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CORPORATE GOVERNANCE AND CAPITAL ACCUMULATION: FIRM LEVEL EVIDENCE FROM ITALY

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Abstract

This study investigates the impact of investor protection on firm ownership and capital growth in a model where investor protection is allowed to vary between firms. Using panel data for Italy, we construct firm level variables to capture the degree of investor protection, which is observable to all shareholders. Empirical evidence indicates that the stronger the investor protection the lower the fraction of equity that is owned by insiders. Results show that higher insider equity ownership is linked to larger risk premiums and higher costs of capital. Implications suggest that the magnitude of capital stock distortions is particularly important when shareholder protection is weak and ownership concentration is high.

JEL Classification: G31; G32; E22; D92; O16

Key Words: Corporate governance, cost of capital, growth, agency problems, shareholder protection

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I Introduction

Over the past decade European policy makers have expressed serious concerns about the slow growth of capital formation which has in turn motivated new policy initiatives to bolster equity markets, foster financial integration and improve legal harmonization (European Economy, 2001, Guiso, Jappelli, Padula and Pagano, 2004)[1]. A key rationale behind the EU policy is that, similar to the US, it believes that by providing firms with better access to equity finance and venture capital, they would grow more rapidly than internal finance alone would allow.[2] However in spite of the development of various European stock markets in the 1990s, economic growth in the EU remains weak and recent evidence shows that even when firms go public, their subsequent growth rates remain low, especially when compared to US firms.[3]

An alternative approach for explaining this growth differential is to examine how institutional differences between countries impact the firm's cost of capital. To date, research indicates that these effects are significant between countries, but relatively fewer empirical studies have emerged to examine the link firm financial structure and the institutional environment. One such study includes Lombardo and Pagano (2000), which investigates differences in legal institutions between countries as a means of explaining differences in returns to equity. They find that the risk-adjusted return on equity is positively correlated with the efficiency of the judicial system; but not related to popular measures of formal protection of shareholders' rights. Hail and Leuz (2004) use share prices and analysts forecasts to analyze the effect of legal institutions and securities regulations on the firm implied cost of capital for

[1] The issue of slow capital formation or growth is related to problems of low levels of entrepreneurship activity and high technology investment which is not the focus of this study.
[2] See Hubbard 1998 for a comprehensive survey of the related literature examining the impact of financing constraints on firms' fixed capital investment decision.
[3] Also see Pagano, Panetta and Zingales (1998) and, for more recent evidence, Carpenter and Petersen (2002), and Carpenter and Rondi (2006).

a panel of 40 countries. [4] This study uses firm level data to extend this literature by investigating the link between investor protection and the cost of capital in Italy.

Several recent studies have pointed to the importance of differences in the financial contracting and legal environment to help explain differences in economic growth and stock market development between the US and Europe (see, for example, Demirguc-Kunt and Maksimovic, 1998, Levine, 1999, and Pagano and Volpin 2006). La Porta, Lopez-de-Silanes, Shleifer, and Vishny ("LLSV", 1997, 2000, 2002) have further shown that investor protection can be important in explaining why firms are owned, financed and valued differently in between countries. Related studies have provided cross-country evidence that firms in countries with weak investor protection, including many EU member states, have highly concentrated ownership (La Porta, Lopez-de-Silanes and Shleifer, 1999, Barca and Becht, 2001).[5] In their recent paper, Himmelberg, Hubbard and Love (HHL) (2002) formalize the economic intuition behind this literature by deriving a structural econometric model in which the effects of investor protection are summarized to investigate the relationship between inside ownership and the cost of capital, and where investor protection is allowed to vary across firms. Using pooled data for 38 countries, they find that on the average, the higher the level of inside ownership, the higher is the marginal cost of capital –due to the higher risk premium, and that the risk premium decreases in the level of outside investor protection. This model is important for our paper because it provides a framework to explain the role of weak governance in the efficient accumulation of capital, such as that experienced in the 1990s in Europe.

In this paper we construct firm level variables to capture the degree of investor protection which is specific to the firm and observable by outside shareholders. We define investor protection by "those features of the legal, institutional, and regulatory environment, and characteristics of firms or projects,

[4]This is related to a burgeoning literature on the link between corporate governance and valuation, which includes Gompers, Ishii, and Metrick (2003) and Cremers and Nair (2005) which examine this link using data on US firms and Durnev and Kim (2005) which provides a comparative study using international data.

that facilitate financial contracting between inside owners (managers) and outside investors" as per HHL. This firm specific degree of investor protection consists of intrinsic, industry-related characteristic such as asset tangibility – because plants and factories are difficult to steal, or can result from voluntary actions taken by the insiders to demonstrate their commitment to comply with best practice corporate governance rules. Insofar as these variables signal lower probability of expropriation to shareholders, they will be more inclined to buy the company's stock and the insider will be less reluctant to release the control rights. We therefore predict a negative relationship between inside equity ownership and degree of firm specific, or "built-in" shareholder protection.

The issue of whether differing degrees of protection exclusively depend on firms' characteristics or insiders' behavior is predicted to be of particular importance for countries where financial institutions and the legal system do not provide the level of protection appropriate to facilitate risk diversification. We take this prediction seriously and investigate the relationship between inside ownership concentration and the implied cost of capital, which is predicted by theory to be positive.[6]

Our empirical investigation uses a panel of Italian publicly traded companies over the period 1995-2002. We collected our data from primary sources, including annual and corporate governance reports, allowing us to construct precise firm specific measures of firm-investors relationships. All firms are manufacturing firms that went public either in the 1980s or 1990s. This time period is important because it marked the turning point for modernization of financial institutions in Italy: capital markets were liberalized, state-owned banks and enterprises were privatized and the issue of shareholder expropriation gained an unprecedented attention during this period, paving the way to a new company law with tighter transparency and governance requirements.

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[5] See Mork, Wolfenzon and Yeung (2005) for a recent survey.

[6] In a related research, Lombardo and Pagano (2000) find that, as a result of poor investor protection, the relationship between investor protection and risk-adjusted equity returns is positive because investors who have to bear non-diversifiable market risk or monitoring costs to enforce their dividend claims must be compensated by higher equilibrium expected returns.

Empirical results are consistent with the model's predictions. First, we find that the stronger the firm-level investor protections the lower the resulting fraction of equity that is owned by insiders. Second, we find that the higher the concentration of inside ownership, the higher the implied cost of capital. Finally, we find evidence that the magnitude of capital stock distortions due to highly concentrated ownership and weak investor protection is quite large, which is consistent with stylized facts that institutional reforms are lagging behind or difficult to implement in Italy.

This study makes three key contributions. First, we provide a micro examination of firm level behavior and related agency problems using exceptionally detailed firm level data. The Italian data is of particular interest because Italy is a European Union member that is commonly acknowledged for providing relatively weak protection to investors (LLSV, 1998; World Bank, 2005). Second, because we do not rely exclusively on explanatory differences in cross-country regressions, this enables us to investigate whether investor protection has an additional cross-firm dimension which goes beyond the information provided in mere country indices. This is important because cross-country regressions commonly assume representative firm behavior in spite of the fact that firm level behavior has been generally shown to be heterogeneous[7]. Third, this study provides empirical evidence which confirms the interaction of investor protection, ownership structure, firm financing and capital investment decisions. This evidence suggests that corporate governance is important in the real and financial decisions of the firm.

The paper is organized as follows. Section II details the theoretical framework and predictions of our model. Section III briefly illustrates the institutional context in Italy. Section IV describes the data for the empirical analysis. Section V describes the empirical strategy and results. We conclude in

[7] With regard to the object of this paper, further motivation to explore cross firm variation in Italy came from empirical evidence in Carpenter and Rondi (2006) whereby the impact of going public on Italian firms' real and financing decisions was found to be highly heterogeneous and almost inextricably related to both firm characteristic (such as size and group affiliation) and institutional factors (such as the level of development of financial institutions at the time of the initial public offering). Specifically, within the same legal environment, some firms were found to use the IPO proceeds to pursue growth

Section VI by discussing implications for policy makers concerned with addressing firm growth and financing issues within the European context.

II Theoretical Framework

Related Literature

The theoretical framework of this study is based on the agency theory of the firm as outlined in Alchian and Demsetz (1972) and Jensen & Meckling (1976), where agency problems between insiders and outsiders arise because insiders can divert firm profits to themselves before paying out dividends.[8] Cross-country evidence documents that legal institutions have systematic influences on investor protection and, in turn, that investor protection affects ownership concentration (LLS, 1999, LLSV, 2000, Shleifer and Wolfenzon, 2002). This suggests that poor investor protection (or more pointedly, poor protection of minority shareholders) favors insiders (large shareholders who control the decision-making of the firm) because it allows them to expropriate outside (minority) shareholders. Concentrated ownership is thus viewed as the response to, or the substitute for, the lack of legal protection, reducing agency problems and managerial slack (Jensen and Meckling, 1976; Shleifer and Vishny, 1986) or minority investors' expropriation - under the assumption that the dominant shareholder does not steal from oneself.[9] Recently, Burkart and Panunzi (2006) find that ownership concentration and legal protection are not necessarily substitutes in a model where shareholder control comes with costs and benefits and monitoring affects managerial incentives. Specifically, when the law is a substitute for monitoring, so as to reduce the amount of earnings that managers can divert as private

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projects and benefit all shareholders, while others pursued different objectives, potentially in conflict with minority investors' interests, thus raising questions about determinants of cross-firm differences.

[8] More recently, the law and finance literature suggests that the extent to which expropriation occurs correlates with differences in both the law and law enforcement (LLSV, 1998).

[9] Interestingly, reliance on this "second-best" solution to agency frictions may be the reason why, in many industrialized countries, company by-laws still include relatively few rules aimed at protecting minority shareholders. Although some progress has been achieved within the EU, as part of the legal harmonization program, much is yet to be done. For example,

benefits (such as with the mandatory dividend rule), legal protection and outside ownership concentration can be complements because better laws weaken the monitoring incentives.

Himmelberg, Hubbard and Love (2002) incorporate theory from both the legal and financial literatures in developing a model that combines the agency framework with risk diversification incentives for insiders to derive an inverse relationship between ownership concentration and quality of the law. A key factor in their model is the introduction of insider risk aversion as the offsetting cost of insider ownership, thus contributing to explain underinvestment and slow growth.

We argue that the potential consequences of poor investor protection on firm capital accumulation need to be investigated at the firm level. This is important not only because of the obvious correspondence in the level of the variables, but also because of the potential underlying relationship between firm ownership concentration, shareholder protection and investment. Weak (minority) shareholder protection and high ownership concentration may be detrimental not only to outside investors, but also to the insider and to the firm itself, in that by preventing the insider (as shareholder) from diversifying risk optimally they also prevent the insider (as manager) from pursuing growth-oriented, risky capital projects, thus impeding optimal capital accumulation for the firm.

According to HHL (2002), under imperfect investor protection, the entrepreneur/manager must retain an equity stake large enough to reassure minority shareholders that he will neither pursue value-destroying projects nor engage in expropriation of firm assetswe predict that the insider will raise external funds (outside equity) in a proportion to the initial wealth invested in the firm that does not dilute his incentives, regardless of the actual amount of equity finance that would be needed to fund the firm's growth project. Two consequences result from this agency problem. First, an additional premium is expected to be included in the cost of capital to compensate for the additional idiosyncratic risk that the entrepreneur/manager is forced to bear, thus reducing the desired stock of capital in

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recent financial scandals in Italy (e.g. Parmalat and Cirio) have been interpreted as a consequence of the delay in the

equilibrium. And second, a suboptimal quantity of capital is raised on the equity market at the time of the IPO, subsequently preventing the firm from exploiting profitable investment opportunities

The Model

The model describes a firm where managers are in full control of decision-making, and have a project in which they may decide to invest. The firm has a Cobb Douglas production function, described by $\Pi(K_{it})$, where K_{it} is the capital stock that depreciates at the rate δ, and managers can sell equity to finance capital expenditures K_{it} and consumptions C_{it}. The managers are risk averse and seek to diversify by selling a fraction $1- \alpha$, of the firm's equity. Insiders can steal or divert a fraction s_{it+1} of firm profits to themselves before paying dividends, but stealing has a cost, $c(\phi_{it}, s_{it}) = \frac{1}{2} \phi_{it} s_{it}^2$, which is a positive function of a quantitative index of investor protectionϕ_{it}: Higher values of ϕ_{it} indicate better shareholder protection. The manager's net return N_{it+1} in period t+1, after taking the firm public, is:

$$N_{it+1} = [\alpha_{it}(1 - s_{it+1}) + s_{it+1} - c(\phi_{it}, s_{it+1})]\Pi(K_{it+1}, \theta_{it+1}) \qquad [1]$$

Because of agency problems between insiders and outsiders, when the manager sells a fraction

$1 - \alpha_{it}$ to raise external finances he has to convince outside investors that they will receive a fair market return (i.e. that stealing will not occur). The level of stealing that maximizes the managers' net return ($\partial N_{it+1} / \partial s_{it+1}$) is characterized by the first-order condition $c_s(\phi_{it}, s_{it+1}) + \alpha_{it} = 1$, and the optimal level of stealing is therefore:

$$s_{it+1} = (1-\alpha_{it})/\phi_{it} \qquad [2]$$

which indicates that stealing is increasing in outside ownership $1- \alpha_{it}$, decreasing in investor protection ϕ_{it}, and further suggests that inside ownership α_{it}, is inversely related to investor protection. The manager's problem is therefore to maximize total expected utility subject to equations [1], [2] and to the investor's participation constraint, described as:

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harmonization (See The Economist, January 3rd, 2004).

$$X_{it+1} = E_{it} [M_{it+1} (1- \alpha_{it})((1 - s_{it+1})\Pi(K_{it+1},\theta_{it+1}) \quad [3]$$

where X are proceeds raised by selling a fraction 1 -α_{it} of the equity and M_{it+1} is the stochastic discount factor used by investors to value next period cash flows.

This model suggests that with imperfect investor protection, the managers will have to commit to lower levels of stealing by retaining a higher fraction of equity than would be optimal for them to fully diversify the firm-specific risk. Consequently, they are forced to bear higher levels of diversifiable idiosyncratic risk. The tradeoff between risk and insiders' incentive to invest in risky capital projects determines the inside ownership stake in equilibrium. The first-order condition that characterizes the optimal capital choice can be derived as[10]:

$$E [\Pi'(k)] = r + \delta + \Gamma + \alpha(\gamma - \Gamma) \quad [4]$$

Where E [Π'(k)] is the marginal profit of capital and the right hand side represents the firm's user cost of capital, where r is the risk-free rate and δ is the depreciation rate on capital. Γ and (γ – Γ) represent the risk discounts in the cost of capital for (non-diversifiable) systematic risk and (diversifiable) idiosyncratic risk, which depend in turn on the stochastic discount factors of the market and of the manager, respectively. What is of interest here is that the idiosyncratic component exists because a large fraction of the insider's income is derived from the profitability of the firm. With poor investor protection and α>0, there is an additional premium in the cost of capital, namely, α(γ – Γ) > 0. The economic intuition of the model is that insiders assign a lower value to risky projects (and profits) than outside investors. Assuming (r + δ + Γ) constant, one can empirically estimate (γ – Γ) by regressing E [Π'(k)], or marginal profit of capital, on inside ownership.

Predictions of the Model

[10] The formal derivation by HHL (2002) shows that this equation defines the risk adjustment to the user cost of capital as the weighted sum of two terms: the first term reflects the covariance between the manager's stochastic discount function and the marginal profit to capital; the second term reflects the compensation for non-diversifiable risk.

In countries where investor protection is said to be generally low –as in Italy, the model predicts endogenously high levels of insider ownership. Accordingly, the idiosyncratic risk premium applied to the cost of capital should be high, implying a steady-state level of capital below the first-best level. This allows us to measure the real effects of corporate governance, namely the effects on the capital accumulation of the firm.

To operationalise this model we first estimate the determinants of the fraction of equity owned by insiders, testing as predicted, whether this fraction depends on firm-level measures of investor protection or not. We then investigate the correlation between inside equity ownership and the marginal return to capital, a relationship that follows directly from the first-order condition for capital, where the cost of capital includes a risk premium that reflects the insiders' exposure to idiosyncratic risk.

III The Institutional Framework of a "Weak Investor Protection" Country

Italy is a typical example of a country where investors are weakly protected. LLSV (1998), in their comprehensive overview of many of the differences between legal, institutional, and regulatory frameworks across countries, classify Italy among French civil law countries, deriving its legal system from Roman codes and its corporate law from the French Commercial Code, written under Napoleon in 1807. In Figure 1 we have summarized key findings from both LLSV (1998) and a recent World Bank report appropriately named "Removing Obstacles to Growth" where Italy's ranking is compared with France's and Germany's, two allegedly similar countries in terms of legal origin and investor protection and with that of UK and US to provide a comparative benchmark from "common law" countries.

This data supports the stylized facts that Italy's laws extend weak protection both to shareholders and creditors, and provides relatively weak enforcement of law. Similar to many Continental Europe countries, particularly Germany, Italy has relatively high ownership concentration levels compared to the US and UK, as well as lower levels of informational disclosure requirements. The law provides

weak protection to both shareholders and borrowers, not only compared to Anglo-Saxon countries, but also compared to France or Germany. Specifically, Italy scored 1 out of 6 of the index summarizing anti-directors rights, and a weak 3 out of 10 for legal rights on borrower/lender protection. Moreover, Italy's cost of insolvency, similar to France's, is more than double Germany's, US' and UK's. Finally we report an index that proxies the quality of the judicial system, as a strong system of legal enforcement could substitute for weak rules whenever managers abuse investors. Again, Italy's shareholders do not fare well, as the index reveals medium to low quality of law enforcement.

Over the last decade Italy has been seeking to bolster its "poor shareholder protection" status in order to improve its' investment climate. In 1999, the Nuovo Mercato, the Italian counterpart of NASDAQ was launched for high tech firms; in 2000, the STAR segment (Segmento Titoli con Alti Requisiti) was created, to enhance the visibility of medium old-economy enterprises (from 40 to 1,000 million Euro of market capitalization) committing to comply with higher liquidity requirements and more severe disclosure rules, and in 2004 the EXPANDI branch, meant to attract small-sized firms (capitalization of 1 million Euro) was launched. In 1998, the Italian government introduced a new corporate law in line with international standards of corporate governance and investor protection that, if literally enforced, would raise the anti-directors rights from 1 to 5.[11] In order to comply with the European Commission's guidelines, a Corporate Governance Code of Self-discipline[12] was issued in 1999 and then twice extended in 2001 and 2006 (Codice Preda). To comply with the Code in Italy, the board of directors must appoint independent, non-executive directors and an investor relations officer, and has to set up audit, nominating and compensation committees - similarly to standards in the US and UK

[11] Law N° 58/1998 (*Legge Draghi*) enforces more informative accounting standards and disclosure requirements, reforms and facilitates take-over bids, restricts cross-shareholdings, introduces oppressed minorities mechanisms such as the shareholders' right to step out of the company by requiring the firm to purchase their shares, lowers the threshold to exercise anti-directors rights (such as legal actions of liability and the right to sue the directors for breach of fiduciary duties).

[12] Listed Companies Corporate Governance Committee of *Borsa Italiana*, "Report and Self-discipline Code", 1999, 2006 available at www.borsaitaliana.it .

However, in spite of these recent institutional changes and legal reforms, time is needed to change the long-standing Italian customs, which have resulted in entrenched conflicts of interests, lack of transparency and financial engineering.[13] For example, when collecting the data for this work, we noticed that while most of the companies had issued a "corporate governance report" and made it available on the Internet by 2004, only a minority had literally complied with even a single of the of the code's provisions. In summary, according to the CONSOB (Commissione Nazionale per le Società e la Borsa), the national authority ruling on equity markets since 1974, investor protection in Italy remains comparatively weak.[14]

IV Data and Variable Construction

A key feature of the model we employ is that investor protection is allowed to vary not only across countries, but also across firms. "Investor protection is anything that exogenously increases the cost of stealing from outsiders" (HHL, p. 8), widening the scope of our search of firm-level determinants of investor protection. For example, tangible assets, such as factories, plants and equipment are difficult to steal and provide a "built-in" degree of protection to outside shareholders. Or, the identity of minority shareholders, such as institutional investors or financial institutions, may influence the degree of investor protection to the extent that they carry more (or less) political clout with law enforcement agencies (see Coffee, 1991 for a survey). Furthermore, in countries providing weak legal protection, insiders may have a hard time selling equity and may wish to signal investors that they intend to honor their financial contracts. In this case they may do so by committing to a transparency regime, hence by voluntarily disclosing sensitive information, improving quality of accounting standards, and complying with a self-disciplining code of corporate governance (Diamond and Verrecchia, 1991, Botosan, 1997).

[13] The Parmalat and Cirio financial scandals in Italy are probably beyond the reach of even well designed rules, much as scandals such as ENRON or Worldcom show for the US.

The Data

The empirical investigation uses an unbalanced panel of 63 manufacturing firms listed on the Italian exchange and tracked over the period 1995-2002.[15] The time frame is imposed by the fact that ownership data only became publicly available by CONSOB in Italy in 1995, and that fact that the most recent data available is 2002. Our sample includes the entire Italian market at this time, excluding only those firms which were not appropriate for our study including those that had less than three continuous years of data, financial firms, service companies, public utilities and objects of merger or divestiture operations. The final sample totaled 63 out of the original 101 firms in the "Industrial Companies" sector of the exchange as of 2002 – or about 40% of the Italian exchange. [16]

An important contribution of our study comes from our collection and use of several relatively new primary data sources allowing us to construct precise firm specific measures of the firm-investor relationship. Specifically, this data enabled us to construct variables measuring the degree of inside ownership and firm-specific, or "built-in", degree of investor protection to test our hypotheses.[17] This data on corporate governance and ownership structure was derived from the corporate governance reports, company and annual reports obtained from the Borsa Italiana and CONSOB.[18]

We also use annual financial and accounting firm-level data taken from the CERIS database.[19] This panel comprises 334 firm-year observations for 63 firms, 43 of which went public after 1995.

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[14] In the Annual Report for the year 2000, CONSOB continues to emphasize that the newly introduced reform of company law (Law n. 58/1998) should "pave the way to strengthened protection of shareholders".

[15] Carpenter and Rondi (2006) report that the Italian exchange had 141 financial and non-financial companies in 1980 and 170 in 1990. Comparable studies for the US usually use a smaller percentage of the exchange, for example Gompers, Ishii and Metrick (2003) uses 1500 US firms which is about 17% of the NYSE and the NASDAQ combined in 1990.

[16] The Italian market for new firms is much smaller than the US' so our sample of 64 firms only looks small, for example Pagano, Panetta, and Zingales (1998) Journal of Finance paper uses 69 Italian firms for a similar time frame.

[17] Data is available upon request from primary author at laura.rondi@polito.it.

[18] *Bollettino CONSOB*, Special Issues, from 1995 to 1997, then available on CONSOB's Internet website.

[19] The database contains extensive information on 1850 Italian manufacturing firms over the period 1977-2002. It was constructed at CERIS-CNR using multiple sources. Balance sheet and stock exchange data were collected from two annual directories, *Le Principali Società*, *Indici e Dati* and *Il Calepino dell'Azionista,* all published by Mediobanca, a large investment bank. Finally extensive information about the firms' age, ultimate ownership, group affiliation, location and

Firms going public in the 1980s and in the 1990s are different in many respects. Although all of them are ultimately family-owned, mature companies operating in manufacturing industries, the former are typically large, part of pyramidal groups where ownership and control are separated, and less growth-oriented whereas the latter tend to be small or medium-sized, not affiliated to hierarchical groups (independent) and more growth-oriented. In addition, firms which went public in the 90s clearly chose to tap the equity markets in a financial environment that was both more transparent and stricter about expropriations, hence with a presumably more favorable attitude towards outside equity than firms going public in the 80s.

Variable Construction

Measuring Inside Ownership and Firm-Specific Investor Protection

Inside ownership is a key variable in this study. In theory, inside owners are shareholders that control decision-making (i.e. sitting on the board of directors and/or in the managerial board). By collecting data on "relevant" (i.e. > 2%) shareholdings, stockholders' identity and information about the boards' composition, we were able to construct an annual, time-varying variable for inside ownership that was consistent with the definition of "insider" in the HHL model.[20] Moreover, because we can match the equity shareholdings of each board member with his executive vs. non-executive role within the board of directors, we can distinguish between insiders and large passive shareholders. Notably, none of the large shareholders in our dataset is identifiable as a passive shareholder while the typical insider is an individual investor, often a representative of a family group.

The detailed information on the composition of the directors' boards shows that controlling families participate in top management supporting findings of LLS (1999) and Bianchi, Bianco, Enriques (2001). Our data suggests that in Italy the percentages of equity held by the controlling

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business activity was obtained from DUN's Bradstreet and other directories. For a complete description of the dataset, see Benfratello et al., 2001.

shareholder and by insiders are very close – 57.16 and 57.5%, which is consistent with the World Bank data reported in Figure 1. This finding is reasonable because the founder or entrepreneur/manager who took the company public usually sits on the board together with other members of his family. We also found that the "family" or the individual investor usually holds the controlling stake directly. In those companies where control is held thorough a holding company, we could identify the ultimate owner in all but two cases.

To proxy for the firm-specific degree of investor protection we used several variables. The sales to capital stock ratio (where the capital stock is reconstructed at replacement value based on a perpetual inventory method) measures asset tangibility. To proxy for the willingness to disclose more information about the company, we e constructed a dummy variable which is equal to 1 if the firm is listed in the STAR (Segmento Titoli con Alti Requisiti – High Requirements Security Segment) branch of Borsa Italiana ; and zero otherwise. A second dummy variable was constructed to take on a value of 1 if the firm has a minority shareholding (usually between 2 and 4%) by a mutual/pension fund, investment bank or a venture capital company; and zero otherwise. This variable is meant to capture the presence of institutional investors, which we assume will lead to better protection of minority shareholder interests in the weakly protective institutional environment.

We also constructed a third dummy variable which is equal to 1 if the firm complied with all norms by the Corporate Governance Self Discipline Code (Preda code) and zero otherwise. This variable uses information from three sections of the code indicating: i) whether the firm's board includes clearly identifiable, non-executive directors, ii) if an auditing committee exists with the required number of independent and non-executive directors; iii) if the investor relations officer was

[20] HHL (2002) define it as the fraction of equity held by insiders, and use the "closely-held shares" variable from the Worldscope database for their cross-country analysis.

also appointed to the board.[21] In addition, we constructed a forth dummy variable, Corp Gov Index, which is the sum of all the scores (0,1,2) of the individual items of the Code (Independent directors, Control Committee, Investor relations) to use as an alternative measure. See the Variable Definitions which accompany the Summary Statistics in Table 1

Measuring the Marginal Profit of Capital

To estimate the model we have to measure the marginal profit of capital.[22] Assume the firm has a Cobb-Douglas production function $Y_{it} = f(A_{it};K_{it};Z_{it}) = AK^{\beta k}Z^{\beta z}$, where A_{it} is a measure of total factor productivity, Y_{it} is output, K_{it} represents the stock fixed capital including the firm's property, plant and equipment, and Z_{it} is a vector of variable factor inputs (e.g., materials, energy, unskilled production workers). Now assuming that the firm faces an inverse demand curve $P(Y_{it})$, variable factor prices w_{it}, and fixed costs F, the profit maximization function is:

$$\Pi(K_{it};w_{it}) = \max P(Y_{it})Y_{it} - w_{it} Z_{it} - F \qquad [5]$$

$$\text{s.t. } Y_{it} = AK^{\beta k}Z^{\beta z}$$

Thus by the envelope theorem, the marginal profitability of fixed capital, denoted MPK, is:

$$MPK \equiv \partial\Pi_{it}/\partial K_{it} = (1+\eta^{-1})\, P_{it}\, (\partial f_{it}/\partial K_{it}) = (1+\eta^{-1})\, \beta_k\, (S/K) = \theta\, (S/K) \qquad [6]$$

[21] Construction of this variable required special attention for two reasons. First, firms were merely advised, not required, to comply with the code, hence for the initial one or two years it was not a straightforward process to determine whether they had compiled a report. Second, many companies provided only vague descriptions of their compliance to the code (e.g. not indicating the number or names of independent directors, or whether non-executive and independent directors in the required proportions were in the auditing committee). In order to assess an objective measure of compliance with these standards, we therefore had to verified all provided information with original documents (corporate governance reports or company reports). For each of the norms, and for each year, companies were assigned a value of 0, 1, or 2 depending on whether the norm was applied at all, the norm was said to be applied but the Independent Director, the Audit Committee members and the Investor Relation persons were not clearly named or identifiable, and finally the above players were all named and identifiable. Ultimately only companies that we determined had applied all three norms were assigned a Corp Gov Dummy value of 1; and zero otherwise.

[22] See HHL (2002) and Gilchrist and Himmelberg (1998) for detailed derivation and empirical estimates for US firms.

Where $\eta \equiv (\partial Y/\partial P)P/Y < -1$ is the firm-level price elasticity of demand , β_k is the capital share of output, S=PY is the firm's sales, and $\theta = (1+\eta^{-1})\,\beta_k$ is a scale parameter that may vary across industries because price elasticity of demand as well as the capital share of sales are different across industries. Thus, up to an industry-specific scale parameter, θ, the ratio of sales to capital may be used to measure the marginal profitability of fixed capital. Assuming that firms are on average at their equilibrium level of capital stock, the marginal profitability of capital should roughly equal the cost of capital, $MPK_{it} = r_{it} + \delta_{it} + \Gamma_{it}$, where r_{it} is the risk-adjusted discount rate, δ_{it} is the depreciation rate and Γ_{it}, is an adjustment for systematic risk. To implement equation [6] empirically, we construct industry-level estimates of θ by averaging over all firms *i* and years *t* in industry *j*, and by assuming $r + \delta + \Gamma = 0.18$ for all industries. Thus, for industry j, θ_j is given by: $\theta_j = [(1/NT)\Sigma_i\Sigma_t\,(P_{it}Y_{it}/K_{it})]^{-1}\,(r + \delta + \Gamma)$ and, for firm *i* at time *t*, $\Pi^k_{it} = \theta_j\,(P_{it}Y_{it}/K_{it})$ is the measure of marginal return to capital. Checks for robustness of using these parameter settings, showed little sensitivity of results to parameter settings. [23] To account for changes in other factors which may influence the MPK, like the business cycle, we included time dummies in the estimations.

Control Variables: Sales, Assets, Leverage, Dual Class Shares and Voting Pact

To minimize the possibility of specification error in our model, we estimate several models with alternative control variables: the log of real sales and the log of real assets as proxy for size, the book value of the firm's leverage (measured by the ratio of financial debt to the sum of financial debt and equity), a dummy indicating if the company uses dual class shares and a dummy to indicate if a small party of shareholders signed an agreement such as a voting pact. Leverage variable is included to control if the firm's insider was reluctant to raise external equity funds. As debt is the only alternative

[23]The value of 0.08 for the depreciation rate used by HHL appears to be consistent with estimates derived by the Bank of Italy. In the absence of data to construct the other parameters, we use the values provided by HHL to proxy for the remaining parameters. Estimates using several alternative sets of parameters showed little sensitivity to these alternative values, supporting the reasonableness of using the HHL parameters as proxy.

source of external funds to finance growth projects, we predict a positive coefficient on leverage (see, for example, Mueller, 2005). Voting pacts denote a coalition of shareholders while dual-class shares denote the presence of shares with limited voting rights (preferred shares, or *azioni privilegiate*)–these are instruments, common in Italy and other EU countries, which can effectively separate control from ownership because they allow insiders to control the firm with small equity stakes.[24]

Table 1 presents summary statistics of key variables. Panel A reports group means and percentiles for the full sample while Panels B and C highlight differences between firms going public in the 1980s and in the 1990s, respectively. On the average, inside equity ownership is quite similar for the two groups -only marginally higher for firms that floated in the 1980s (0.580 vs. 0.573). Mature quoted firms tend to be larger than newly public firms. They also exhibit greater assets tangibility, which is viewed as representing an intrinsic protection for outside investor against expropriation, and are slightly less leveraged than newly public firms. In contrast, firms that went public in the 1990s displayed higher compliance with corporate governance rules (0.162 vs. 0.101), and a strong presence in the STAR segment of the exchange (0.426 vs. 0.150 – not surprisingly, as this branch was meant to bring in medium sized, growth oriented businesses). These firms also appear more attractive to institutional investors than mature public firms (0.509 vs. 0.381) and do not display dual-class shares.

V Empirical Results

The empirical tests in this paper focus on two main refutable hypotheses. First, we tested whether inside ownership is related to measures of investor protection by regressing inside ownership on firm-specific investor protection. The intuition is that anything that increases the cost of stealing (i.e. investor

[24] These agreements are of interest as they are often used in Europe to articulate company strategies such as merger proposals or take-over bids, hiring a new CEO, add new members of the board, or change their compensations. In sum, they serve to address and decide on many crucial matters –some of which may be decided in a fashion contrary to the best interests of the outside shareholders. Listed firms are required to notify CONSOB of all shareholders' agreements including information on their content and duration. For detailed use of voting pacts see Bianchi, et al. (2001).

protection) allows insiders to reduce their equity share and provides an incentive to minority investors to buy firm shares. Second, we tested the model's prediction that the equilibrium level of inside ownership is positively related to the marginal return of capital, a relationship that reflects the additional idiosyncratic risk premium in the marginal cost of capital. The implications of a higher implied cost of capital are to reduce capital investment, contributing to an explanation of the apparent slow growth in the time period of the study. We present the empirical results of the estimations in Tables 2, 3 and 4.

On the Link Between Inside Ownership and Firm-Specific Investor Protection

Table 2 reports coefficient estimates of panel regressions of inside ownership concentration on investor protections for the full sample in columns (1), (2) and (3) and for the two sub-samples of firms that went public in the 1980s and 1990s in columns (4) and (5) respectively. The motivation for this strategy is twofold. On the one hand, as described in Section 3, financial markets and regulations in Italy changed across the two decades leading firms to tap the equity market with different motivations and post-IPO behavior. On the other hand, this strategy allows us to account for the fact that newly public firms may display highly concentrated ownership because they have not yet had the chance to achieve their optimal post-IPO ownership structure (Goergen and Renneboog, 2003). We noticed however that inside ownership is quite similar across the two sub-samples.

The dependent variable is the logarithm of α, the equity holdings by members of the firm's board of directors. To test for corporate governance effects, the specification in column (1) includes the Corporate Governance dummy, the most restrictive definition of compliance with the Preda Code, while the specification in column (2) controls for the separate effects of firm adherence to the main norms in the Code - namely if firms have independent directors, an auditing committee and an investor relations officer. All specifications include the set of control variables: the log of real total assets to account for

size effects, Shareholder Agreement, Firm Leverage, Dual Class Shares, as well as firm specific fixed-effects.

In column (1), we find that the coefficient on the sales to capital ratio, our proxy for tangibility, is positive but insignificant. The coefficient on the STAR dummy is insignificant, suggesting that a record of transparency in the public equity market does little to impact the level of the firm's ownership concentration. Notably, floating in the STAR segment is typical of firms that IPO'ed in the 1990s.

The Institutional Investor variable is negative and significant, as expected. This suggests that having an institutional minority shareholder acts as a substitute for investor protection, which indirectly may allow the insider to retain a smaller equity share. The Corporate Governance dummy is the measure that we expected to best capture the built-in degree of investor protection, and we find that the estimated coefficient is negative and significant -consistent with the model predictions. The control variables, especially firm's size, are not significant though firm leverage has the expected positive coefficient. The two variables we included to capture ownership and control separation, dual class shares and voting pacts, are also not significant.

In Column (2), we use the unrestricted version of the Corporate Governance variable, allowing for an explicit measure of the impact of the Preda code's norms. We notice that, of all the three measures, appointing an independent director has by far the strongest effect on decreasing the insider's equity share. Changing the specification does not affect the results, although we observe that the positive coefficient on leverage is now more significant (but still below conventional levels of acceptance).

In Column (3), we switch to the Corporate Governance Index, which allows for greater variability in the data than the simple dummy to account for the degree of compliance with the norms of the Preda Code.[25] The coefficient on this variable is negative, as expected, and strongly significant confirming the negative relationship between firm-specific compliance with company by-laws that are closely

related with investor protection. The last three columns report results from a specification that uses the Corporate Governance Index instead of the Dummy.

When we compare the results for older and newly public firms in columns (4) and (5), we note some interesting differences. First, if we look at the corporate governance index, we find that the coefficient for firms going public in the 1990s enters with a negative and significant sign whereas the coefficient for firms listing in the 1980s is negative but insignificant. The absence of a relationship between ownership concentration and both observance of norms disciplining governance and asset tangibility suggests that insiders in mature quoted firms do not seek built-in protections to apply to financial markets, possibly because they know they can resort to alternative external sources to fund their projects. This interpretation is supported by the empirical result on the coefficient for leverage, which is positive and strongly significant for mature firms and negatively insignificant for newly public firms.

Focusing on firms that went public more recently, we find that the institutional investors' dummy does not surface in this regression contrary to what one may expect from the summary statistics in Table 1, showing a tendency of institutional shareholders to invest in newly public companies. One possible explanation of this result is therefore that the lack of significance is due to lack of variability in the data. In contrast, the institutional investor dummy enters the regression for firms listing in the 1980s, with a negative and significant coefficient the regression as predicted by the theory. Across estimates, firm size only appears significant in impacting ownership concentration for firms listing in the 1990s, where size enters with a positive coefficient. This is in contrast with HHL's finding of a negative effect where they argue that large firms may ensure better protection to outside investors because of economies of scale to monitoring. The positive coefficient on size for IPOs in the 1990s could be due to the fact that for the first time smaller firms may have had access to better protection.

[25] We thank one referee for suggesting us to operationalise this variable, which exploits the information content of our data

For example it could be that smaller firms may have been better able to monitor more efficiently in this decade.[26] We interpret these results as suggesting that the 1990s provided an institutional environment for the firm that was different from that of the 1980's in terms of reforms to protect minority shareholder interests, indicative of at least a partial success of reforms aimed at improving shareholder protection in Italy. Finally, in column (6) we estimate our model using an alternative, more standard, definition of tangibility, the ratio between fixed assets to total assets (see for example, Rajan and Zingales, 1995). Again we find that tangibility of assets has no impact on the insider's stake of the company. All other results remain unchanged.

Marginal Returns to Capital and Inside Ownership

The second test focuses on the predicted positive relationship between the level of inside ownership (α) and the marginal return to capital (MPK).[27] From the first-order condition for the capital stock in equation [3], we obtain the following empirical model:

$$MPK_{it+1} = r + \delta + \Gamma + (\gamma - \Gamma)\alpha_{it} + u_{it} \qquad [7]$$

These regressions produce estimates of $(\gamma - \Gamma)$, which reflects the average additional risk premium for bearing idiosyncratic risk, above the systematic risk premium (Γ), which is absorbed in the constant term. The sensitivity of MPK results to parameter selection can be assessed by examining results in Table 3 column (6) and column (7) which use alternative values for depreciation and risk-free rates, resulting in values $r + \delta + \Gamma = 0.12$ and $r + \delta + \Gamma = 0.22$. While the estimates on Inside Shares change somewhat, the magnitude and direction, and significance of coefficients remain similar, suggesting results are relatively robust to parameter specification.

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more properly.

[26] Although it is also possible that there is simply a joint endogeneity of firm size and inside ownership.

[27] In the Appendix, Table A2 reports the two digit NACE industry estimates of the scale parameters θ_j that we used to construct the firm-level marginal profitability of capital, as described in equation [6]. Our estimates are based on the full sample of 1,850 firms and over 19,000 firm-year observations in the CERIS database.

Table 3 presents the panel (fixed-effects) estimates from regressions of the marginal profitability to capital on inside ownership concentration. Columns (1) to (4) report our results for the full sample, while column (5) presents the results where the inside equity variable is interacted with two dummies indicating firms going public in the 1980s and in the 1990s, respectively.

In column (1), we find the predicted positive coefficient on inside ownership, although the coefficient is not significant. In the remaining columns we present two-stage least squares estimates where we control for the potential endogeneity of inside ownership.[28]

The empirical results support the hypothesis of a positive relationship between the equity fraction owned by insiders and the marginal return to capital predicted by the first order condition that characterizes the optimal capital choice. Columns (2) and (3) show that the coefficients on inside ownership are positive and significant, with estimated values of 0.047 or of 0.063 depending on whether the instrument set includes the corporate governance dummy or its breakdown into the three norms. This evidence, consistent with HHL's model prediction, suggests that under poor investor protection the higher the concentration of inside ownership, the higher the implied cost of capital.

Column (4) introduces the log of total assets to control for size effects. The results indicate that the statistical significance of Inside Share is robust to this change in the specification. Column (5) contains estimates of the same model, but includes an interaction term for inside ownership to investigate the alleged differing characteristics of the two sub-samples of firms going public in 1980s and 1990s. Estimation results show that the firm specific risk premium at mature companies is significantly higher (both statistically and economically) than at firms that went public in the 1990s. This finding is interesting because the 1990s signify a period when the financial and legal environment became increasingly reluctant to ignore wrongful initiatives against minority shareholder interests (0.028 vs 0.057 for IPOs in 1980s and 1990s, respectively). In Columns (6) and (7), we test whether our

estimates are sensitive to the choice of the parameters used to calculate the MPK, and we find that the magnitude and direction, and significance of coefficients remain similar, suggesting our results are relatively robust to parameter specification. Finally, in column (8) we report the results from using the Return on Equity (as measured by the Net Income to Equity ratio) as an alternative measure for the marginal profit to capital.[29] We find that the model predictions are supported by the data as the inside equity share keep both its sign and significance.[30]

Using the estimated coefficients in Table 3, we can calculate the quantitative importance of cost of capital distortions for the firm size, i.e. the extent to which weak governance is an obstacle to efficient accumulation of capital. These also depend on the elasticity of the capital stock to the marginal cost of capital.[31] In Table 4, we report the solutions for the equilibrium values of marginal profit to capital and the associated capital stock assuming the estimated coefficients and sample values of inside ownership. Given our estimates of the additional risk premium for bearing idiosyncratic risk in Table 3, $(\gamma - \Gamma)$, if we use the estimated coefficient 0.063 in column (3), Table 4 estimates, for a range of values of insider ownership, α, the implied equilibrium values of marginal profit, Π^k, and the associated capital stock (K). Assuming that when investor protection is perfect, $\alpha=0$ and the cost of capital $\Pi^k_{it} = r + \delta = 0.18$, in Panel A, our calculations show that a firm where the insider typically holds 50.9% of the

[28] The instrument sets include once-lagged (t-1) inside ownership and all explanatory variables used in the analysis of the determinants of inside ownership, as discussed in the footnote to Table 3.

[29] Madsen and Davis 2003 provide a theoretical model which establishes the linkages between the firms return on equity, the marginal product of capital, the cost of capital, and the dividend payment for new economy firms.

[30] In an unreported regression we estimated the same model, only using the dividend yield as a further alternative measure of the cost of equity capital. We calculate the dividend yield as the ratio between the cash dividend and the market capitalization of the company. Our results are consistent with the model predictions although the coefficient on inside equity is positively signed but not significant (the estimated coefficient is 0.037 and the standard error is 0.035). Finally, we have checked for the potential impact of extreme values on results by re-estimating the model in table 3 after eliminating the extreme low and high values. The results (available on request) are overall unchanged. In particular when we re-estimate the model in column (3) we find an inside equity coefficient of 0.053 *(0.027)* and a p-value=0.051.

[31] We use the first-order condition as from equation [6] assuming a Cobb-Douglas production function with constant returns to scale and a downward sloping demand curve for output. So our starting point is $\Pi^k_{it} = (1-\eta)\, AK^{-\eta} = r + \delta + \Gamma + (\gamma - \Gamma)\alpha_{it}$ which allows us to examine the sensitivity of the capital stock to changes in the user cost of capital. To derive the impact of changes in investor protection and ownership concentration numerically, we adopt the parameter values for η, δ, r, and Γ used by HHL, which are, respectively, 0.2, 0.08, 0.10 and 0.0.

equity (the 25th percentile in our sample) is found to accumulate about the 50% of the capital of a firm where the insider's stake is 10%. In sum, empirical evidence suggests that the magnitude of underinvestment in Italy due to highly concentrated ownership and poor shareholders' protection is rather large. Panel B of Table 4 also reports our estimates of the quantitative importance of cost of capital distortions for the determinants of size when we use alternative parameters to measure the risk-free rate and the depreciation rate. Overall the results show that the magnitude of underinvestment is severe, independent of the parameter choice, suggesting the relative importance of the concentration of inside ownership.

VI Conclusions

Over the last decade Italy has been seeking to bolster its "poor shareholder protection" status to improve the investment climate. In this paper, we empirically investigate the impact of investor protection on the cost of capital in Italy using firm-level data to test the two main predictions from a theoretical model that incorporates and measures effects of the legal and financial systems on the agency problems of the firm. In general our results confirm the firm-level link between investor protection, ownership structure and the cost of capital; providing an explanation of why, particularly for countries with poor investor protections, risk aversion is the offsetting cost of ownership concentration.

More specifically, our findings suggest that voluntary compliance with corporate governance best-practice norms as well as tighter liquidity and disclosure rules have had a negative impact on the concentration of inside ownership of the firm in Italy, encouraging idiosyncratic risk diversification and capital allocation. Institutional minority ownership also are negatively related to inside ownership, suggesting that the presence of venture capitalists or mutual/pension funds may serve as a signal of

better protection to minority shareholders.[32] Asset intangibility is positively related to inside ownership, which supports the intuitive notion that R&D intensive firms have a harder time obtaining equity capital because of the inherent asymmetrical information problems associated with high technology firms. We interpret these variables as proxies of firm specific "built-in" investor protections allowing the insider to reduce his stake in the company as well as to improve risk diversification.

Our results confirm that investor protection has an important cross-firm dimension in addition to the more familiar cross-country dimension. This suggests that firms' insiders are ultimately not obliged to hold large equity stakes even in countries where investor protection provided by the law is ostensibly weak. In addition, we find that the cross-firm dimension of investor protection changes with length of the period the firm has been listed on the stock exchange. In particular, built-in investor protections such as asset tangibility and corporate governance compliance appear to matter for firms which went public in the 1990s, but not for companies that went public in the 1980s, when equity markets in Italy were opaque and shareholder rights were not even in the agenda. The evidence from the time dimension highlights the positive role of financial development and legal environment improvement for firms' financing and investment decisions.

Finally, we find that the higher the insider equity ownership, the higher the marginal cost of capital as measured by the industry-adjusted marginal product to capital. Our findings overall suggests that in countries where the investor protection is weak, the agency costs of outside equity are higher and the equilibrium levels of inside ownership is also higher. This will in turn raise the cost of capital and discourage capital investment. Our last piece of evidence is consistent with this. When we estimate the quantitative implications of ownership concentration for firm growth we find that the magnitude of the distortions from the first-best level of capital stock is large, contributing an explanation of the underinvestment and slow growth that has plagued Italy in recent years.

[32] An interesting alternative explanation, posited by an anonymous referee, is that lower inside ownership provides a higher

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free float, making it easier for institutional shareholders to build a stake in the firm.

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TABLE 1 - SUMMARY STATISTICS FOR FIRM-LEVEL VARIABLES AND DEFINITIONS
(Means and percentiles, 1995-2002; 63 firms and 334 firm-year observations)

Variable	Mean	Std. dev.	25th Perc.	50th Perc.	75th Perc.	Min.	Max.
			PANEL A – ALL FIRMS				
Inside Equity Share	0.575	0.118	0.509	0.590	0.662	0.087	0.88
Log (Total Assets)	11.77	1.079	11.0	10.999	12.349	9.942	14.578
Sales/Capital	3.135	5.281	1.494	1.920	3.200	0.592	52.47
Tangibility	0.354	0.147	0.278	0.370	0.479	.018	0.673
MPK	0.175	0.430	0.081	0.112	0.156	0.036	4.296
Book leverage	0.366	0.215	0.180	0.351	0.518	0	1.031
Corp. Gov. Dummy	0.142	0.252	0.000	0.000	0.250	0	1
Corp. Gov. Index	1.503	2.262	0.000	0.000	3	0	6
Star Segment	0.339	0.473	0.000	0.000	1.000	0	1
Dual Shares	0.242	0.429	0.000	0.000	0.000	0	1
Institutional Investors	0.469	0.409	0.000	0.429	1.000	0	1
			PANEL B – IPO 1980'S (20 FIRMS)				
Inside Equity Share	0.580	0.124	0.549	0.609	0.662	0.087	0.775
Log (Total Assets)	12.201	1.193	11.400	11.971	13.287	10.176	14.578
Sales/Capital	1.787	0.889	1.141	1.396	2.289	0.592	4.885
Tangibility	0.427	0.133	0.368	0.424	0.517	0.057	0.673
MPK	0.112	0.045	0.077	0.106	0.147	0.039	0.239
Book leverage	0.357	0.211	0.162	0.388	0.505	0	0.879
Corp. Gov. Dummy	0.101	0.132	0.000	0.000	0.196	0	1
Corp Gov Index	1.565	2.288	0	0	4	0	6
Star Segment	0.150	0.366	0.000	0.000	0.000	0	0
Dual Shares	0.551	0.499	0	1	1	0	1
Institutional Investors	0.381	0.335	0.063	0.310	0.625	0	1
			PANEL C – IPO 1990'S (43 FIRMS)				
Inside Equity Share	0.573	0.116	0.506	0.578	0.643	0.197	0.88
Log (Total Assets)	11.443	0.841	10.875	11.376	11.834	9.941	14.539
Sales/Capital	3.761	6.289	1.793	2.431	3.741	0.747	52.47
Tangibility	0.296	0.131				0.019	0.640
MPK	0.205	0.519	0.081	0.116	0.160	0.037	4.296
Book leverage	0.370	0.218	0.207	0.302	0.451	0.002	1.031
Corp Gov Dummy	0.162	0.291	0.000	0.000	0.250	0	1
Corp Gov Index	1.454	2.246	0	0	3	0	6
Star Segment	0.426	0.495	0.000	0.000	1.000	0	1
Dual Share Dummy	0	0	0	0	0	0	0
Institutional Investors	0.509	0.437	0.000	0.571	1.000	0	1

Variable	DEFINITION
Inside Equity Share	The fraction of equity held by insiders (controlling shareholder(s) and board members)
Log (Total Asset)	The log of firm's total assets, where assets is measured in constant ITL
Sales/Capital	The ratio of firm sales to capital stock (at replacement values)
Tangibility	The ratio of Fixed Assets to Total Assets, where fixed assets is measured at replacement values and total asset is defined as (Total assets – fixed assets at historic cost + fixed assets at replacement value)
MPK	The industry-adjusted measure for the marginal return to capital. See Table A2
Book Leverage	The ratio of financial debt to the sum of financial debt and equity
STAR segment	A 0/1 dummy =1 if the firm is listed in the High Requirement Security Segment
Institutional Investor	A 0/1 dummy=1 if the firm has an Institutional Investor owning more than 2%
Dual Class Share	A 0/1 dummy=1 if the firm has non-voting shares
Corp Gov Dummy	A 0/1 dummy=1 if there is compliance with all 3 Corp. Gov. criteria below:
Independent director	A 0/1 dummy=1 if Independent director(s), is clearly named, non-executive, no shareholdings, no family members
Audit Committee	A 0/1 dummy=1 if the company has an Audit committee of clearly named, non-executive, a majority of independent directors
Investor Relation	A 0/1 dummy=1 if the Investor relation officer is clearly named, non-executive
Corp Gov Index	An index ranking from 0 to 6. The index is the sum of the individual values assigned to compliance with the *Independent Director*, *Audit Committee*, *Investor Relation* rules in the Corporate Governance Self-Discipline Code. These in turn take the value 0 if the criterion is not met by the company, and 1 if the criterion is partially met (i.e. the independent directors or audit committee members or investor relation persons are not clearly named and identifiable), and the value 2, if the criterion is literally and substantially met.

TABLE 2 - DETERMINANTS OF INSIDE OWNERSHIP CONCENTRATION
Dependent Variable: Log α

FIRM-LEVEL CHARACTERISTICS	(1) ALL FIRMS	(2) ALL FIRMS	(3) ALL FIRMS	(4) 1980S FIRMS	(5) 1990S FIRMS	(6) ALL FIRMS
SALES / CAPITAL	0.003 (0.004)	0.000 (0.004)	0.001 (0.004)	-0.030 (0.036)	0.003 (0.005)	-
TANGIBILITY	-	-	-	-	-	0.322 (0.331)
STAR SEGMENT	-0.031 (0.030)	-0.028 (0.024)	-0.015) (0.021)	- -	-0.007 (0.034)	-0.024 (0.021)
INSTITUTIONAL INVESTORS	-0.060* (0.033)	-0.058* (0.031)	-0.055* (0.031)	-0.081** (0.036)	-0.025 (0.028)	-0.057* (0.032)
CORPORATE GOVERNANCE DUMMY	-0.086* (0.049)	-	-	-	-	-
CORPORATE GOVERNANCE INDEX	-	-	-0.042*** (0.015)	-0.025 (0.018)	-0.049** (0.023)	-0.044*** (0.015)
INDEPENDENT DIRECTORS DUMMY	-	-1.148* (0.077)	-	-	-	-
AUDIT COMMITTEE DUMMY	-	-0.015 (0.061)	-	-	-	-
INVESTOR RELATION OFFICER DUMMY	-	0.060 (0.054)	-	-	-	-
SHAREHOLDERS' AGREEMENT	0.132 (0.119)	0.144 (0.111)	0.140 (0.118)	0.431 (0.300)	0.030 (0.059)	0.139 (0.114)
LEVERAGE	0.173 (0.213)	0.200 (0.192)	0.192 (0.208)	0.542** (0.267)	-0.128 (0.188)	0.154 (0.183)
LOG TOTAL ASSET	0.011 (0.071)	0.040 (0.060)	0.031 (0.068)	-0.120 (0.106)	0.150* (0.081)	0.059 (0.058)
DUAL-CLASS SHARES DUMMY	0.034 (0.090)	0.028 (0.083)	0.002 (0.090)	-0.016 (0.076)	-	-0.002 (0.093)
R^2-within	0.074	0.135	0.103	0.313	0.089	0.108
F-test (p-value)	3.28 (0.00)	4.62 (0.00)	52.99 (0.00)	2.59 (0.02)	25.0 (0.00)	22.33 (0.00)
N. Obs.	334	334	334	147	187	334
N. Firms	63	63	63	20	43	63
Sample period	1995-2002	1995-2002	1995-2002	1995-2002	1995-2002	1995-2002

Notes: Fixed-effects estimates. Robust standard errors in parentheses use White's correction for heteroskedasticity. In columns (4) and (5), data subsets of 1980s and 1990s firms refer to the subset of firms which had their initial public offerings in the 1980s and 1990s respectively.

*** Coefficient significantly different from 0 at the 1 percent level or less.
** Coefficient significantly different from 0 at the 5 percent level.
* Coefficient significantly different from 0 at the 10 percent.

TABLE 3 - ESTIMATES OF THE FIRST-ORDER CONDITION FOR THE CAPITAL STOCK
Dependent Variable = MPK

	LSDV	Instrumental variable estimation (2SLS)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
INSIDE $SHARE_T$	0.017	0.047*	0.063**	0.048*	-	0.041*	0.075*	0.926*
	(0.013)	*(0.026)*	*(0.029)*	*(0.028)*	-	*(0.024)*	*(0.045)*	*(0.535)*
INSIDE $SHARE_T$ 1980S	-	-	-	-	0.028			
	-	-	-	-	*(0.049)*			
INSIDE $SHARE_T$ 1990S	-	-	-	-	0.057*			
	-	-	-	-	*(0.032)*			
LOG (TOTAL ASSETS)				0.015	0.014			
				(0.010)	*(0.012)*			
F-Test (*p-value*)	0.23*(0.63)*	-	-	-	-	-	-	-
χ^2		4794.9	4773.7	4800.1	4815.3	4776.0	4776.3	8.98
(p-value)		*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.00)*	*(0.01)*
N. obs. [N. Firms]	271[63]	271[63]	271[63]	271[63]	271[63]	271[63]	271[63]	271[63]
Sample period	1996-2002	1996-2002	1996-2002	1996-2002	1996-2002	1996-2002	1996-2002	1996-2002

Notes: Fixed-effects estimates in column (1) and 2SLS estimation in columns (2-8) performed using STATA. Column (4) adds the log of real total asset to control for the effect of size. In column (5) the Insider Share is interacted with two dummies for the two subsets of firms which had their initial public offerings in the 1980s and 1990s, respectively. In Col (6), MPK is estimated with alternative parameter values for depreciation and risk-free rates summing up to 0.12 instead of 0.18. In Col (7) MPK is estimated with alternative parameter values for depreciation and risk-free rates summing up to 0.22 instead of 0.18. In Col (8) the dependent variable is Return on Equity (Net Income/Book Equity), which we use as an alternative estimate of the required return to equity capital/Cost of capital. Standard errors in parentheses are robust to heteroscedasticity. **, * denote coefficient significance at the 5% and 10% level, respectively. Variables used to instrument Insider Share are as follows:

Col. (2): Insider (-1), Institutional Investors and Corporate Governance Dummy, Log (Sales).

Col (3): Inside (-1), STAR, Institutional Investors, Independent Directors, Audit Committee, Investor Relations and Voting Pacts dummies, and Size.

Cols (4-7): Inside (-1), STAR, Institutional Investors, Independent Directors, Audit Committee, Investor Relations, Dual Shares and Voting Pacts dummies, Firm age, Leverage, Log (Sales) and year dummies.

In Col (8) the dependent variable is the Return on Equity (ROE). The instrument set includes: Inside (t-1), STAR, Institutional Investors, Independent Directors, Audit Committee, Investor Relations dummies, Firm age, Log (Sales) and year dummies.

TABLE 4 - QUANTITATIVE IMPORTANCE OF CAPITAL STOCK DISTORTIONS FOR ITALY

Estimates of Marginal Profit of Capital Π^k, by % inside ownership α,

And capital stock K, given idiosyncratic risk estimates from Table 3.

PANEL A : ESTIMATES ASSUMING: $r + \delta + \Gamma = 0.18$

Inside ownership	Idiosyncratic risk: $\gamma - \Gamma = 0.063$		Idiosyncratic risk: $\gamma - \Gamma = 0.047$	
	$r + \delta + \Gamma = 0.18$		$r + \delta + \Gamma = 0.18$	
α	Π^k	K	Π^k	K
0.000	0.180	100	0.180	100
0.100	0.186	84.1	0.185	87.9
0.300	0.199	60.7	0.194	68.6
0.509	0.212	44.0	0.204	53.6
0.590	0.217	39.1	0.208	48.8
0.662	0.222	35.3	0.211	45.1

Notes: Calculations based on observed equity ownership, α (0.10, 0.30, and the 25th, 50th, and 75th percentiles of the sample distribution), of Italian insiders and estimated values of the idiosyncratic risk premium, $\gamma - \Gamma = 0.063$ and $\gamma - \Gamma = 0.047$ (see Table 3, columns 2 and 3).

PANEL B : ESTIMATES ASSUMING ALTERNATIVE PARAMETER VALUES FOR $r + \delta + \Gamma$

Inside ownership	Idiosyncratic risk: $\gamma - \Gamma = 0.041$		Idiosyncratic risk: $\gamma - \Gamma = 0.075$	
	$r + \delta + \Gamma = 0.12$		$r + \delta + \Gamma = 0.22$	
α	Π^k	K	Π^k	K
0.000	0.120	100	0.220	100
0.100	0.124	84.5	0.228	84.6
0.300	0.132	61.3	0.243	61.5
0.509	0.141	44.8	0.258	44.9
0.590	0.144	39.9	0.264	40.0
0.662	0.147	36.0	0.270	36.2

Notes: Calculations based on observed equity ownership, α (0.10, 0.30, and the 25th, 50th, and 75th percentiles of the sample distribution) of Italian insiders and estimated values of the idiosyncratic risk premium, $\gamma - \Gamma = 0.041$ and $\gamma - \Gamma = 0.075$ (see Table 3, columns 6 and 7).

Appendix

Table A1 Firm characteristics by industry upon entry
(Means/frequencies)

Industries	# Firms	Inside equity ownership	STAR segment	Institutional Investor	Shareholders' Agreement	Corporate Governance Dummy	Book Leverage
Non metallic mineral products	5	60.07	0.00	0.80	0.20	0.00	43.84
Chemical rubber and plastics	8	62.40	0.38	0.50	0.38	0.38	23.00
Machinery and Equipment	10	52.54	0.30	0.80	0.50	0.20	38.13
Electrical machinery. TLC and electronics	17	60.67	0.41	0.35	0.29	0.29	29.33
Transport Equipment	5	53.12	0.40	0.80	0.20	0.80	41.02
Food and Drinks	4	52.68	0.75	0.25	0.25	0.50	41.08
Textile and Clothing	12	58.75	0.17	0.25	0.17	0.33	35.85
Print Publishing	2	59.78	0.50	0.00	0.00	1.00	43.28

Variable	DEFINITION
Inside Equity Share	The fraction of equity held by insiders (controlling shareholder(s) and board members)
Book Leverage	The ratio of financial debt to the sum of financial debt and equity
STAR segment	A 0/1 dummy =1 if the firm is listed in the High Requirement Security Segment
Institutional Investor	A 0/1 dummy=1 if the firm has an Institutional Investor owning more than 2%
Shareholders' Agreements	A 071 dummy=1 if some of the shareholders have signed a voting pact
Corp Gov Dummy	A 0/1 dummy=1 if there is compliance with all 3 Corp. Gov. criteria: *Independent Director*, *Audit Committee*, *Investor Relation* rules per the Corporate Governance Self-Discipline Code.

Table A2 - Two-Digit NACE estimates of θ_j for the CERIS Panel of Italian Firms

NACE Classification	Obs.	S/K		θ_J Italy	SIC Classification	θ_J G-H
		Mean	Std. Dev.			
22	1040	2.774	2.599	0.065	33	0.063
24	1149	1.472	0.843	0.122	32	0.069
25	2358	3.478	2.873	0.052	28	0.051
26	134	1.301	0.455	0.138	28	0.051
31	1239	3.272	3.162	0.055	34	0.040
32	2047	3.679	2.948	0.049	35	0.036
33	79	2.177	1.371	0.083	35	0.036
34	2143	3.867	3.697	0.047	36	0.039
35	546	3.243	4.079	0.056	37	0.037
36	491	2.921	2.830	0.062	37	0.037
37	277	3.998	3.835	0.045	38	0.036
41	1504	4.883	3.812	0.037	20	0.036
42	1071	3.178	2.588	0.057	20	0.036
43	1289	2.676	2.389	0.067	22	0.035
44	114	5.117	2.495	0.035	31	0.017
45	826	5.223	4.132	0.034	23	0.017
46	286	3.798	3.001	0.047	24	0.044
47	1274	3.114	3.007	0.058	26-27	0.058
48	663	2.412	1.938	0.075	30	0.040
49	201	5.795	4.671	0.031	39	0.032

Notes: S/K denotes the sales to capital stock ratio. Our estimates are based on the full sample of 1,850 firms and over 19,000 firm-year observations in the CERIS dataset. The last column reproduces 2-digit SIC estimates of θ_j by Gilchrist & Himmelberg (1998) for comparison.

Table A3 - Correlation Matrix

	Insider share	Tangibility	Sales to capital	MPK	STAR dummy	Institutional Investor Dummy	Corporate Governance Index	Corporate Governance Dummy	Independent Director Dummy	Control Committee Dummy	Investor Relation Dummy	Voting Pact Dummy	Leverage	Dual Share Dummy	Log Total asset	ROE
Insider share	1.000															
Tangibility	0.064	1.000														
Sales to capital	-0.052	-0.428**	1.000													
MPK	-0.065	-0.291***	0.970***	1.000												
STAR	-0.055	-0.064	-0.068	-0.087	1.000											
Institutional Investor	-0.174***	-0.033	-0.065	-0.071**	0.108**	1.000										
CG Index	-0.045	-0.027	-0.038	-0.050	0.152***	0.104*	1.000									
CG Dummy	-0.017	-0.022	-0.026	-0.038	0.181***	0.122**	0.886***	1.000								
Independent Director	-0.049	-0.037	-0.040	-0.050	0.097*	0.094*	0.914***	0.700***	1.000							
Audit Committee	-0.019	0.020	-0.040	-0.044	0.133**	0.108**	0.915***	0.888***	0.768***	1.000						
Investor Relation	-0.052	-0.054	-0.023	-0.042	0.189***	0.081	0.890***	0.837***	0.696***	0.733***	1.000					
Voting Pacts	-0.243***	-0.136**	-0.038	-0.071	0.054	0.061	-0.132**	-0.112**	-0.126**	-0.152***	-0.082	1.000				
Leverage	-0.296***	-0.049	0.152***	0.166***	-0.028	0.019	0.068	0.044	0.115**	0.032	0.030	0.058	1.000			
Dual Share	-0.088	0.263***	-0.094*	-0.055	-0.075	0.010	0.091*	0.055	0.065	0.067	0.118**	-0.150***	0.034	1.000		
Log Total Asset	-0.059	0.019	-0.032	-0.012	-0.159***	-0.078	0.181***	0.068	0.266***	0.123**	0.090	-0.175***	0.374***	0.415***	1.000	
ROE	-0.081	-0.012	-0.026	-0.033	-0.012	-0.043	-0.030	-0.015	-0.048	-0.018	-0.014	-0.029	0.086	-0.021	0.029	1.000

FIGURE 1. SUMMARY COMPARISON OF INVESTOR PROTECTION CHARACTERISTICS					
	Italy	Germany	France	United Kingdom	United States
Ownership Concentration	0.58	0.48	0.34	0.19	0.20
Shareholder Rights	1	1	3	5	5
Information Disclosure	5	5	6	7	7
Legal Rights of Borrowers	3	8	3	10	7
Insolvency Costs	18	8	8	6	8
Efficiency of the Judicial System	6.75	9	8	10	10

Source: *Removing Obstacles to Growth*, 2005 World Bank Report.

Notes: Ownership concentration of 10 largest firms by dominant shareholder (LLSV 1998)
Anti-director rights out of 6, summarizing shareholder rights as reported by LLSV (1998)
Disclosure index out of 10, based on investor protection laws and regulations requiring reporting (World Bank 2005)
Legal rights index out of 10, based on laws protecting borrowers and lenders (World Bank 2005)
Costs of insolvency as a % of estate (World Bank 2005)
Efficiency and integrity of the legal environment as it affects business index out of 10 (LLSV 1998)