	-5.94	7.67
	(2.23)**	(0.41)	(1.96)*	(0.33)	(-4.13)***	(1.16)
Foreign sales/Total sales	5.18	2.27	5.22	2.06	3.14	6.66
	(2.99)***	(0.48)	(3.04)***	(0.44)	(2.06)*	(2.40)**
ADR	4.13	1.43	4.27	1.47	0.64	9.77
	(4.61)***	(0.60)	(4.88)***	(0.61)	(0.48)	(3.21)***
Country investor protection	0.62	0.61	0.64	0.53	0.41	0.56
	(5.34)***	(2.90)**	(5.46)***	(2.36)**	(2.16)**	(2.63)**
Stock market capitalization /GDP	0.74	6.01	0.59	6.56	-0.47	3.02
	(0.67)	(2.83)**	(0.58)	(3.04)***	(-0.34)	(1.37)
Log GNP/capita	-15.27	0.38	-15.05	0.11	-3.01	-0.58
	(-4.41)***	(0.31)	(-4.68)***	(0.09)	(-0.54)	(-0.38)
Constant	163.84	15.08	163.29	18.34	63.42	58.66
	(4.42)***	(1.18)	(4.66)***	(1.44)	(1.11)	(6.44)***
Adjusted R^2	0.416	0.091	0.425	0.075	0.324	0.248
Observations	334	147	339	160	1530	232

Table VI *(continued)*

	Panel D Two-digit SIC (year 1999)		Panel E Three-digit SIC (year 2000)		Panel F Four-digit SIC (year 2000)	
	DD	DG	DD	DG	DD	DG
	(7)	(8)	(9)	(10)	(11)	(12)
Softly competitive	4.43	-11.35	3.76	-11.05	2.12	-1.47
	(3.17)***	(-3.90)***	(2.69)**	(-4.01)***	(1.78)*	(-0.55)
Weakly competitive	2.88	-10.92	2.95	-12.92	2.48	-7.03
	(1.93)*	(-3.78)***	(1.97)*	(-4.26)***	(1.87)*	(-2.38)**
Sales growth	1.92	-2.18	4.05	-2.79	3.59	-4.25
	(1.43)	(-1.12)	(1.38)	(-0.70)	(1.30)	(-0.93)
Dependence on external finance	1.05	1.25	0.76	-0.37	0.49	0.58
	(2.51)**	(1.55)	(1.91)*	(-0.45)	(1.76)*	(0.60)
Log(Assets)	1.59	1.19	1.70	1.44	1.77	2.02
	(3.91)***	(1.51)	(3.79)***	(1.68)	(4.13)***	(1.95)*
Ownership	-8.06	-3.59	-11.92	5.80	-15.52	4.00
	(-2.89)***	(-0.76)	(-3.81)***	(1.19)	(-5.34)***	(0.71)
Cash/Assets	10.37	4.35	9.83	3.70	11.87	8.20
	(2.58)**	(0.45)	(1.98)*	(0.32)	(2.42)**	(0.72)
Foreign sales/Total sales	0.76	3.99	7.12	1.81	4.23	0.51
	(1.45)	(0.89)	(3.73)***	(0.36)	(2.25)**	(0.10)
ADR	5.38	2.05	4.20	1.71	4.46	1.87
	(5.78)***	(0.82)	(4.39)***	(0.69)	(4.62)***	(0.67)
Country investor protection	0.34	0.39	0.67	0.76	0.73	0.44
	(2.61)**	(1.74)*	(4.63)***	(3.40)***	(2.87)***	(1.89)*
Stock market capitalization/GDP	1.31	6.98	-0.22	7.20	0.50	7.86
	(0.99)	(3.03)***	(-0.21)	(2.99)***	(0.48)	(2.99)***
Log GNP/capita	-13.99	-0.57	-13.39	1.20	-16.98	-0.55
	(-3.41)***	(-0.49)	(-3.25)***	(0.93)	(-4.39)***	(-0.37)
Constant	165.70	29.42	154.54	1.92	190.84	3.88
	(3.87)***	(1.96)*	(3.58)***	(0.13)	(4.77)***	(0.24)
Adjusted R^2	0.362	0.086	0.395	0.114	0.378	0.095
Observations	339	160	339	160	339	160

Table VI *(continued)*

	Panel G CAPEX, DEBT, R&D (year 2000)		Panel H Non-linearity (year 2000)	
	DD	DG	DD	DG
	(13)	(14)	(15)	(16)
Softly competitive	4.08	-14.29		
	(3.04)***	(-4.26)***		
Weakly competitive	1.87	-10.55		
	(1.27)	(-3.18)***		
Competition			11.06	-20.33
			(1.85)*	(-1.86)*
Competition^2			-15.72	29.59
			(-2.41)**	(2.12)**
R&D/Total Sales	33.50	-194.60		
	(2.08)*	(-1.05)		
Capital expenditures/Assets	-2.87	13.76		
	(-0.18)	(0.59)		
Debt/Assets	-0.12	9.47		
	(-0.04)	(1.43)		
Sales growth	1.47	-0.52	1.23	-1.59
	(0.61)	(-0.13)	(0.47)	(-0.38)
Dependence on external finance	0.32	0.93	0.87	1.11
	(1.74)*	(1.05)	(2.00)*	(1.22)
Log(Assets)	2.06	0.56	1.80	1.48
	(4.60)***	(0.59)	(4.40)***	(1.58)
Ownership	-7.99	4.69	-9.29	3.93
	(-2.73)**	(1.02)	(-3.08)***	(0.80)
Cash/Assets	5.98	10.21	8.30	8.15
	(1.37)	(0.89)	(1.90)*	(0.70)
Foreign sales/Total sales	5.36	5.71	1.74	1.11
	(3.03)***	(1.14)	(1.78)*	(0.22)
ADR	3.77	2.65	4.69	1.30
	(4.26)***	(1.01)	(5.29)***	(0.52)
Country investor protection	0.62	0.84	0.55	0.74
	(5.00)***	(3.60)***	(4.82)***	(2.94)***
Stock market capitalization/GDP	0.26	7.67	0.91	6.23
	(0.24)	(3.02)***	(0.88)	(2.43)**
Log GNP/capita	-14.79	-0.09	-16.11	0.30
	(-4.39)***	(-0.07)	(-4.95)***	(0.22)
Constant	158.57	19.77	179.76	13.86
	(4.33)***	(1.19)	(5.24)***	(0.45)
Adjusted R^2	0.424	0.113	0.424	0.107
Observations	339	160	339	160

Table VII:
Product Market Competition, Corporate Governance, and Valuation

The dependent variable in each regression is Tobin's Q, defined as total assets plus market value of equity minus book value of equity divide by total assets. Strongly, Softly, and Weakly competitive are dummy variables set to one if competition lies in the highest, middle, or lowest tercile of the empirical competition distribution, and zero otherwise. Competition is expressed as 1-HHI, where HHI is the Herfindahl-Hirschman Index computed as the sum of squares of firms' industry market shares based on sales; firm sales are from Bureau van Dijk ORBIS. We identify an industry by its two-digit SIC code. CG is the S&P corporate governance ratings. Firm-level variables are from Worldscope. Ownership is the proportion of shares held by insiders; Sales growth is inflation-adjusted sales growth winsorized at the 1% level; Log(Assets) is the log of total assets in U.S. dollars; Capital expenditures/Assets is CAPEX scaled by total assets; Debt/Assets is total debt to total assets; Cash/Assets is cash holdings scaled by total assets; Property/Assets is PPE divided by total assets; Foreign sales/Total sales is firm exports divided by net sales; R&D/Total sales is the ratio of research and development expenditures to net sales; ADR is a dummy variable set to one if the firm has a major U.S. exchange listing and zero otherwise; Country investor protection is the product of the anti-director rights index from Djankov et al. (2008) and the rule of law from ICRG ; Stock market capitalization/GDP is the country's stock market capitalization divided by gross domestic product and is from Beck and Demirgüç-Kunt (2009); Log GNP/capita is the log of GNP/capita and is from WDI. Developed and developing countries comprise countries above and below the median GNP/capita, respectively. Standard errors are robust to within-country variation; numbers in parentheses are student-t. *, **, and *** reflect significance at the 10%, 5%, and 1% levels, respectively.

	Developed countries		Developing countries	
	(1)	(2)	(3)	(4)
CG *Strongly competitive	0.03	0.02	0.07	0.28
	(1.63)	(0.98)	(2.37)**	(8.75)***
CG *Softly competitive	0.04	0.04	0.05	0.23
	(3.25)***	(2.12)**	(2.34)**	(4.39)***
CG *Weakly competitive	0.03	0.03	0.04	0.18
	(2.33)**	(1.51)	(1.94)*	(2.85)**
Softly competitive	-0.34	-0.07	1.70	0.67
	(-0.52)	(-0.15)	(4.96)***	(0.64)
Weakly competitive	0.83	1.37	1.67	4.54
	(0.89)	(1.78)*	(1.48)	(1.80)
Ownership	-0.45	-0.08	-0.75	-1.96
	(-0.62)	(-0.10)	(-0.60)	(-1.42)
Sales growth	1.33	1.91	-3.11	-3.68
	(1.53)	(1.51)	(-4.44)***	(-1.22)
Log(Assets)	-0.32	-0.36	-0.37	-0.52
	(-4.48)***	(-2.67)**	(-2.52)**	(-1.11)
Capital expenditures/Assets	2.97	1.25	12.13	50.91
	(1.01)	(0.46)	(3.50)***	(6.07)***
Debt/Assets	-0.35	-0.07	-3.46	-4.69
	(-0.52)	(-0.07)	(-2.19)**	(-1.84)*
Cash/Assets	5.38	4.96	14.37	35.96
	(2.17)**	(3.05)***	(2.58)**	(3.99)***
Property/Assets	-0.01	0.16	1.05	2.52
	(-0.02)	(0.20)	(0.45)	(0.58)
Foreign sales/Total sales	-0.53	-0.89	2.05	0.59
	(-0.76)	(-1.36)	(2.77)**	(0.23)
R&D/Total Sales	16.19	18.49	21.72	76.47
	(2.54)**	(3.01)***	(0.49)	(1.35)
ADR	-0.02	0.05	0.39	1.61
	(-0.17)	(0.27)	(0.74)	(1.05)
Country investor protection	0.01		0.11	
	(0.54)		(1.55)	
Stock market capitalization/GDP	-0.01		0.59	
	(-0.07)		(0.38)	
Log GNP/capita	-0.49		-0.83	
	(-0.67)		(-3.31)***	
Industry dummies	yes	yes	yes	yes
Country dummies	no	yes	no	yes
Constant	9.06	4.53	4.89	-11.55
	(1.12)	(2.18)**	(1.69)	(-1.41)
Adjusted R^2	0.480	0.500	0.541	0.566
Observations	309	309	144	144

Table VIII:
Product Market Competition, Corporate Governance, and Valuation: CLSA and ISS Governance Ratings
The dependent variable in each regression is Tobin's Q, defined as total assets plus market value of equity minus book value of equity divide by total assets. Strongly, Softly, and Weakly competitive are dummy variables set to one if competition lies in the highest, middle, or lowest tercile of the empirical competition distribution, and zero otherwise. Competition is expressed as 1-HHI, where HHI is the Herfindahl-Hirschman Index computed as the sum of squares of firms' industry market shares based on sales; firm sales are from Bureau van Dijk ORBIS. We identify an industry by its two-digit SIC code. CG is either the ISS or CLSA corporate governance ratings. Firm-level variables are from Worldscope. Ownership is the proportion of shares held by insiders; Sales growth is inflation-adjusted sales growth winsorized at the 1% level; Log(Assets) is the log of total assets in U.S. dollars; Capital expenditures/Assets is CAPEX scaled by total assets; Debt/Assets is total debt to total assets; Cash/Assets is cash holdings scaled by total assets; Property/Assets is PPE divided by total assets; Foreign sales/Total sales is firm exports divided by net sales; R&D/Total sales is the ratio of research and development expenditures to net sales; ADR is a dummy variable set to one if the firm has a major U.S. exchange listing and zero otherwise; Country investor protection is the product of the anti-director rights index from Djankov et al. (2008) and the rule of law from ICRG ; Stock market capitalization/GDP is the country's stock market capitalization divided by gross domestic product and is from Beck and Demirgüç-Kunt (2009); Log GNP/capita is the log of GNP/capita and is from WDI. Developed and developing countries comprise countries above and below the median GNP/capita, respectively. Standard errors are robust to within-country variation; numbers in parentheses are student-t. *, **, and *** reflect significance at the 10%, 5%, and 1% levels, respectively.

	Panel A : ISS governance		Panel B : CLSA governance	
	(1)	(2)	(3)	(4)
CG *Strongly competitive	0.00	0.00	0.27	0.22
	(0.55)	(0.10)	(2.13)**	(2.19)**
CG *Softly competitive	0.00	0.00	0.24	0.25
	(1.14)	(0.03)	(1.87)*	(2.36)**
CG *Weakly competitive	0.02	0.02	0.07	0.10
	(3.29)***	(3.53)***	(1.87)*	(1.75)
Softly competitive	0.17	0.10	3.06	1.77
	(1.66)	(0.91)	(0.68)	(0.39)
Weakly competitive	0.29	0.65	11.09	9.55
	(1.12)	(2.80)**	(1.39)	(1.94)*
Ownership	0.01	0.10	3.35	6.50
	(0.11)	(0.99)	(0.94)	(1.90)*
Sales growth	0.10	0.10	-2.59	-0.67
	(1.51)	(1.38)	(-1.23)	(-0.34)
Log(Assets)	-0.06	-0.04	-0.09	-0.02
	(-3.38)***	(-1.80)*	(-0.21)	(-0.08)
Capital expenditures/Assets	3.39	3.15	-8.12	-2.59
	(3.72)***	(3.62)***	(-0.57)	(-0.28)
Debt/Assets	-0.21	-0.16	-2.33	1.75
	(-1.48)	(-1.08)	(-0.47)	(0.48)
Cash/Assets	0.69	0.88	3.14	3.25
	(1.91)*	(2.46)**	(0.40)	(0.37)
Property/Assets	-0.44	-0.38	4.83	-2.99
	(-3.14)***	(-2.92)***	(0.68)	(-0.40)
Foreign sales/Total sales	0.19	0.12	3.49	2.95
	(1.62)	(0.94)	(1.38)	(2.11)*
R&D/Total Sales	3.68	3.94	6.86	-8.21
	(3.62)***	(3.46)***	(0.26)	(-0.94)
ADR	0.19	0.17	3.47	4.09
	(2.89)***	(2.56)**	(1.03)	(1.03)
Country investor protection	0.01		0.10	
	(0.21)		(1.05)	
Stock market capitalization/GDP	-0.09		-1.65	
	(-1.81)*		(-1.03)	
Log GNP/capita	0.07		-1.13	
	(0.47)		(-1.11)	
Industry dummies	yes	yes	yes	yes
Country dummies	no	yes	no	yes
Constant	0.99	1.26	-11.22	-25.29
	(0.65)	(3.42)***	(-0.99)	(-2.99)***
Adjusted R^2	0.288	0.310	0.397	0.426
Observations	1434	1434	203	203

Table IX:
Corporate Governance and Firm Valuation: Three-Stage Least Squares

The dependent variable in each regression is either the S&P corporate governance ratings (CG) or the firm Tobin's Q defined as total assets plus market value of equity minus book value of equity divide by total assets. Competition is expressed as 1-HHI, where HHI is the Herfindahl-Hirschman Index computed as the sum of squares of firms' industry market shares based on sales; firm sales are from Bureau van Dijk ORBIS. We identify an industry by its two-digit SIC code. Less competitive (competitive) comprise firms below (above) the median of the competition measure. Firm-level variables are from Worldscope. Sales growth is inflation-adjusted sales growth winsorized at the 1% level; Dependence on external finance is from Compustat and is computed for U.S. firms in the same industry from 1995-2000 as capital expenditures minus cash flows from operations divide by capital expenditures; Log(Assets) is the log of total assets in U.S. dollars; Ownership is the proportion of shares held by insiders; Cash/Assets is cash holdings scaled by total assets; Foreign sales/Total sales is firm exports divided by net sales; R&D/Total sales is the value of research and development expenditures divided by net sales; ADR is a dummy variable set to one if the firm has a major U.S. exchange listing and zero otherwise; Alpha and Beta are measures of excess returns and market risk, respectively. Country investor protection is the product of the anti-director rights index from Djankov et al. (2008) and the rule of law from ICRG; Stock market capitalization/GDP is the country's stock market capitalization divided by gross domestic product and is from Beck and Demirgüç-Kunt (2009); Log GNP/capita is the log of gross national product per capita and is from WDI. Developed and developing countries are subsamples of countries above and below the median gross national product per capita, respectively. Numbers in parentheses are student-t. *, ** and *** reflect significance at the 10%, 5% and 1% levels, respectively.

	Developed countries				Developing countries			
	Less competitive		Competitive		Less competitive		Competitive	
	CG Equation (1)	Valuation Equation (2)	CG Equation (3)	Valuation Equation (4)	CG Equation (5)	Valuation Equation (6)	CG Equation (7)	Valuation Equation (8)
Tobin's Q	0.46		0.17		5.14		0.56	
	(0.29)		(0.21)		(1.51)		(0.37)	
CG		0.07		0.03		0.03		0.17
		(2.19)**		(0.39)		(2.46)**		(4.53)***
Competition	8.12		-0.45		5.08		19.73	
	(2.11)**		(-0.04)		(0.48)		(2.85)***	
Sales growth	11.38	-0.37	-0.09	1.19	-17.15	0.49	5.95	-2.31
	(2.10)**	(-0.66)	(-0.04)	(1.87)*	(-1.09)	(1.57)	(0.88)	(-2.82)***
Dependence on external finance	0.79		0.27		0.23		3.23	
	(2.80)**		(1.77)*		(0.08)		(1.92)*	
Log(Assets)	4.58	-0.56	1.97	-0.35	3.60	-0.54	5.49	-0.86
	(5.10)***	(-3.00)***	(3.48)***	(-1.49)	(1.29)	(-4.96)***	(2.90)***	(-3.74)***
Ownership	-6.39	1.17	-2.22	0.09	-5.62	0.80	-0.80	2.76
	(-1.28)	(2.02)**	(-0.59)	(0.09)	(-0.50)	(1.51)	(-0.08)	(2.60)**
Cash/Assets	9.44	1.20	8.46	2.87	-18.52	5.22	-3.09	-1.59
	(0.66)	(0.68)	(1.73)*	(1.80)*	(-0.56)	(5.19)***	(-0.14)	(-0.49)
Foreign sales/Total sales	7.94	-1.33	-0.19	-0.49	-14.77	-0.83	5.09	-0.68
	(2.08)**	(-2.73)***	(-0.26)	(-3.05)***	(-1.21)	(-1.27)	(0.66)	(-0.77)
R&D/Total Sales	71.16	22.45	42.73	17.52	-412.64	-41.75	1,113.94	326.21
	(1.23)	(3.44)***	(1.53)	(2.46)**	(-0.92)	(-0.58)	(1.67)	(2.82)***
ADR	3.67	-0.22	4.56	-0.42	-5.52	0.96	0.19	-0.05
	(1.80)*	(-0.76)	(4.77)***	(-1.05)	(-1.05)	(3.82)***	(0.04)	(-0.11)
Alpha	-0.04		0.47		0.31		3.86	
	(-0.02)		(0.95)		(0.18)		(0.92)	
Beta	-4.15		1.84		-33.19		2.52	
	(-0.91)		(0.56)		(-1.74)*		(0.39)	
Country investor protection	0.53	-0.06	-0.83	-0.03	0.45	0.05	-0.05	-0.13
	(2.47)**	(-2.61)**	(-3.33)***	(-0.31)	(0.65)	(1.50)	(-0.13)	(-2.06)**
Stock market capitalization/GDP	-0.47	0.11	21.68	0.83	9.30	-0.18	13.51	-0.36
	(-0.44)	(0.82)	(7.30)***	(0.41)	(1.78)*	(-0.75)	(1.97)*	(-0.37)
Log of GNP/capita	-2.31	-0.15	7.03	-0.17	0.81	0.53	-0.73	0.37
	(-0.50)	(-0.29)	(1.65)	(-0.13)	(0.21)	(3.83)***	(-0.29)	(0.84)
Constant	-12.15	9.83	-54.01	6.52	-23.89	0.70	-55.30	0.58
	(-0.24)	(1.84)*	(-1.28)	(0.54)	(-0.55)	(0.38)	(-1.31)	(0.11)
Industry fixed effects	no	yes	no	yes	no	yes	no	yes
R^2	0.50	0.53	0.69	0.48	0.37	0.75	0.49	0.59
Observations	135	135	153	153	59	59	54	54