

Corporate Governance and the Returns on Investment

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Abstract

We analyze the impact of corporate governance institutions and ownership structures on company returns on investment by using a sample of more than 19,000 companies from 61 countries across the world. We show that the origin of a country's legal system proves to be the most important. Companies in countries with English-origin legal systems earn returns on investment that are at least as large as their costs of capital. Companies in all countries with civil law systems earn on average returns on investment below their costs of capital. Furthermore, differences in investment performance related to a country's legal system dominate differences related to ownership structure. We also present considerable evidence that managerial entrenchment worsens a company's investment performance.

Keywords: corporate governance, external capital markets, ownership structure, returns on investment

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Corporate Governance and the Returns on Investment

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We analyze the impact of corporate governance institutions and ownership structures on company returns on investment by using a sample of more than 19,000 companies from 61 countries across the world. We show that the origin of a country's legal system proves to be the most important. Companies in countries with English-origin legal systems earn returns on investment that are at least as large as their costs of capital. Companies in all countries with civil law systems earn on average returns on investment below their costs of capital. Furthermore, differences in investment performance related to a country's legal system dominate differences related to ownership structure. We also present considerable evidence that managerial entrenchment worsens a company's investment performance.

Like all good theories, the neoclassical theory of investment, as first formulated say by Modigliani and Miller (1958), derives strong and refutable predictions from an elegant and simple model. Assuming that managers maximize the wealth of their shareholders, they invest until the point where their cost of capital equals the marginal returns on investment. Since the cost of capital is the same for internally and externally raised funds, investment levels are independent of how they are financed, and for the same reason, the returns on investment are predicted to be the same for all companies, abstracting from differences in corporate risk.

A large empirical literature contradicts each of these predictions. Investment appears to be related to the source of finance suggesting the existence of a *hierarchy of finance*.¹ Funds raised from outside of a firm to finance investment cost more than internal cash flows. Estimates of returns on corporate investment vary widely and are often substantially below company costs of capital.² A variety of hypotheses have been put forward to explain these empirical findings including the existence of differential *transaction costs* in using the external capital market to finance investment (Duesenberry, 1958), *asymmetric information*, which raises the costs of using external capital markets (Stiglitz and Weiss, 1981; Myers and Majluf, 1984), and *agency problems* that allow managers to select investment levels that do not maximize shareholder wealth (Baumol, 1959; Marris, 1964, 1998; Grabowski and Mueller, 1972).

Much of the theoretical work on investment has consciously or implicitly assumed the existence of an “Anglo-Saxon” institutional environment. Companies are isolated legal entities, which contract with other independent legal entities or individuals when they raise capital externally. Thus arises the possibility that the managers inside of a firm have different information about the returns on investment projects from the information available to potential suppliers of finance outside the firm. Common share ownership is assumed to be widely dispersed, resulting in deficient monitoring of managers and agency problems. Most of the empirical work that has tested these hypotheses about investment has also used datasets drawn from Anglo-Saxon countries like Canada, the UK and the USA.

Hoshi, Kashyap and Scharfstein (1991) were among the first to demonstrate the importance of the institutional environment to these hypotheses. They showed that the kind of asymmetric information problems that can produce a relationship between cash flows and investment in Anglo-Saxon countries do not exist for Japanese companies belonging to *groups*, which generally include both other companies and a group bank. A group firm’s “external sources of finance” have access to the same information as its managers do, and thus external capital carries no premium with it, and internal cash flows lose their power to explain levels of investment.

In the last decade several additional studies have appeared that confirm the importance of institutional factors in explaining corporate investment with data from non Anglo-Saxon countries. One set of studies has stressed the importance of institutional factors in explaining why and when cash flows are significant determinants of capital investment and R&D.³ A second line of research examines how cross-national differences in capital market and corporate governance institutional structures are related to measures of performance like productivity and economic growth.⁴

Our work also emphasizes the importance of institutional factors in determining a country’s economic performance, but differs from this other research in that we use a measure of performance that is directly tied to the micro-theory of the firm. Previous studies of agency problems have usually used *average* performance measures like Tobin’s *q*. Such measures of performance confound inframarginal and marginal returns and thus are less than ideal for testing hypotheses regarding managerial behavior. A firm’s Tobin’s *q* might be high, for example, because it has considerable market power. This market power could in turn provide its managers the “free cash flow” to pursue their own goals. An ideal measure of investment performance for testing hypotheses about agency problems should identify *marginal* returns. We employ such a measure – the ratio of a firm’s returns on *investment* to its costs of capital.

In testing for the effects of institutional factors on investment performance, we focus upon two sets of institutions: (1) the corporate governance structure of a country as defined by its legal system, for example, rules governing takeovers, the composition and election of boards of directors, and so on, and (2) the ownership structure of a company. These institutions determine how closely a manager's goals are aligned with those of the owners of a firm, and thus the extent to which a firm's investment performance may suffer from agency problems. We present evidence that both sets of institutions can affect the investment performance of companies in a given country. We also present evidence that the sources of funds managers use for investment (i.e. internal cash flows, new debt and new equity) as well as the strength of accounting standards and creditor rights matter for investment performance.

We proceed as follows: The main hypotheses tested are developed in the following section. Section II describes the methodology employed to measure returns on investment and test the different hypotheses. The data used in these tests are discussed in section III. The results regarding the effects of corporate governance and ownership structures are presented in sections IV and V. Conclusions are drawn in the final section. An Appendix details data sources, variables, and ownership concepts used.

I. Main Hypotheses

A. Legal Institutions and Returns on Investment

A firm that maximizes shareholder wealth invests up until the point where the *marginal* return on investment equals its cost of capital. In our empirical work we measure what effectively amounts to a marginal Tobin's q , q_m , where $q_m = r/i$ and r is the return on a firm's investment, and i is its cost of capital. Since the average return on investment should be equal to or greater than the marginal return, we predict for a firm, which maximizes shareholder wealth, $q_m \geq 1$.

We shall define a *strong* corporate governance system as one, which aligns managerial and shareholder interests and thus leads managers to maximize shareholder wealth. Managerial and shareholder interests are more likely to be aligned in countries in which it is easy for shareholders to monitor managers, and initiate proxy fights or hostile takeovers if they are displeased with their company's performance. La Porta, Lopez de Silanes, Shleifer and Vishny (1997, 1998, hereafter LLSV) have recently categorized the legal environments of countries according to the protections of this sort that they give to shareholders. We shall employ their categorization as a measure of the strength of a country's corporate governance system, and use it to test:

Hypothesis 1: For companies located in countries with strong corporate governance systems, $q_m \geq 1$.

Weak corporate governance systems allow managers to pursue their own goals at the shareholders' expense. Recent research has focused on the conflict between managers and shareholders over dividend payments (LLSV, 2000; Faccio et al., 2001; Gugler and Yurtoglu, *forthcoming*). Where corporate governance systems are weak managers pay out less in dividends and retain larger fractions of their cash flows to pursue their own goals. Among these may be the pursuit of size and growth as emphasized in the earlier managerial discretion literature.⁵ The flip side of paying out too little dividends is investing too much. This reasoning leads us to expect $q_m < 1$, in countries with weak corporate governance systems.

Some firms have attractive investment opportunities and limited financial resources, however, and both their managers and their shareholders benefit from their achieving high investment rates and rapid growth. For these companies no conflict between managers and shareholders over dividend and investment policies exists. Indeed, these companies are often young firms in rapidly growing industries – the kinds of companies that can suffer from asymmetric information problems – and thus are likely to *underinvest*, so that $q_m \geq 1$. This consideration leads us to qualify our prediction for weak corporate governance systems.

Hypothesis 2: For companies with limited investment opportunities that are located in countries with weak corporate governance systems, $q_m < 1$.

B. Legal Institutions, Ownership Structures and Returns on Investment

Of necessity a manager's interests are aligned with those of a shareholder, if the shareholder and manager are one and the same. Thus, a necessary condition for a conflict of interest between managers and shareholders is for there to be a *separation of ownership from control*, and all early contributions to the managerial-discretion literature cited Berle and Means (1932) to this effect. This literature implicitly assumed that when ownership was concentrated, either the managers themselves or an outside family held the controlling stake in the firm. In either case the owners were assumed to want the managers to maximize their wealth, and thus that manifestations of managerial discretion, like low returns on investment, would be observed only when share ownership was widely dispersed. This hypothesis will be tested by comparing q_m for companies with widely dispersed ownership with q_m for other companies in countries with strong corporate governance structures.

Hypothesis 3: In countries with strong corporate governance systems, companies with widely dispersed shareholdings have lower q_m s than the other companies in their country group.

Joseph Schumpeter (1911, 1934, p. 94) was perhaps the first economist to postulate that managers are empire builders. Schumpeter did not put forth this assumption to explain the actions of Berle/Means managers who own small fractions of shares, however, but as a description of the goals of the owner-entrepreneurs who founded the giant enterprises that appeared in the late 19th and early 20th centuries, individuals whom he likened to “medieval knights” seeking to found “dynasties.” The intrinsic rewards from running a giant enterprise may appeal to professional and owner managers alike. Moreover, the persons typically classified as owner managers do not own all of the company’s outstanding shares. Thus, a manager/shareholder conflict still is possible with respect to the interests of minority shareholders. In addition, in countries where takeovers and proxy contests are relatively easy to initiate, a manager’s immunity to such attacks *increases* with her shareholdings (Fama and Jensen, 1983). Thus, a priori it would seem that managers’ incentive to maximize shareholder wealth might increase or decline with their shareholdings. Consistent with this ambiguity the literature has produced a wide range of estimates of the relationship between company performance and both shareholder identities and the size of their shareholdings.⁶ These considerations lead us to conclude that *no* simple predictions about the values for q_m for companies controlled by individuals or families can be made for countries with strong institutional protections of minority shareholders.

In countries with weak protections the situation is somewhat different. First of all, in these countries we do not expect to observe as many companies with dispersed share ownership as in countries with strong protections of minority shareholders. Investors will be unwilling to bid large sums for shares when they know that they can be exploited by the dominant shareholders, and the owner-founders will therefore not issue many shares.⁷ When one observes a company with widely dispersed ownership in a country whose legal institutions do not protect minority shareholders, one must assume that the company had sufficiently attractive investment opportunities, or the original dominant owners were somehow able to bond themselves to not exploit minority shareholders, so that they were able to issue many shares. These firms can be expected to earn relatively high returns on investment, and thus we obtain:

Hypothesis 4: In countries with weak corporate governance systems, companies with widely dispersed shareholdings have higher q_m s than the other companies in their country group.⁸

Although the existing literature leads to the prediction that individually-controlled

companies have higher returns on investment than other companies in countries with strong corporate governance systems, no similar prediction can be made for individually-controlled companies in countries with weak corporate governance systems. All companies in our sample have issued common shares, which are traded on organized securities markets. The individual or family who controls a company, which we have categorized as individually-controlled, owns the largest block of the company's shares, but not all of them. Any funds distributed to all shareholders must thus be *shared* with other shareholders. Thus if it is possible, the individual or family who controls a company may try to appropriate company funds in ways that do not add value to the company's shares. Weak corporate governance systems provide greater scope for the exploitation of minority shareholders by the dominant shareholder, and make it impossible to predict whether individually-controlled companies in countries with weak corporate governance systems will exhibit superior investment performance.⁹

Similar difficulties arise in trying to hypothesize about the relative performance of companies falling into the remaining three ownership categories that we identified: firm-controlled, finance-controlled and state-controlled, where by finance-controlled we mean controlled by a bank, insurance company or some other financial institution. For example, it is reasonable to expect that those in control of any firm *A*, even if they are empire builders, will want the managers of any firm *B* that *A* controls to maximize its profits, as this provides more funds for *A* to pursue the goals of those who control it, whatever they may be. Thus, we might expect higher returns on investment for firms that are controlled by other companies.

On the other hand, there are several reasons why companies lower down in a pyramid may exhibit poor investment performance: (1) the families standing behind these pyramids are empire builders who are willing to sacrifice profits at all levels of the pyramid in pursuit of their goals, (2) the pyramid's size makes careful monitoring of lower-level firms difficult, and (3) the performance of lower level firms is sacrificed to benefit the parent firm at the top of the pyramid.¹⁰ Given these conflicting possibilities, we do not think that it is possible to make specific predictions regarding the investment performance of companies controlled by other companies. We shall, however, test to see whether this category of ownership is associated with systematic differences in investment performance. We examine the effects of cross-ownership and corporate pyramids separately.

Predicting the effects of financial control on investment performance is equally difficult. Banks and other financial institutions are also susceptible to agency problems between their managers and ultimate owners. Merger activity in the banking sector of the United States and

Europe in recent years suggests that some bank managers may also find empire-building to be an attractive pursuit. A bank's managers may condone and even finance the aggressive expansion programs of firms that it controls so long as they can pay the interest on debt owed to the bank, since the bank's growth rate is positively linked to that of these firms. Thus, companies controlled by financial institutions might not perform any better than other companies. Germany's strong economic performance during the first quarter century following World War II has often been attributed to wise advice and careful monitoring of the private sector provided by its major banks and other financial institutions. Many observers now think that the role of banks in Germany has been exaggerated, however.¹¹ Some observers even *blame* major banks in Asia for making the "crisis" of the late 1990s worse than it would have been.¹² We shall test for any systematic effects of control by financial institutions on company investment performance, but make no predictions as to what this effect should be.

A double principal-agent problem can be said to exist, in the case of state-controlled firms. Their ultimate owners are the citizens of the state. The same free-rider logic that makes shareholders poor monitors of managers when shares are widely dispersed, makes citizens poor monitors of politicians. Thus, citizens are unlikely to hold politicians accountable for the poor investment performance of a state-owned company, and elected politicians may not exert great effort monitoring these companies in the citizens' interests leading to poor investment performance. On the other hand, state-controlled firms are often located in key economic sectors and possess dominant market positions. These favorable circumstances might create sufficiently attractive investment opportunities for state-controlled companies to offset the inefficiencies caused by agency problems. We again leave it to the data to sort out these conflicting tendencies.

C. Returns on Investment out of Different Sources of Finance

This section discusses the probable effects of the three main sources of finance, internal cash flows, new debt and new equity, on the returns on investment. Consider Figure 1. Investment outlays are given along the horizontal axis, and marginal returns on investment (mrr) and the cost of capital, i , along the vertical axis. If the costs of external and internal capital are the same, a firm with marginal returns on investment of mrr_H and internal cash flows CF , maximizes shareholder wealth by investing I_H and raising $(I_H - CF)$ on the external capital market. Its $mrr = i$, and its average return on investment, r , will be greater than i making $q_m = r/i > 1$.

If the costs of external capital are greater than for internal capital because of the transaction costs of issuing bonds and equity, or because of asymmetric information problems between

managers and the capital market, the shareholder-wealth-maximizing firm invests less than I_H and $mrr > i$, and q_m rises still further above one. Thus for firms that maximize shareholder wealth, their returns on total investment should be greater than their costs of capital, and this relationship should hold regardless of the source of investment funds. We shall use subscripts to designate sources of investment funds:

$q_{m,I}$ = the ratio of r to i for total investment,

$q_{m,CF}$ = the ratio of r to i for investment out of cash flow,

$q_{m,D}$ = the ratio of r to i for investment out of new debt, and

$q_{m,E}$ = the ratio of r to i for investment out of new equity.

We then have

Hypothesis 5: For companies with $q_{m,I} \geq 1$, it is also true that $q_{m,CF} \geq 1$, $q_{m,D} \geq 1$, and $q_{m,E} \geq 1$.

Now consider a firm with the marginal returns on investment schedule mrr_L . It maximizes shareholder wealth by investing I_L and paying $(CF - I_L)$ in dividends. If its managers wish to grow faster than the rate implied by this investment, they of course invest more than I_L . As I increases, mrr falls below i . If the firm were to invest all of its cash flow, its return on investment would be k , which could also be regarded as the implicit cost of internal capital. Should it wish to invest still more, it would have to enter the external capital market. Should it choose to issue equity to finance additional investment, under the assumption of capital market efficiency its share price will fall as soon as it announces the sale of equity to reflect the fact that it is investing at an $r < i$.¹³ Thus, the change in market value from the sale of equity will be less than the value of the equity sold, and $q_{m,E} < 1$.

The use of debt to finance investments with $r < i$ should also result in an immediate fall in share price, as the market realizes that the fixed commitment to pay interest on the debt will reduce the funds available for future dividends, when $r < i$. Since a bank loan or bond constitutes a more specific commitment with ostensibly greater penalties from breaking this commitment, we expect that firms will prefer to issue equity rather than debt to finance investments with very low expected returns. This leads to the predictions of

Hypothesis 6: For companies with $q_{m,I} < 1$, $1 > q_{m,D} > q_{m,CF}$ and $q_{m,D} > q_{m,E}$.

Thus, in countries with weak capital market discipline, we predict a hierarchy in the *returns* on investment that differs from that usually assumed to hold for the *costs* of capital. The weakness

of the implicit contract between managers and equity holders compared to the contractual relationship between debt holders and managers produces higher returns for investments out of new debt issues than for those made out of new equity issues and cash flows.

II. Methodology¹⁴

Let I_t be a firm's investment in period t , CF_{t+j} the cash flow this investment generates in $t + j$, and i_t the firm's discount rate in t .

$$PV_t = \sum_{j=1}^{\infty} \frac{CF_{t+j}}{(1+i_t)^j} \quad (1)$$

We can then take PV_t from (1) and the investment I_t that created it, and calculate the ratio of pseudo-permanent return r_t to i_t , a ratio that we call q_{mt}

$$PV_t = \frac{I_t r_t}{i_t} = q_{mt} I_t \quad (2)$$

If the firm had invested the same amount I_t in a project that produced a permanent return r_t , this project would have yielded the exact same present value as the one actually undertaken. The ratio of r_t to i_t , is the key statistic in our analysis. If a firm maximizes shareholder wealth, then it undertakes no investment for which $q_{mt} < 1$.

The market value of the firm at the end of period t can be defined as

$$M_t = M_{t-1} + PV_t - \delta_t M_{t-1} + \mu_t \quad (3)$$

where δ_t is the depreciation rate for the firm's total capital as evaluated by the capital market, and μ_t is the market's error in evaluating M_t . Subtracting M_{t-1} from both sides of (3) and replacing PV_t with $q_{mt} I_t$ yields

$$M_t - M_{t-1} = q_{mt} I_t - \delta_t M_{t-1} + \mu_t \quad (4)$$

That q_{mt} is a marginal q can easily be seen from (2) and (4) by contrasting it with Tobin's q . Tobin's q is the market value of the firm divided by its capital stock and thus is an average return on capital. Marginal q is the change in the market value of a firm divided by the change in its capital stock (investment) that caused it.

If $\delta_t = 0$ and a firm invests 100 at an $r_t > i_t$, then eq. (4) implies that its market value increases by more than 100. Conversely, if $\delta_t = 0.05$ and $M_{t-1} = 1000$, then the firm must invest 50 at an $r_t = i_t$ just to keep its market value unchanged.

Two additional features of q_{mt} are worth noting. First, its use as a measure of performance obviates the need to calculate company costs of capital. Eqs. (2) and (4) define the *ratio* of a company's return on investment to its cost of capital, which is precisely the statistic needed to test hypotheses about agency problems and the effects of corporate governance on investment performance. Second, the procedure for calculating q_{mt} allows for different degrees of risk across companies. The stock market will demand a greater future stream of cash flows from an investment of 100 before it raises the market value of a high risk company by 100, than it demands of a low risk company.

The assumption of capital market efficiency implies that the error term in (4) has an expected value of zero, and thus that equation (3) can be used to estimate both δ_t and q_{mt} under the assumption that they are either constant across firms or over time, or both. Dividing both sides of (4) by M_{t-1} yields

$$\frac{M_t - M_{t-1}}{M_{t-1}} = -\delta + q_m \frac{I_t}{M_{t-1}} + \frac{\mu_t}{M_{t-1}} \quad (5)$$

Equation (5) is favored over other possible rearrangements of (4), because it does not involve a lagged dependent variable, and in cross-section regressions is less likely to be subject to heteroscedasticity owing to the deflation of all error terms by M_{t-1} ¹⁵.

To estimate (5) we need data on the market value of each firm and its investments. A firm's market value at the end of year M_t is defined as the market value of its outstanding shares at the end of t plus the value of its outstanding debt. Since this number reflects the market's evaluation of the firm's total assets, we wish to use an equally comprehensive measure of investment. Accordingly we define investment as

$$I = \text{After tax profits} + \text{Depreciation} - \text{Dividends} + \Delta D + \Delta E + R \& D + ADV$$

ΔD and ΔE are funds raised using new debt and equity issues. Since $R \& D$ and advertising expenditures (ADV) are also forms of investment that can produce "intangible capital" which contributes to a company's market value, we add them to investment to obtain a measure of the firm's additions to its total capital.

III. The Data

The financial data are taken from the 1996-2001 versions of the *Global Vantage* and 1997 version of the *Compustat* databases of *Standard & Poor's*. These data sets contain accounting and stock price data on companies with listed stocks from virtually every country in the world starting in 1985. We exclude banks and financial companies and some service industries (SICs 6000 through 6999 and above 8100), because the nature of capital and investment in these industries is not comparable to those of non-financial firms. To minimize the weight of outliers, we cap our basic variables at both the 1st and 99th percentiles of each country sample. After this procedure we are left with 19,010 companies. In many countries and for many companies data were not available for all 16 years. Table 1 reports the number of firms, time period coverage and total number of observations for each of the 46 countries, which we group according to the LLSV classification, and for China, nine transition countries and five African countries. It also reports the means and standard deviations of the main variables used in our analysis. Appendix A details the construction of the variables.

Our ownership data come mainly from three sources: *AMADEUS* database for the European companies, *Compact Disclosure* for the US, and the *Asian (Japanese) Company Handbook* for Asia. The remaining data sources on ownership structure are listed in Appendix B.

IV. Tests of Hypotheses Regarding Corporate Governance and Ownership Structures

A. The Effects of Country Legal Systems

Our model assumes that the stock market makes an unbiased estimate of the true value of a firm's total assets at the end of $t-1$, and all changes in the firm's market value during year t are therefore due to either its investment during this year or the depreciation in the value of its total assets. Stock markets are notoriously volatile, however,¹⁶ and it is thus possible that annual changes in company market values are affected by general shifts in market sentiment that change the market's estimation of the value of assets in place. To correct for these swings in sentiment we use yearly deviations from country sample means for each variable in the regression, a procedure that removes country-specific year effects from the equation.

The intercept in eq. (5), δ , is an estimate of the depreciation rate; the expected fall in a company's market value in any given year when no investment takes place. Depreciation rates vary across companies depending on the kinds of capital they possess. To allow for these differences, each company is assigned to a two-digit SIC industry, and separate intercepts are

estimated for each industry depreciation rate (intercept) for each industry. As a group the industry intercepts were statistically significant, but provided no interesting economic insights and are not reported in any of the tables.

Table 2 presents the results for our tests of Hypotheses 1 and 2 using all available data for each country for the period 1985 through 2000. There are 112,590 observations, and the model explains about 25 percent of the variation in company market values. LLSV (1997) argue that countries with Anglo-Saxon legal systems have the strongest corporate governance systems followed in order by the Scandinavian, German and French origin countries. Countries with French origin legal systems are claimed to have the weakest corporate governance systems. Our estimates of returns on investment as a fraction of costs of capital, our \hat{q}_m s, match this prediction. Countries with Anglo-Saxon legal systems have a \hat{q}_m of 1.02, the highest value of any country group. The average firm in every other country group earned a return on investment significantly less than its cost of capital with the estimates falling in line with LLSV's predictions. The best performer was the Scandinavian group of countries with a \hat{q}_m of 0.78, followed by the Germanic group ($\hat{q}_m = 0.74$), with the average firm in a French-origin country having a return on investment of only 59 percent of its cost of capital.

We also report \hat{q}_m s for pooled groups of transition and African countries. The estimated returns on investment are 64 percent of company costs of capital for the transition countries. This low figure is consistent with the general impression that corporate governance structures in transition countries do not afford shareholders much protection against the managers of their firms, but also suggests that corporate governance structures in transition countries are no weaker and arguably marginally stronger than in French-origin countries.

Most students of development would also probably not expect that corporate governance structures are particularly strong in Africa. The \hat{q}_m of 0.77 for the African countries, roughly the same as for the Scandinavian countries, is somewhat surprising, therefore. Since most of the African countries in our sample are former British colonies, this result might be interpreted as indicating that the remnants of British legal institutions left from colonization offer shareholders some protection even in an otherwise unfriendly environment for capitalist firms.

In Panel B of Table 2, we present separate estimates of q_m for individual countries grouped once again according to the LLSV categorization. Roughly the same picture emerges when we observe the \hat{q}_m s for the individual countries, as was seen for the entire groups. The countries with the strongest corporate governance systems – the English-origin and Scandinavian countries –

have the lowest fractions of \hat{q}_m s significantly less than 1.0 (8/16 and 2/4).¹⁷ In contrast *five* of the six \hat{q}_m s for the German-origin, and 14 of 20 for the French-origin countries are significantly less than 1.0.

The effects of the “Asian crisis” can also be seen, when the results in Panel B are compared to earlier estimates of q_m by Mueller and Yurtoglu (2000). Using data up through 1996, they estimated \hat{q}_m s > 1.0 for Hong Kong, Malaysia, Thailand and Japan, while these countries all pick up \hat{q}_m s < 1.0 in our data. A split between the three Asian countries in the German-origin group and the three European ones was observed in the Mueller/Yurtoglu study and can still be seen in our results, despite the Asian crisis. Taiwan’s \hat{q}_m is significantly greater than 1.0, and Japan’s is much higher than either Switzerland’s or Germany’s \hat{q}_m . These differences might simply imply significant differences in legal institutions within the German-origin countries or differences in investment opportunities across these countries.

Other than this division within the German-origin group, we have not been able to discern any obvious geographic pattern to our estimates of investment performance besides that related to country legal systems. Many of the countries with low \hat{q}_m s are in Europe, but the differences in \hat{q}_m s in Panel B of Table 2 cannot be explained by a simple Europe/non-Europe dichotomy. Within Europe the only three countries with \hat{q}_m s insignificantly different from 1.0 (Ireland, Norway and Finland) are in the two LLSV categories with the strongest corporate governance systems. Great Britain has the fourth highest \hat{q}_m of the European countries. The *nine* lowest \hat{q}_m s for Europe belong to countries in the two lowest LLSV categories (Germany, Switzerland, Belgium, France, Greece, Italy, Portugal, Spain and Turkey).

Differences in investment opportunities may also explain why some of the \hat{q}_m s in countries with weak corporate governance systems (for example, Chile and Taiwan) are both greater than 1.0 and much higher than for other countries in these groups. It is perhaps worth pointing out that differences in investment opportunities cannot explain estimates of q_m that are significantly *less* than 1.0 in members of the Anglo-Saxon group like Great Britain and New Zealand. If companies in these countries have poor investment opportunities, which is of course quite possible, this should lead to low *levels* of investment, if managers are maximizing shareholder wealth. Poor investment performance ($\hat{q}_m < 1$) can come about only, if managers invest more than the amount that would maximize shareholder wealth.

At the bottom of Panel B we present the \hat{q}_m for China. It is 0.45. Corporate governance

institutions in Communist China do not appear to do a very good job aligning manager and shareholder interests.

The sample of countries for which we have estimated investment performance is large and heterogeneous. This heterogeneity may lead the reader to question the legitimacy of the assumption of capital market efficiency underlying our methodology for estimating marginal q s. Although there undoubtedly are great differences across countries in the capabilities of investors to estimate future returns on corporate investments, it is not obvious to us why these differences should result in systematic *biases* in the different capital markets' estimates as opposed to differences in *variances*, which lower the R^2 s but leave the estimates unbiased. We see no reason to expect that the capital markets in French-origin or transition economies continually underestimate the returns on company investments in these countries, and that these biases account for our results. Indeed, if such a bias existed, it should soon disappear as the actual returns on investment become known, investors recognize their mistaken estimates, and correct them. Thus, when they pass the usual tests for statistical significance, we believe that the results reported in Table 2 reliably reflect differences in investment performance across countries.

B. The Effects of Ownership Structures

In Section I we put forward several hypotheses that related investment performance to the ownership structure of a firm. These hypotheses are tested by using eq. 5, and allowing q_m to take on different values depending on both a company's country of origin and its ownership structure. Given the differences between the ownership structures for the three European countries with Germanic-legal-systems and the three Asian countries in this group, we have divided the German-origin countries into European and Asian subgroups.¹⁸

Consistent with the existing literature, we have employed two ownership criteria for categorizing companies – the largest shareholder owns 10 percent or more of the company's shares, and a 20 percent cut off. The difference in results between the two definitions was modest, and we report only those for the 10 percent. Table 3 presents our results from this exercise. Under each origin heading there are two entries. The first entry for each ownership category represents the point estimate of \hat{q}_m for that category. Thus, family controlled firms in English-origin countries have a \hat{q}_m of 1.082, which is significantly greater than 1.0 as indicated by the p-value of a two-tailed test below this coefficient. The second entry is the \hat{q}_m for the remaining companies in that country group. Thus, the \hat{q}_m for all English-origin companies that

were not family controlled is 1.019. The $>$ separating these two numbers indicates that the first entry is greater than the second, and the number below the inequality is the level of significance of this difference. Entries in boldface indicate differences significant at the 5 percent level, two-tailed test.

The first thing that stands out in Table 3 is that *all* \hat{q}_m s > 1.0 for the English-origin countries, as opposed to only three for the remaining 40 entries in the table. The origin of a country's legal system overwhelms differences in ownership structures in explaining returns on investment.

Hypothesis 3 predicts that companies with dispersed ownership should have lower q_m s than other companies in countries with strong corporate governance systems. The \hat{q}_m for dispersed-ownership companies is less than for the remaining firms in the Anglo-Saxon countries, but the difference is not statistically significant. Thus, we cannot accept Hypothesis 3. We note again, however, that q_m is an estimate of a company's *average* return on investment relative to its cost of capital, since the estimate is made using data on total investment in each year. Shareholder wealth maximization requires equating the *marginal* returns on investment to the cost of capital. Thus, the estimate of q_m of 1.001 for dispersed-ownership firms in Anglo-Saxon countries likely implies a marginal return on investment somewhat under their costs of capital, suggesting some agency problems for these companies.

The significantly higher \hat{q}_m for the companies controlled by individuals (families) might also be interpreted as indirect evidence of agency problems when ownership is dispersed. An alternative interpretation would be that family-controlled companies have trouble raising capital externally due to asymmetric information problems. This interpretation might also explain the significantly smaller \hat{q}_m for companies controlled by financial institutions. These companies presumably do not have trouble raising external capital to finance worthy investment projects.

Hypothesis 4 predicts that companies with dispersed ownership have higher returns on investment than other firms in countries with weak corporate governance systems, since the owners were able to issue many shares in the first place by credibly committing themselves not to exploit small shareholders and/or since they have such attractive investment opportunities that no agency conflict exists. This hypothesis finds support in both the Scandinavian and Germanic-European countries. In both cases the estimated q_m is above 1.0 and significantly higher than for the other companies in these two country groups. Given that only one other entry in Table 3 for a non-English-origin country is greater than one, these results provide rather strong support for

Hypothesis 4 in these countries. Companies with dispersed ownership in Scandinavia and Germanic-Europe appear to have sufficiently attractive investment opportunities to produce \hat{q}_m s equal to or greater than one. Most of these companies are large, multinational firms, and may therefore be subject to the same corporate governance constraints as companies in the Anglo-Saxon countries.¹⁹ In the three Asian countries with German-origin legal systems and the French-origin countries, no significant differences in the \hat{q}_m s for dispersed-ownership companies and the rest of the samples were observed, however.

Neither a priori reasoning nor the existing empirical evidence allowed us to make predictions about the relative performance of companies that are individually-controlled in countries with weak corporate governance systems, or are finance-controlled, or non-financial-controlled or state-controlled. Consistent with these ambiguities, we generally find no significant differences between the \hat{q}_m for companies in one of these ownership categories and that for all other firms in its country group. The only significant difference in investment performance for individually-controlled companies to be observed in Table 3 is for the English-origin countries as predicted by Hypothesis 3.

The \hat{q}_m for companies controlled by financial firms is significantly less than that for other firms in the English-origin group. This \hat{q}_m is greater than one, nevertheless, and also greater than that for each of the other four country groups. It is thus not possible to say that financially-controlled firms in English-origin countries do badly in an absolute sense. The only other difference in \hat{q}_m s that is statistically significant occurs for the French-legal-system sample, where the point estimate of 0.692 is significantly greater than that of 0.579 for the rest of the sample. Although financial institutions appear to improve the investment performance of companies that they control in French-legal-system countries, they do not bring about a spectacular improvement. Companies controlled by financial firms are still predicted to have returns on investment that are less than 70 percent of their costs of capital. Their performance looks good only in comparison to other companies in the French-legal-system countries.

In none of the five country groups is there a significant difference between the \hat{q}_m for firms controlled by other, non-financial companies and that of the rest of the sample. Managers of one company are not significantly better at monitoring managers of other companies than are other ownership groups.²⁰ As discussed above, this may be because the potential advantages managers have as monitors of other firms are dissipated through the construction of large pyramidal structures. Additional evidence on the performance of companies in corporate pyramids is

presented in the following subsection.

The estimate of \hat{q}_m for state-controlled companies in the three Germanic-European countries is 0.374, the smallest estimate in Table 3. Within these three countries, the agency problems associated with state-control of enterprises clearly seem to dominate. In three of the remaining four country groups the \hat{q}_m for state-controlled companies is larger than for other firms, with the \hat{q}_m s for state-controlled companies in the three Asian countries with German-origin systems and the countries with French-origin systems both being insignificantly different from 1.0. In these two country groups, state firms actually exhibit the best investment performance of any ownership category. One explanation for this superior performance might be that state-controlled companies in these countries are located in industries with particularly attractive investment opportunities. Another possible explanation, of course, is that the state in these countries is an adept monitor of the firms that it controls.²¹

The results in Table 3 imply that ownership structures are less important determinants of investment performance than legal institutions. In the three Asian countries with German-origin legal systems none of the \hat{q}_m s for any ownership category is significantly different from that for the remaining firms. In the four other country groups, only seven of the 20 \hat{q}_m s for particular ownership categories are significantly different from those for the remaining firms. The most consistent differences in \hat{q}_m s visible in Table 3 are across country legal systems rather than across ownership categories.²² These findings are consistent with those of other recent studies. Although honest and effective legal institutions are consistently associated with good performance, the link between corporate performance and owner identities seems more tenuous.²³

C. The Effects of Insider Ownership Concentration, Pyramiding, Cross-Shareholding and Voting Rights

In this subsection we present some additional tests of the effects of ownership structure for countries where we have a richer data set on ownership structures.

1. *The Effects of Insider Ownership in the United States*

As noted in section I, when ownership is concentrated in the hands of managers, it can have two, opposing effects on a company's investment performance. As a manager's ownership stake rises, the manager may identify more closely with other shareholders, and thus try to increase the market value of the firm. Alternatively, a larger ownership stake reduces the threat of dismissal

thus freeing a manager to pursue goals that conflict with the other shareholders' interests. Thus, a priori rising ownership concentration in the hands of insider managers has an ambiguous impact on firm performance.

We use data on the shareholdings of managers of U.S. corporations to test for the effects of inside ownership concentration on investment performance. We do this by interacting inside ownership variables with the investment term on the right-hand-side of eq. 5. The results are presented in Table 4. The number under q_m is the coefficient on investment by itself, under IO is the coefficient on investment multiplied by the fraction of shares owned by insiders. IO^2 represents an interaction term with the square of IO , IO^3 with its cube. The estimated coefficients imply a similar nonlinear relationship between q_m and inside ownership concentration as Morck, Shleifer and Vishny (1988) (hereafter MSV) observed for Tobin's q . The predicted q_m rises from 0.95 as inside ownership increases from zero reaching a peak of 1.21 at a shareholding of 22 percent. From there q_m falls reaching a low of 0.92 at a shareholding of 68 percent, from there on it rises again. Thus, the entrenchment of management due to their possessing concentrated shareholdings results in a significant deterioration in their companies' investment performance over the range of ownership concentration levels from 22 to 68 percent.

Several studies have examined the relationship between various measures of corporate performance and ownership concentration since MSV's article appeared. Three of these, Cho (1998), Short and Keasey (1999) and Cosh, Guest and Hughes (2000) come up with the same sort of nonlinear relationship between performance and ownership concentration as MSV and we do. McConnell and Servaes (1990, 1995) observe only the first part of the curve – an inverted parabola – in their US data, as do Thomsen and Pedersen (2000) in data for European corporations.²⁴ The turning points observed by MSV were at ownership concentration levels of 5 and 25 percent. These are much lower than the 22 and 68 percent that we observe, and the 40-50 percent range at which McConnell and Servaes record corporate performance peaking. One explanation for this difference is that the MSV sample of 371 Fortune 500 companies contains on average much larger firms than do the McConnell and Servaes (over 1000) and our (3671) samples (Kole, 1995). Managers of smaller firms must hold larger fractions of their companies' shares before they feel safe enough in their jobs to pursue policies that destroy their shareholders' wealth. When we restrict our sample to Fortune 500 firms as MSV did, the turning points in our data come at concentration levels of 11.6% and 40.3%. A second possible explanation for the difference in turning points is that our data are from the late 1980s and 1990s, while MSV's are from 1980. The late 1980s merger wave with its many, highly visible hostile takeovers may have

raised the levels of share ownership that managers perceive to be necessary to protect them from hostile takeovers. Our data also imply that the level of ownership concentration at which managers' and shareholders' interests become realigned is much higher than suggested by MSV.

2. Exogeneity of Ownership

Several authors have questioned the MSV results on the grounds that ownership concentration may not be an exogenous variable (Loderer and Martin, 1997; Cho, 1998; Himmelberg, Hubbard and Palia, 1999, and Zhou, 2001). This criticism might also be directed against our results in subsection 1, and more generally with respect to the results reported in Table 3 with respect to ownership identity and investment performance. It is necessary, therefore, that we take up the issue of the possible endogeneity of ownership.

Let us begin with the more general issue of whether the relationships between owner identities and q_m presented in Table 3 could be misinterpreted because of reverse causality. Such a misinterpretation seems much more likely if we were to use a measure of *average* performance as most other studies have, say Tobin's q , than with our measure of marginal q .²⁵ For example, low Tobin's qs for state-controlled companies might not indicate that the state is a poor monitor of managers, but rather that the state has chosen to concentrate its shareholdings in low profit industries. The estimated q_m of 0.374 for state-controlled companies in the European-Germanic countries reported in Table 3, on the other hand, *must* be interpreted as a management failure at least in so far as the other shareholders of the firm are concerned. If state-controlled firms in the European-Germanic countries are located in low profit industries, *and their managers are maximizing the wealth of their shareholders*, they will invest little and the returns on this investment will equal their cost of capital. The fact that these returns fall far short of the costs of capital implies over (poor) investments and poor monitoring of managers. Although the *investment opportunities* that a firm faces may legitimately be considered as exogenous, the managers determine what is to be made of these opportunities and thus the realized returns on investment. Managers decide the nature and amounts of investment, the investments do not determine the identity of owners or managers. The returns on investment are then determined by the nature of the investments made. Since the returns on investment follow from the nature of the investments made, these too must be regarded as endogenous.²⁶

Similar arguments apply with respect to the relationship between q_m and insider ownership concentration. It might be reasonable to assume that insider shareholdings vary across firms as a function of the height of investment opportunities, the riskiness of investment, and so on (Demsetz and Lehn, 1985). But the returns realized on investment depend on the investments

actually made and these are the result of the decisions of the managers at the time they are made. One might argue that very high shareholdings in the hands of managers only occur in very young firms, which are still managed by their entrepreneurial founders. These firms may have very attractive investment opportunities and at the same time suffer from the kind of asymmetric-information problems that lead to *under* investment. High levels of manager shareholdings might then be associated with returns on investment that exceed company costs of capital and are higher than for more mature companies. Under this reasoning, managerial shareholdings would proxy for the youth of the firm and be positively associated with q_m . Such reasoning *cannot* explain why q_m would fall below 1.0, however, or a *negative* relationship between q_m and managerial holdings over middle ranges of holdings. A $q_m < 1$ must be interpreted as indicating agency problems, and falling q_m s with rising management holdings as indicating increasing agency problems due to entrenchment.

3. The Effects of Pyramiding, Cross-Shareholding and Voting Rights in Europe

Corporate pyramids in which company *A* owns a controlling interest in company *B*, *B* owns a controlling interest in *C*, and so on, are quite common in Western Europe. As noted in section I, companies in the lower levels of a pyramid can be expected to exhibit poor performance for several reasons: (1) the managers/families at the top of the pyramid are empire builders, (2) the managers at the top of the pyramid transfer resources from lower level companies up to the top, or (3) the distance between the top and a given company in the pyramid becomes too great for the managers at the top to monitor this company effectively. These considerations lead us to predict poorer investment performance for companies at lower levels in corporate pyramids.

Corporate pyramids can lead to a diversion of a dominant owner's interests and those of minority shareholders by allowing the dominant holder to lever the voting rights in her shares. When this occurs the dominant shareholder's control rights exceed her cash flow rights, allowing her to exploit minority shareholders. We thus predict poorer investment performance for companies for which the dominant shareholder's control and cash flow rights are unequal.

Cross-shareholdings in which company *A* owns shares in companies *B* and *C*, *B* owns shares in *A* and *C*, and so on, are also frequently observed in Western Europe. Such interlocking shareholdings can entrench the managers of all of the companies so joined, and thus free them to pursue their personal goals at the expense of outside shareholders.

To test these hypotheses three dummy variables were created: $PYRM = 1$, if a company is two or more levels down in a corporate pyramid, 0 otherwise; $VR = 1$, if the control and cash flow

rights of the dominant shareholder are equal, 0 otherwise; and $CROSS = 1$, if a company is part of a group of firms with cross-shareholdings, 0 otherwise. We again interact these three variables with the investment term on the right-hand-side of eq. 5. The results from this exercise are given in Table 5. All coefficients on the three interaction terms are statistically significant and of the predicted signs. They also imply economically significant impacts on investment performance due to differences in corporate governance structures. A European company for which the control and cash flow rights of the dominant shareholder are equal, and it is not part of either a corporate pyramid or a group of companies linked by cross-shareholdings is predicted to have a return on its investment that is 80 percent of its cost of capital ($0.68 + 0.12$). In contrast, a company for which control rights exceed cash flow rights and is lower down in the pyramid and is linked to other companies by cross-shareholdings is predicted to have a return on its investment that is only 34 percent of its cost of capital ($0.68 - 0.09 - 0.25$).

4. The Effects of Cross-Shareholding in Japan

Cross-shareholdings are also common in Japan, where members of the so-called *keiretsu* hold shares in each others' companies. The same entrenchment of managers and negative effects on investment performance can be expected for members of these corporate groups. The first two entries in Table 6 report the \hat{q}_m for independent firms (0.94) and the difference in \hat{q}_m for group firms, both estimated over the entire sample period from 1985 through 2000. Members of corporate groups in Japan²⁷ can be seen to have a predicted q_m that is 0.11 lower than that for independent firms (significant at 1 percent level). The effect of cross-shareholdings in Japan is not as large as for European companies, but it goes in the same direction. Group firms in Japan have significantly lower returns on investment relative to their costs of capital than do independent companies.

As in most Asian countries, Japanese companies were hit hard by the "Asian crisis." Our sample also expands dramatically over the last few years of the sample period through the addition of a large number of independent companies. To gauge the effects of these events, we reestimated the equation for the periods 1985-95 and 1996-2000, roughly before and after the crisis. Over the first period, the group firms can still be seen to perform significantly worse than the independent companies. Following the advent of the crisis both the independent and group firms exhibit much poorer investment performance, and the difference between independent and group firms disappears. Our results imply, however, that when economic conditions are normal, cross-holdings of shares among companies in Japan have a similar effect on returns on investment to that observed in Europe, if less deleterious.²⁸

V. Tests of Hypotheses Regarding the Effects of Capital Market Constraints on the Returns on Investments from Different Sources of Finance

In this section we test for the effects of legal institutions on the returns on investment from different sources of finance. We first conduct these tests using our country group categories and then using specific two types of legal institutions.

A. The Effects of Country Legal Systems

The differences in legal institutions that have been used to distinguish among corporate governance systems also have implications with respect to the returns on investment that one expects from different sources of finance. To the extent that strong corporate governance structures protect shareholders' interests, we can expect the returns on investments out of cash flows *and* new equity issues to be positively related to the strength of a country's corporate governance structure. This leads us to predict that the returns on investments out of cash flows and new equity issues correspond to those observed for total investment across the different country legal environments. Since the contractual protections associated with debt are more specific and easier to enforce, a weaker or nonexistent relationship between corporate governance systems and returns on investment out of new debt is expected. For the same reason, we also predict for companies with returns on total investment that are less than their costs of capital, that the returns on debt are the highest of the three sources of funds.

These predictions are tested using eq. 5 by breaking total investment into the three sources of finance and estimating separate coefficients on investment for each source of finance. The results are presented in Panel A of Table 7. Consider first the first four country categories.²⁹ The first row in each country group gives the estimates for the full sample of companies. The returns on investments out of cash flows follow the LLSV rankings of corporate governance systems except that the Scandinavian countries are ahead of the Anglo-Saxon countries. The lowest returns on reinvested cash flows occur for the French-legal-system countries as predicted.

Companies in the Anglo-Saxon countries obtain the highest returns on investments out of new equity issues. The second highest returns are not earned by companies in the Scandinavian countries, however, but in Germanic legal systems. The average returns on new equity issues in both the Scandinavian- and French-legal-system countries are significantly less than one. Consistent with the prediction that debt is a more binding commitment on managers than equity,

the returns on investments financed by new debt issues are seen to nearly equal their costs of capital across all legal systems.

One reason why the returns on reinvested cash flows and new equity issues reported in the first row of each country group do not correspond to differences in the strength of legal systems across the groups is that there may be important differences in investment opportunities across the groups. Companies that issue equity in some Germanic countries, like Japan and Taiwan, may have more attractive investment opportunities than companies in the Scandinavian countries. Accordingly the second and third sets of results in each group present estimates with the sample divided into companies for which $\hat{q}_{m,I} \geq 1$, and for which $\hat{q}_{m,I} < 1$.³⁰

Hypothesis 5 predicts that for companies with $q_{m,I} \geq 1$, $q_{m,CF}$, $q_{m,D}$ and $q_{m,E}$ are also ≥ 1 . This hypothesis is supported in each of the four country groups. For companies with attractive investment opportunities, no conflict between managers and shareholders exists over investment policies, regardless of a country's legal institutions. Indeed, the very high \hat{q}_m estimated for some sources of funds for companies with $\hat{q}_{m,I} \geq 1$, suggests that these companies are cash/equity constrained, and that their shareholders would *benefit* from even greater amounts of investment.

The same cannot be said for the companies with $\hat{q}_{m,I} < 1$. As predicted by hypothesis 6, all 12 \hat{q}_m s estimated on the different sources of funds are less than one for these companies. Hypothesis 6 further asserts that $(q_{m,I} < 1) \Rightarrow (q_{m,D} > q_{m,CF} \text{ and } q_{m,D} > q_{m,E})$. This hypothesis is fully supported in all four country groups. In the Anglo-Saxon and Germanic countries reinvested cash flows earn the lowest returns, while in the Scandinavian and French-origin countries it is new equity issues that have the lowest returns. The bottom three entries in Panel A of Table 7 present separate estimates of q_m for the three sources of investment funds for our samples of transition and African countries and China. The weakness of the corporate governance systems in each category is again revealed by the very low returns on investments made out of cash flows. Somewhat surprisingly perhaps, the hypothesis that $\hat{q}_{m,D} \geq 1$ could not be rejected at the 5 percent level, in all three cases, and $\hat{q}_{m,E} \geq 1$ for both the transition and African countries. We suspect that this finding occurs because companies in transition and African countries that raise external capital do so abroad or from foreign investors trading in their countries, and are able to do so, only if they have attractive investment opportunities. Corporate governance institutions in China do not appear to offer much protection to purchasers of new equity issues. Our samples are so small and contain so few companies for which $q_{m,I} \geq 1$, that we have not undertaken any further analysis of these three

country groups.

B. The Effects of Accounting Standards

The results reported so far imply the existence of significant differences in investment performance across countries that are related to their legal institutions. They raise the further questions of which specific legal institutions account for these differences, and whether the differences observed might be perhaps related to other institutions that just happen to be correlated with differences in legal institutions. Considerations of space preclude our undertaking an exhaustive search to determine which specific legal and other institutional factors lead to differences in investment performance, but before closing we shall examine the effects of two, specific types of institutions that seem a priori particularly likely to be related to agency issues – the strength of accounting standards and creditor rights.

Shareholders should be able to protect themselves better against self-serving managers and to make better decisions regarding the purchase of new equity issues, the better the quality of accounting information at their disposal. *The Center for International Financial Analysis and Research* (Bavishi, 1993) has examined the accounting practices in a large sample of countries and ranked them according to the number of desirable pieces of information each country's standards require to be published. The scale of this index for the countries in our study runs from a low of 36 for Portugal to a high of 83 for Sweden with a median of 64. We have classified any country with a score of 64 or more as having a strong set of accounting standards, with a score of 63 or less as having weak accounting standards.³¹ Our expectation is that returns on cash flows and new equity are relatively higher in countries with strong accounting standards. It is possible, of course, that an improvement in equity's performance comes to some extent at the expense of debt holders, and not simply from a reduction of managerial discretion and an improvement in investment performance. We shall also be interested, therefore, in whether strong accounting systems are associated with *lower* returns on investment financed through new debt.

Our estimates of the returns on investments out of the three sources of funds for the two categories of accounting standards are presented in Panel B of Table 7. The number under the coefficient estimates is the p-value of a test that the coefficient is equal to one, whereas a * (** and ***) indicates that the coefficient estimate is significantly different from zero at the 1% (5% and 10%) level. Entries in bold indicate statistically significant differences between strong and weak standards at the 5% level.

The results for all four country groups are in line with our expectations. Eleven of the twelve $\hat{q}_{m,CF}$ s for countries with strong accounting standards are larger than the $\hat{q}_{m,CF}$ s for

countries with weak standards, five of them significantly so. Eleven of the twelve $\hat{q}_{m,E}$ s for countries with strong accounting standards are larger than the $\hat{q}_{m,E}$ s for countries with weak standards, five again significantly so. Thus, the existence of strong accounting standards appears to strengthen the hand of shareholders resulting in higher returns on both reinvested cash flows and new equity issues, and this holds more or less regardless of a country's legal origin.³² There is also a suggestion that the improvement in performance for equity holders comes to a degree at the expense of debt holders. Nine of the twelve $\hat{q}_{m,D}$ s for countries with strong accounting standards are smaller than the $\hat{q}_{m,D}$ s for countries with weak standards, one of these differences is significant at the five percent level, two others at the 10 percent level. We conclude that the existence of strong accounting standards does improve the investment performance of companies as far as shareholders are concerned.

The fact that accounting standards differ across countries raises the possibility that reported profits and depreciation in some countries differ from their true values, and that this biases our estimates in some way. There are several observations to make in this regard. First, note that our measure of changes in debt is difficult to distort, and measures of changes in equity appear to be almost completely insensitive to accounting standards. The fact that our predictions are borne out for $q_{m,D}$ and $q_{m,E}$ is comforting in this regard. With respect to cash flows, it is generally held that companies in civil law countries, as e.g. in Germany, systematically *under* report their profits to avoid paying taxes, discouraging unions to demand higher wages, small shareholders to demand higher dividends, and so on. To the extent this is the case, and the capital market recognizes that this under reporting occurs, our estimates of returns out of reinvested cash flows for these countries are biased *upward*, since the observed changes in market value will be due to larger amounts of investment than in our data. Alternatively, variations in accounting standards may lead to random differences between reported and true cash flows. The effects of such differences on our estimates depend upon one's interpretation of the assumption of capital market efficiency. If one assumes that the capital market can estimate the true cash flows of firms and the changes in market values reflect these accurate estimates, then our use of reported cash flows introduces an error of observation and a downward bias in our estimate of $q_{m,CF}$. Alternatively, if the capital market bases its estimates of a firm's value on its reported cash flows, our estimated $q_{m,CF}$ s will accurately reflect the market's expectations about the quality of companies' investments out of cash flows.

C. The Effects of Creditors' Rights

LLSV (1998) have examined the rights of creditors in different countries and ranked them on a scale of one to four, with four representing the strongest rights. Using this index we have classified any country with a score of 3 or 4 as having strong creditor rights, with a score of 1 or 2 as having weak creditor rights.³³ We anticipate superior performance on investments made out of new debt issues in countries with strong creditor rights, and possibly poorer performance for investments financed out of cash flows or new equity issues in these countries.

Our tests of these predictions are presented in Panel C of Table 7, which should be interpreted analogously to Panel B. The results are once again in line with our expectations. Nine of the twelve $\hat{q}_{m,D}$ s for countries with strong creditors' rights are larger than the corresponding $\hat{q}_{m,D}$ s for countries with weak creditors' rights. The fact that only two of these nine differences are statistically significant can be attributed to the $\hat{q}_{m,D}$ s already being equal to or greater than one in several cases even in the countries with weak creditors' rights.³⁴ There is also evidence that improved protection for debt holders harms new equity holders. Eleven of the twelve $\hat{q}_{m,E}$ s for countries with strong creditors' rights are smaller than the $\hat{q}_{m,E}$ s for weak rights, with six of these differences being statistically significant. No systematic differences related to creditors' rights were observed in the patterns of returns on investments out of cash flows, however. We conclude that strong creditor rights do tend to benefit debt holders and harm purchasers of new equity in all four country groups.

VI. Conclusions

Our study holds differences in legal institutions and ownership structures to be important in explaining differences in company returns on investment relative to their costs of capital, q_m . Of these two sets of institutions, the origins of a country's legal system proved to be the most important. The hypothesis that English-origin legal systems produce corporate governance systems that better protect shareholders against managers than other systems found support in our data. The null hypothesis that returns on investment were at least as great as company costs of capital failed to be rejected for the English-origin countries, but was rejected for every other country group. The null hypothesis was rejected for more than half of the individual countries examined. However, the rejection rate was much lower for the two strongest corporate governance systems (10 of 20 countries) than for the weakest systems (20 of 27 including China).

In general, differences in investment performance related to country legal systems dominated differences related to ownership structure. In each of the five ownership categories, companies in countries with English-origin legal systems earned returns on investment equal to or

greater than their costs of capital. The same can be said for only three of 40 estimates of investment returns by ownership category in the four country groups with non-English-origin legal systems. In the three Asian countries with German-origin legal systems *no* ownership category had a significantly better investment performance than for the other firms in these countries. Within the countries with non-English-origin legal systems, neither control by a financial firm nor by another non-financial company sufficed to ensure that returns on investment equalled company costs of capital. Nor did control by a family raise q_m to 1.0 in the Scandinavian, Germanic-European and French-origin countries.³⁵ In contrast, within the English-origin countries the estimate of q_m for family-controlled firms was both greater than 1.0 and higher than for any other ownership category in this country group. This result also illustrates the importance of a country's corporate governance legal institutions in determining its investment performance. Strong corporate governance institutions help to align managerial and shareholder interests, and prevent dominant individual or family shareholders from exploiting minority shareholders.

Although differences in ownership structures appear to be less important in determining investment performance than differences in the legal environments in which corporations operate, we did find some differences in performance related to ownership structures that exceeded those linked to legal systems. The difference in estimated q_m between the English- and French-origin legal systems was 0.43 (1.02-0-59). The differences between companies with widely dispersed shareholdings and other companies in the Scandinavian and Germanic-European countries were respectively 0.46 and 0.76. We hypothesized that this occurred, because companies in countries with weak corporate governance institutions will not issue large numbers of shares to outsiders unless they can convince them that they will earn attractive returns. Companies with widely dispersed shareholdings in the Scandinavian and Germanic-European countries may also earn higher returns on investment, because they have extensive operations in countries like Great Britain and the United States and thus are effectively subject to English-origin legal systems.

Control by the state was also found to have dramatically different effects on investment performance between the three Germanic-European and French-origin countries. State-controlled companies in Austria, Germany and Switzerland earned returns on their investment of only 37 percent of their cost of capital, while state-controlled companies in French-origin countries had estimated returns insignificantly different from their costs of capital.

We also presented considerable evidence that the entrenchment of managers in companies worsened their investment performance. Returns on investment relative to costs of capital for U.S. companies fell as management's shareholdings increased over a range of concentration levels

running from 22 to 68 percent. Cross-shareholdings were associated with significantly worse investment performance in both Europe and Japan.

We have also provided considerable evidence that the more explicit contractual relationship between firms and debt holders than between firms and equity holders, and the greater scope for debt holders to penalize managers who renege on these contracts leads to higher returns on investments made out of new debt than out of either reinvested cash flows or new equity issues for companies with $q_{m,t} < 1$. A *hierarchy of finance* with respect to the returns on investment exists for these companies that differs from that usually postulated in the determinants of investment literature, new debt earns the highest returns. Because of the explicit nature of the contractual relationship between firms and debt holders, the returns on debt were only modestly higher in countries with strong creditors rights than in countries with weak rights. Strengthening accounting standards, on the other hand, often had a significant impact on the returns on cash flows and new equity issues almost regardless of a country's other legal institutions. The estimated q_m for investments out of cash flows was roughly 0.50 higher in the full samples of companies in the English- and German-origin countries, and was also significantly higher for investments out of new equity issues in these and the French-origin countries.

One important conclusion that can be drawn from this study is obviously that agency problems exist in all countries and can have significant impacts on the investment performance of companies. A second, more comforting conclusion is that agency problems can be mitigated by the institutional structures of a country. Legal institutions that strengthen shareholder rights do bring about superior investment performance.

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Appendix: Balance Sheet and Income Statement Data and Calculation of Variables

Data are taken from the 1997 version of the *Standard and Poors' Compustat (CS)* for USA and Canada and from the 1996-2001 versions of the *Global Vantage (GV)* for all countries. These datasets contain balance sheet, income statement, and stock market information. The sample period for the data is from 1985 through 2001. We exclude all banks and financial companies (SICs 6000 through 6999) and some service industries (SICs above 8100) because the nature of capital and investment in these industries is not comparable to those of non-financial companies. Table A1 gives an overview of the sample composition by industry and country group. The majority of the sample firms (55 %) are in manufacturing industries, utilities are 11 % of the sample firms and 11 % come from the agriculture, construction, or mining sector, and the rest from services.

Table A1: Composition of the Sample

Country group	Agriculture (< 1000)	Mining (1000-1499)	Construction (1500-1999)	Manufacturing (2000-3999)	Utilities (4000-4999)	Services (>5000)
English	0.80%	8.50%	2.40%	51.20%	10.90%	26.20%
German	0.30%	0.60%	8.80%	66.20%	8.10%	15.90%
French	1.60%	2.80%	5.00%	59.20%	12.70%	18.70%
Scandinavian	0.00%	3.10%	3.80%	60.70%	16.70%	15.70%
Africa	3.60%	20.00%	0.00%	7.30%	67.30%	1.80%
Transition	1.10%	8.90%	7.80%	51.40%	22.30%	8.40%
China	0.80%	1.70%	5.00%	69.40%	19.00%	4.10%
Total	0.80%	6.60%	3.80%	54.60%	10.70%	23.60%

The variables (*CS* data item numbers in parentheses) are as follows. The market value is defined as the sum of the market value of common stock, the book value of total debt and preferred stock. The market value of common stock is the end-of-fiscal year number of shares (54) multiplied by the end-of-fiscal year price per share (199). We use the book value of total debt (9+34) instead of its market value. An accurate estimate of the market value of a firm's outstanding debt obligations requires knowledge not only of the associated coupon and maturity structure but also of the credit quality of each component. Because such information is not available from standard data sources, we use the book values. The preferred stock is taken to be, in order and as available, redemption value (56), liquidating value (10), or par value (130). The investment of a firm in year t is meant to represent all funds available to the company, which could have been paid out directly to shareholders but were instead retained. Thus, investment in year t is defined as

$$I = IB + DEP - DIV + \Delta Debt + \Delta Equity + R \& D + ADV$$

where IB (18) is income before extraordinary items (profits after taxes and interest), DEP (14) is accounting depreciation and DIV (21) is total dividends paid in the fiscal year. These come directly from the annual income statements of each company. New debt ($\Delta Debt$) is derived by taking the change in total debt since the previous period. Net new equity ($\Delta Equity$) is calculated as sales (108) less purchases (214) of common and preferred stock. Where these items are not available, $\Delta Equity$ is approximated by the change in the number of common shares outstanding multiplied by the average share price $((197+198)/2)$.

Missing values of $R \& D$ expenditures (46) interpolated from surrounding values on the premise that $R \& D$ to sales ratios are fairly constant over short periods of time, or approximated using $R \& D$ data at the 3-digit SIC code level from the *FTC's Annual Line of Business Reports*.

Advertising expenses (45) are not reported on GV database. For all countries (except for USA and Canada) these are proxied using aggregate advertising-to-sales ratios at the 4-digit SIC code level from a recent study by Rogers and Tokle (1993) who use firm level data from *Leading National Advertisers* to compute 4-digit advertising sales ratios. The remaining advertising figures are approximated by multiplying the actual company sales by 2-digit advertising to sales ratios that come from the 1990 *IRS Reports on Corporation Returns* (Table 6-Balance Sheets, Income Statements, Tax, and Selected Other Items, by Major Industry).

All variables are deflated using the *CPI* (1995=1.00). The main data source for the *CPI* is the latest version of the *International Financial Statistics* maintained by the *Austrian Institute of Economic Research (WIFO)*.

Ownership and Control: Data Sources and Concepts

1. United States of America

The percentage of insider ownership for US firms is provided by the *Compact Disclosure (CD)* database. The sole source of ownership data used by *CD* is the *Securities and Exchange Commission's* corporate proxy statement. Insider ownership is defined as the total number of shares held in aggregate by all officers and directors. We obtain the percentage of total shares held by insiders by dividing this total by the number of shares outstanding. This comprehensive measure of insider ownership has several advantages over alternative measures as for example inferring insider ownership by aggregating individual holdings. First, it incorporates ownership stakes of officers and directors whose individual stakes are smaller than 5% of the outstanding shares. Second, it alleviates the need to trace each beneficial owner's association with the firm.

See Anderson and Lee (1997) for a comparison of different ownership sources and measures. Finally, we were able to compile an unbalanced panel for 3,005 firms in total over the years 1988 – 1997. The median number of annual observations per firm is seven (mean 6.2; max 10). The mean (median) value of total insider holdings over all firms and years is 21.06 % (14.22%). For a breakdown over time, see Table A2.

Percentage holdings of shareholders that have significant power to exercise influence over corporate affairs or decisions for the USA are obtained from item 12 of form 10-K.

Table A2. Insider ownership in the USA

Year	Mean	S.D.	Median
1988	19.23	20.35	12.32
1989	21.78	20.93	15.23
1990	21.72	20.91	15.72
1991	21.21	20.90	14.13
1992	21.05	20.38	14.58
1993	20.22	19.76	13.97
1994	21.20	20.35	14.59
1995	21.69	20.76	14.86
1996	21.55	21.10	14.00
1997	18.10	19.61	11.48
All	21.06	20.59	14.22

2. Europe

2.1 Germany

The data on the ownership structure of the German sample firms have been gathered from the 1988, 1991, 1994, and 1997 editions of the *Wer gehört zu wem*, a publication of the German *Commerzbank* that offers information on the identities and percentage shareholdings of firm owners. Since this source of data is available every fourth year, we use the most recent ownership data for missing years, e.g., the 1995 data are taken from the 1994 edition and the 1996 data from the 1997 edition. This procedure is unlikely to introduce much error since the ownership structure of German companies has been very stable. We cover 359 German firms.

2.2. Europe other than Germany

The ownership data on all other European countries come from the December 1999 version of *AMADEUS*. *AMADEUS* is a Pan-European financial database, containing balance sheet and ownership information on over 220,000 major public and private companies in all sectors in 26 European countries. The countries are (national information provider in parentheses): Austria (Verband der Vereine Creditreform e.V.), Belgium (National Bank of Belgium S.A.), Bulgaria

(Creditreform Bulgaria OOD), Czech Republic (Albertina Data), Denmark (Kobmanstandens Oplysningsbureau A/S), Eire (CFI Online Limited), Estonia (Krediidiinfo AS), Finland (Finska - Suomen Asiakastieto Oy), France (SCRL S. A.), Germany (Verband der Vereine Creditreform e.V.), Greece (ICAPHellas S. A.), Hungary (Intercredit Budapest Kft.), Iceland (Icecredit S.p.A.), Latvia (KrediidiinfoAS), Luxembourg (Bureau van Dijk S.A.), The Netherlands (Delwel Uittgeverij B.V. and NV Databank), Norway (Creditinform AS), Poland (Info Credit), Portugal (MOPE Lda), Romania (Romanian Chamber of Industry and Commerce), Slovak Republic (Albertina Data), Spain (Informa S.A.), Sweden (UC AB), Switzerland (D&B Novinform AG) and United Kingdom (Jordans).

To be included in *AMADEUS* companies must comply with at least one of the following criteria: (i) their turnover must be greater than 10 million Euro, (ii) the number of their employees must be greater than 150; and (iii) their total assets must be greater than 10 million Euro. The sources of the ownership information are mostly the annual company reports. Information provided includes the percentage holdings of shareholders holding more than 5% (for the UK the cut off point is the 1% level), the name of the owner, and the date of the filing. In total we categorized 330,941 owners to one of the following owner identities: families/individuals, non-financial firm, financial firm, foreign firm, the state, and dispersed owners, defined as owners holding less than 5% of the equity. In addition, we were able to rebuild the company pyramids, since *AMADEUS* assigns a company key to all owners in the database, provided these are also among the 220,000 companies fulfilling the criteria above. Thus, we are confident that we capture the most important aspects of the ownership and control structure, like the share concentration and identity of the most important direct owners, the pyramidal structure, the deviation from one-share-one-vote due to pyramiding, and cross-shareholdings (see below for a detailed explanation of these concepts.) We could match 2,890 firms with complete information on the ownership and control structure to our *CS/GV* databases.

We supplement *AMADEUS* data for Italy by information provided by *CONSOB* (Document published by the *CONSOB* as per art. 1/5 of Law 216/74,1998) and we make use of the annual reports obtained from www.huginonline.com for the missing data on Scandinavian companies.

Salient features of many corporate governance systems involve pyramiding, cross-shareholdings, and large controlling stakes of families, financial and industrial firms, and the state. Pyramiding potentially induces a wedge between cash flow and voting rights. Suppose, for example an ultimate shareholder (X) owns α fraction of the shares of corporation A , which owns

β fraction of another corporation B , which in turn owns γ fraction of corporation C . Provided that X has "control" at each layer of the pyramid, one way to measure her voting rights in C is to use the last direct stake in the pyramidal chain. The fraction of her cash flow rights is only $\alpha \cdot \beta \cdot \gamma$. With for example $\alpha = \beta = \gamma = 1/2$, X has the majority control of corporation C , whereas the cash flow rights amount just to 12.5 percent. The cash flow rights to voting rights ratio, $CRVR$ is equal to 0.25 (=12.5%/50%) and we code $VR=0$. The number of pyramidal layers above C is three, that is X controls C via two other corporate vehicles A and B , and we code $PYRM=1$.

To explain our concept of cross-shareholdings, suppose now that corporation A owns α fraction of corporation B , which in turn owns β fraction of A , where $\alpha, \beta \geq 25\%$. Either A or B or both control C , our sample firm. Then we would say that C is ultimately controlled via a cross-shareholding construction, i.e. $CROSS = 1$.

Table A3 presents summary statistics on pyramiding and the $CRVR$ ratio. On average, our sample firms operate at the 2.11th layer of corporate pyramids. Nearly 30% of the firms are in the third or lower down layers. The mean ratio of cash flow to voting rights is 0.84. Perhaps as expected, the least deviation of this ratio is found for the UK (0.97). On average, around 30% of firms have no deviation of cash flow from voting rights.

Table A3. Europe: Pyramiding and the deviation of cash flow from voting rights

Country	Pyramidal Layers	Percentage of firms lower than 2	Mean $CRVR$	Percentage of firms $CRVR=1$
Austria	2.03	20.0%	0.928	40.4%
Belgium	2.68	42.1%	0.659	25.0%
Finland	1.98	10.0%	0.881	33.8%
France	2.13	22.8%	0.748	31.2%
Germany	2.13	36.1%	0.763	21.6%
Greece	2.47	29.4%	0.868	66.7%
Ireland	2.10	14.3%	0.833	18.4%
Italy	2.00	10.3%	0.888	13.2%
Luxembourg	3.00	33.3%	0.957	20.0%
Netherlands	2.29	22.1%	0.844	37.9%
Norway	2.63	40.0%	0.779	27.4%
Portugal	2.38	28.6%	0.729	33.3%
Spain	2.36	28.0%	0.757	36.6%
Sweden	2.10	27.4%	0.701	30.3%
Switzerland	1.99	20.5%	0.842	31.7%
United Kingdom	1.94	8.4%	0.968	29.8%
All	2.11	27.8%	0.839	29.1%

3. Japan and East Asian Countries

Our ownership data for Japan are collected from the 1985, 1988, 1991, 1995, and 1997 issues of the Japan Company Handbook which lists the identities and percentage holdings of the 10 largest shareholders and the names of the chairman and the president of the company. The information on business group membership is gathered from the 1990/91, 1992/93, 1995/96, 1996/97 issues of *Industrial Groupings in Japan*. This source rates the degree of inclination of companies to eight of the major business groups in Japan (Mitsubishi, Mitsui, Sumitomo, Fuyo, DKB, Sanwa, Tokai and IBJ Groups). The degree of inclination is rated on a scale of four, four indicating the strongest degree and depends on the total group's shareholding among the ten largest owners. It also considers the sources and amounts of bank loans, the number of directors sent from the group and other characteristics including the historical background of the group/company relationship. We consider companies with a strong inclination (rating 3 and 4) as group members. Our results are robust to a broader definition (including those rated with 1 and 2) or to Nakatani's (1984) refinement of this list, which selects firms in the largest six groups and eliminates firms switching groups.

4. Rest of the world

We use the 1991, 1994, 1995/96, 1997 issues of the *Asian Company Handbook* to determine the ownership structure of the East Asian countries in the sample (China, Hong Kong, India, Indonesia, Malaysia, Philippines, Singapore, South Korea, Taiwan and Thailand). Similar to the *Japan Company Handbook* these publications list the identity and percentage shareholdings of the major owners of the companies in these countries along with the names of the important executives (president and chairman), which enables us to designate the shareholders as insiders. For some of the missing information on Indian companies, we use the corporate filings at the *Mumbai Stock Exchange*.

For Canada, we use the *FP Survey of Industrials*, which gives the identities, and percentage shareholdings of the major owners.

For the ownership structure of companies from Argentina, Brazil, Mexico and Venezuela, we consult the 1995/96 edition of the Argentina, Brazil, Mexico and Venezuela Company Handbooks published by the *I M F Editora Ltda. RJ, Brazil*. This publication lists the major shareholders, their percentage shareholdings and the names of the major executives of Latin American companies. Several issues from 1997 and 1998 issues of *AmericaEconomia*, are used to cover companies not listed in the above publication.

For companies from Australia, New Zealand, South Africa, we use the 1995/1996 edition of *Major Companies of the Fareast & Australasia* from *Graham & Whiteside*.

Ownership structure of Turkish companies is determined by using the 1995 and 1997 editions of the *Yearbook of Companies* from the Istanbul Stock Exchange.

We use the information on the ownership and control structure of firms to categorize firms into one of the following categories: family-controlled, financial firm-controlled, non-financial firm-controlled, state-controlled and dispersed. The criterion of categorization is that the largest shareholder of the firm is a family, financial firm, non-financial firm or the state *and* that her stake is larger than 10% of total equity. We define a firm to be in dispersed ownership if the largest shareholder of the firm holds less than 10% of total equity. We also categorize group member companies as non-financial firm-controlled even if the largest shareholder is not a non-financial firm. The low percentage of firms categorized as dispersed in the US is due to the inclusion of many small companies. It should be noted that the percentage of firms categorized as dispersed in English-origin countries increases to 46.3% when we employ a 20% cut-off.

We repeat all our regressions using only five years of accounting and financial data centered on the year of ownership data. This exercise reduces the number of observations from 70,252 to 56,191 in the regressions reported in table 3. All significant differences in table 3 carry over. We also repeat this exercise using the 20% criterion for categorization. Again, in addition to all significant differences reported in table 3, the difference between the investment performance of firms owned by non-financial companies in French-origin countries (0.547) and the rest (0.670) becomes significant at the 3 percent level

Table A4 presents percentages of firms broken down into the five control categories (using the 10% cut-off) as well as countries and legal systems. We also report the rating on Accounting Standards (*AS*) and Creditor Rights (*CR*). The entries for each legal system report the medians of *AS* and *CR* ratings and the means of our control dummies.

Table A4: Sample Composition by Ownership Category, Country, and Legal System

Country	Accounting Standards	Creditor Rights	Number of Firms	Control				
				Family	Financial	Non-financial	State	Dispersed
Australia	75	1	114	30.7%	17.5%	30.7%	0.0%	21.1%
Bermuda	na	na	12	25.0%	25.0%	50.0%	0.0%	0.0%
Canada	74	1	280	34.6%	19.6%	40.4%	3.3%	2.1%
Cayman Islands	na	na	5	0.0%	0.0%	100.0%	0.0%	0.0%
Great Britain	78	4	687	17.9%	37.0%	15.1%	1.8%	28.2%
Hong Kong	69	4	43	14.0%	34.9%	51.2%	0.0%	0.0%
India	57	4	37	2.7%	2.7%	43.2%	51.4%	0.0%
Ireland	na	1	24	29.2%	20.8%	16.7%	8.3%	25.0%
Israel	64	4	14	28.6%	14.3%	50.0%	0.0%	7.1%
Malaysia	76	4	158	38.0%	10.1%	48.1%	1.9%	1.9%
New Zealand	70	3	18	0.0%	55.6%	44.4%	0.0%	0.0%
Pakistan	na	4	1	0.0%	0.0%	100.0%	0.0%	0.0%
Singapore	78	4	97	27.8%	28.9%	43.3%	0.0%	0.0%
South Africa	70	3	25	24.0%	24.0%	48.0%	4.0%	0.0%
Thailand	64	3	81	7.4%	56.8%	32.1%	3.7%	0.0%
USA	71	1	3,070	47.3%	25.9%	14.6%	0.9%	11.3%
English	71	3.5	4,666	39.2%	26.9%	19.8%	1.7%	12.4%
Denmark	62	3	40	25.0%	12.5%	25.0%	2.5%	35.0%
Finland	77	1	34	5.9%	17.6%	38.2%	23.6%	14.7%
Norway	74	2	42	16.7%	23.8%	47.6%	7.1%	4.8%
Sweden	83	2	54	16.7%	38.9%	33.3%	3.7%	7.4%
Scandinavian	64	2	170	16.5%	24.7%	35.9%	8.2%	14.7%
Austria	54	3	30	6.7%	23.3%	53.3%	16.7%	0.0%
Germany	62	3	240	26.7%	15.4%	48.8%	7.0%	2.1%
Japan	65	2	1,036	5.9%	6.6%	58.1%	0.2%	29.2%
South Korea	62	3	16	25.0%	6.3%	25.0%	12.4%	31.3%
Switzerland	68	1	66	33.3%	10.6%	42.4%	4.6%	9.1%
Taiwan	65	2	11	18.2%	9.1%	9.1%	9.1%	54.5%
German	63.5	2.5	1,399	11.1%	8.6%	54.9%	2.2%	23.2%
Argentina	45	1	8	12.5%	25.0%	50.0%	12.5%	0.0%
Belgium	61	2	41	9.8%	34.1%	53.7%	0.0%	2.4%
Brazil	54	1	25	12.0%	12.0%	56.0%	20.0%	0.0%
Chile	52	2	9	11.1%	44.4%	33.3%	0.1%	11.1%
France	69	0	187	25.1%	17.6%	51.3%	2.3%	3.7%
Greece	55	1	5	0.0%	0.0%	80.0%	20.0%	0.0%
Indonesia	na	4	41	34.1%	9.8%	48.8%	7.3%	0.0%
Italy	62	2	57	3.5%	40.4%	47.4%	3.4%	5.3%
Luxembourg	na	na	3	0.0%	0.0%	66.7%	33.3%	0.0%
Mexico	60	0	8	50.0%	0.0%	50.0%	0.0%	0.0%
Netherlands	64	2	66	6.1%	13.6%	43.9%	6.1%	30.3%
Netherlands Antilles	na	na	5	20.0%	20.0%	60.0%	0.0%	0.0%
Panama	na	na	3	33.3%	33.3%	33.3%	0.1%	0.0%
Peru	38	0	1	0.0%	0.0%	100.0%	0.0%	0.0%
Philippines	65	0	4	0.0%	25.0%	25.0%	50.0%	0.0%
Portugal	36	1	10	0.0%	20.0%	30.0%	50.0%	0.0%
Spain	64	2	59	1.7%	23.7%	57.6%	8.5%	8.5%
Turkey	51	2	5	20.0%	40.0%	40.0%	0.0%	0.0%
Venezuela	40	na	1	100.0%	0.0%	0.0%	0.0%	0.0%
French	54.5	1	538	15.8%	21.0%	50.2%	6.1%	6.9%
China	na	na	2	50.0%	0.0%	0.0%	50.0%	0.0%
Total	64	2	6,775	30.9%	22.6%	29.9%	2.3%	14.3%

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Table 1 Summary Statistics and Sample Composition by Country, 1985- 2000

Country	Sample Period	Number of Films	$(M_t - M_{t-1})/M_{t-1}$		Investment/ M_{t-1}		CF/ M_{t-1}		$\Delta Debt_t/M_{t-1}$		$\Delta Equity_t/M_{t-1}$	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Australia	1985-2000	346	0.127	0.508	0.154	0.250	0.040	0.128	0.015	0.147	0.060	0.152
Bermuda	1985-2000	215	0.087	0.519	0.148	0.264	0.048	0.149	0.008	0.172	0.040	0.109
Canada	1985-2000	1478	0.165	0.528	0.165	0.244	0.050	0.121	0.025	0.164	0.057	0.137
Cayman Islands	1985-2000	42	0.169	0.602	0.154	0.273	0.058	0.202	0.019	0.193	0.049	0.131
Great Britain	1985-2000	1331	0.116	0.434	0.180	0.241	0.063	0.087	0.016	0.122	0.049	0.159
HongKong	1985-2000	127	0.090	0.464	0.132	0.232	0.045	0.104	0.020	0.159	0.042	0.127
India	1988-2000	246	0.084	0.487	0.152	0.211	0.057	0.058	0.002	0.103	0.041	0.131
Ireland	1985-2000	63	0.183	0.512	0.201	0.276	0.061	0.086	0.038	0.166	0.057	0.144
Israel	1985-1999	56	0.271	0.708	0.171	0.228	0.028	0.122	0.033	0.153	0.042	0.114
Malaysia	1985-2000	381	0.192	0.564	0.137	0.237	0.045	0.083	0.024	0.145	0.034	0.135
New Zealand	1985-2000	66	0.058	0.361	0.110	0.246	0.053	0.077	0.000	0.169	0.023	0.101
Pakistan	1993-2000	46	-0.047	0.302	0.236	0.349	0.097	0.135	-0.013	0.168	0.013	0.060
Singapore	1985-2000	208	0.125	0.504	0.126	0.188	0.049	0.070	0.014	0.127	0.031	0.100
South Africa	1985-2000	118	0.098	0.511	0.1541	0.1845	0.091	0.089	0.007	0.101	0.025	0.089
Thailand	1986-2000	243	0.054	0.463	0.181	0.285	0.068	0.124	0.017	0.162	0.047	0.176
USA	1985-2000	8591	0.124	0.510	0.149	0.234	0.040	0.129	0.023	0.156	0.026	0.115
English	1985-2000	13557	0.127	0.504	0.155	0.237	0.046	0.122	0.022	0.152	0.035	0.127
Denmark	1985-2000	101	0.055	0.371	0.199	0.249	0.085	0.073	0.006	0.118	0.032	0.149
Finland	1985-2000	79	0.107	0.414	0.159	0.210	0.089	0.076	-0.004	0.141	0.024	0.102
Norway	1985-1999	103	0.113	0.464	0.178	0.243	0.070	0.090	0.017	0.158	0.039	0.120
Sweden	1985-2000	156	0.136	0.437	0.192	0.271	0.078	0.067	0.004	0.141	0.052	0.192
Scandinavian	1985-2000	439	0.104	0.424	0.184	0.248	0.080	0.077	0.006	0.140	0.038	0.150
Austria	1985-2000	82	0.024	0.368	0.215	0.287	0.107	0.105	0.019	0.165	0.031	0.149
Germany	1985-2000	425	0.056	0.350	0.233	0.263	0.107	0.112	0.011	0.133	0.026	0.111
Japan	1985-2000	2219	0.064	0.343	0.111	0.147	0.035	0.046	0.022	0.102	0.018	0.061
South Korea	1988-1999	82	0.310	0.487	0.316	0.329	0.066	0.152	0.138	0.277	0.032	0.058
Switzerland	1985-2000	160	0.109	0.375	0.205	0.260	0.099	0.092	0.003	0.140	0.025	0.127
Taiwan	1988-1999	126	0.067	0.453	0.154	0.190	0.041	0.047	0.026	0.089	0.062	0.148
German	1985-2000	3094	0.067	0.351	0.138	0.188	0.050	0.071	0.021	0.114	0.021	0.080

Table 1 (Continued) Summary Statistics and Sample Composition by Country, 1985–2000

Country	Sample Period	Number of Firms	$(M_t - M_{t-1}) / M_{t-1}$		Investment / M_{t-1}		CF / M_{t-1}		$\Delta Debt_t / M_{t-1}$		$\Delta Equity_t / M_{t-1}$	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Argentina	1989-2000	24	0.046	0.361	0.257	0.318	0.128	0.188	0.055	0.154	0.030	0.180
Belgium	1985-2000	79	0.082	0.359	0.234	0.319	0.101	0.078	0.012	0.153	0.020	0.095
Brazil	1989-2000	133	0.127	0.624	0.120	0.317	0.058	0.203	-0.006	0.107	0.021	0.156
Chile	1988-1999	73	0.082	0.426	0.160	0.167	0.086	0.074	0.030	0.106	0.028	0.090
Colombia	1989-1999	15	-0.009	0.530	0.175	0.215	0.100	0.119	0.017	0.119	0.031	0.105
France	1985-2000	495	0.085	0.370	0.227	0.271	0.101	0.094	0.005	0.147	0.032	0.115
Greece	1988-1999	49	0.560	0.679	0.443	0.453	0.086	0.065	0.038	0.139	0.286	0.433
Indonesia	1989-1999	132	0.136	0.551	0.185	0.305	0.044	0.134	0.044	0.181	0.055	0.182
Italy	1985-2000	150	0.066	0.351	0.183	0.252	0.096	0.082	0.006	0.170	0.027	0.105
Luxembourg	1986-2000	12	0.126	0.450	0.190	0.185	0.094	0.088	0.046	0.144	0.028	0.120
Mexico	1986-1999	81	0.094	0.464	0.198	0.247	0.105	0.125	0.025	0.136	0.029	0.121
Netherlands	1985-2000	174	0.101	0.373	0.221	0.233	0.101	0.075	0.018	0.124	0.036	0.143
Netherlands Antilles	1985-2000	19	0.083	0.392	0.134	0.206	0.050	0.099	0.028	0.128	0.029	0.099
Panama	1985-2000	4	0.100	0.356	0.072	0.117	0.052	0.038	0.002	0.115	0.001	0.024
Peru	1992-2000	20	0.073	0.522	0.279	0.376	0.239	0.304	-0.005	0.126	0.014	0.057
Philippines	1985-1999	83	0.079	0.526	0.140	0.259	0.057	0.126	0.022	0.220	0.036	0.097
Portugal	1988-1999	49	0.115	0.413	0.248	0.327	0.100	0.083	0.023	0.159	0.044	0.165
Spain	1985-1999	117	0.099	0.390	0.207	0.298	0.087	0.087	0.010	0.153	0.064	0.210
Turkey	1990-1999	29	0.402	0.814	0.415	0.418	0.216	0.212	0.038	0.121	0.128	0.274
Venezuela	1991-2000	10	-0.121	0.323	0.106	0.200	0.085	0.129	-0.039	0.164	0.024	0.063
French	1985-2000	1748	0.100	0.429	0.210	0.281	0.093	0.109	0.014	0.150	0.039	0.150
China	1994-1999	70	0.034	0.498	0.279	0.368	0.125	0.167	0.046	0.218	0.022	0.124
Transition Countries	1994-1999	85	0.015	0.473	0.268	0.320	0.128	0.157	0.033	0.203	0.019	0.069
African Countries	1994-1999	17	-0.047	0.373	0.090	0.266	0.032	0.143	0.029	0.173	0.020	0.070
All	1985-2000	19010	0.113	0.474	0.156	0.234	0.051	0.114	0.021	0.146	0.033	0.122

The group of transition countries includes 85 firms from Czech Rep., Estonia, Croatia, Hungary, Lithuania, Poland, Romania, Russia, and Slovakia. The group of African countries includes 17 firms from Gabon, Ghana, Kenya, Liberia, and Zambia.

Table 2 Estimates of returns on investment (q_m) by legal system and by country

The table presents the results of estimating eq. 5 by constraining (1) all companies in a country, and (2) all companies in a country group defined by legal system to have the same return on investment relative to the cost of capital (q_m). We estimate (but do not report) 25 depreciation rates defined by 2-digit SIC. The first (second) equation has an adjusted R^2 of 0.23 (0.24). There are 112,590 observations. All t-values are robust to heteroscedasticity. * indicates the significance level of a Wald test that the estimated q_m is different from 1.00.

Country	\hat{q}_m	t-value	($\hat{q}_m \neq 1$)*	Obs.	Firms
Panel A: Legal systems					
English Origin	1.02	111.34	0.03	82,463	13,557
Scandinavian Origin	0.78	13.67	0.00	2,120	439
German Origin	0.74	35.51	0.00	19,496	3,094
French Origin	0.59	29.23	0.00	8,246	1,818
Transition Countries†	0.64	4.3	0.01	194	85
African Countries†	0.77	10.9	0.00	71	17
Panel B: Countries					
Australia	0.94	22.01	0.20	2,342	346
Bermuda	0.91	11.08	0.27	821	215
Canada	1.16	46.27	0.00	9,536	1478
Cayman Islands	0.58	3.13	0.02	161	42
Great Britain	0.85	33.44	0.00	9,402	1,331
Hong Kong	0.78	8.92	0.01	660	127
India	0.80	8.2	0.04	906	246
Ireland	1.10	13.87	0.21	362	63
Israel	1.27	6.29	0.18	179	56
Malaysia	0.86	17.98	0.00	1,809	381
New Zealand	0.86	12.36	0.05	328	66
Pakistan	0.40	4.67	0.00	105	46
Singapore	0.97	10.31	0.75	1,182	208
South Africa	1.07	5.11	0.72	549	118
Thailand	0.64	10.53	0.00	1328	243
USA	1.05	89.39	0.00	52,793	8,591
Denmark	0.65	6.22	0.00	532	101
Finland	0.96	9.91	0.69	420	79
Norway	1.04	12.64	0.63	511	103
Sweden	0.65	6.01	0.00	657	156
Austria	0.71	5.82	0.02	461	82
Germany	0.57	16.58	0.00	2740	425
Japan	0.86	32.24	0.00	14,874	2,219
South Korea	0.70	9.01	0.00	199	82
Switzerland	0.64	7.79	0.00	868	160
Taiwan	1.26	12.32	0.01	354	126
Argentina	0.78	5.09	0.16	86	24
Belgium	0.51	7.65	0.00	467	79
Brazil	0.25	4.09	0.00	379	133
Chile	1.24	5.38	0.29	214	73
Colombia	0.43	2.66	0.00	44	15
France	0.57	16.51	0.00	2,591	495
Greece	0.54	4.5	0.00	113	49
Indonesia	0.84	9.5	0.06	516	132
Italy	0.64	13.27	0.00	810	150
Luxembourg	0.70	1.5	0.52	56	12
Mexico	0.50	5.01	0.00	312	81
Netherlands	0.69	9.83	0.00	1,068	174
Netherlands Antilles	1.19	8.54	0.17	88	19
Panama	1.25	6.09	0.23	36	4
Peru	0.11	0.88	0.00	45	20
Philippines	1.00	5.26	0.98	249	83
Portugal	0.46	4.43	0.00	180	49
Spain	0.54	10.1	0.00	764	117
Turkey	0.52	3.89	0.00	75	29
Venezuela	0.58	2.79	0.04	32	10
China	0.45	3.96	0.00	121	70

† The group of transition countries includes 85 firms from Czech Rep., Estonia, Croatia, Hungary, Lithuania, Poland, Romania, Russia, and Slovakia. The group of African countries includes 17 firms from Gabon, Ghana, Kenya, Liberia, and Zambia.

Table 3 The Effects of Ownership on the Returns on Investment (q_m) by Country Group

The table presents the results of estimating eq. 5 by allowing q_m to take on different values depending on both a company's country of origin and its ownership structure. The first entry for each ownership category gives the point estimate of q_m for that category. The second entry is the t_m for the remaining companies in that country group. The > (<) sign between the two numbers indicates that the first entry is greater (smaller) than the second one. The number below the inequality is the level of significance of this difference, the numbers below each entry indicate the p-value of a test that the estimated coefficient is equal to 1. Entries in bold face indicate differences significant at the 5 percent level, or better (two tailed test). The number of observations is 70,252 and the adjusted R^2 's are about 0.23. All t-tests are based on White (1980) standard errors. All equations include 25 industry dummies (not reported).

	English Origin		Scandinavian Origin		European-German Origin		Asian-German Origin		French Origin	
Family	1.082	> 1.019	0.773	> 0.739	0.599	< 0.636	0.987	> 0.872	0.569	< 0.605
	0.00	0.02	0.12	0.84	0.00	0.66	0.92	0.41	0.00	0.56
Financial	1.002	< 1.061	0.561	< 0.812	0.561	< 0.640	0.869	< 0.882	0.692	> 0.579
	0.92	0.03	0.00	0.13	0.00	0.41	0.32	0.93	0.00	0.04
Non-Financial	1.058	> 1.041	0.718	< 0.761	0.626	< 0.628	0.896	> 0.863	0.565	< 0.644
	0.03	0.59	0.00	0.73	0.01	0.98	0.00	0.55	0.00	0.10
Dispersed	1.001	< 1.050	1.145	> 0.683	1.358	> 0.601	0.829	< 0.906	0.543	< 0.605
	0.91	0.21	0.00	0.40	0.01	0.00	0.00	0.20	0.00	0.50
State	1.014	< 1.045	0.796	> 0.743	0.374	< 0.634	1.322	> 0.880	0.952	> 0.588
	0.91	0.82	0.00	0.40	0.00	0.04	0.37	0.23	0.00	0.00

Table 4 The Effects of Insider Ownership Concentration on q_m in the United States

The table reports a nonlinear relationship between q_m and insider ownership (IO) for US companies. The coefficient of IO , IO^2 , and IO^3 are multiplied with 100, 100², and 100³, respectively. All t-tests are based on White (1980) standard errors. All equations include 25 industry dummies (not reported). See table A2 in the Appendix B for summary statistics on insider ownership.

	\hat{q}_m	IO	IO^2	IO^3	N	$Adj. R^2$
Coefficient	0.95	2.71	-8.23	6.14	31,698	0.25
t-value	24.91	5.25	4.80	3.99		

Table 5 The Effects of Pyramiding, Cross-Shareholdings and Shareholder Voting Rights in Europe

The table reports the effect of pyramiding ($PYRM$), cross-shareholdings ($CROSS$) and deviations of control and cash flow rights (VR). The variable $PYRM = 1$, if a company is two or more levels down in a corporate pyramid, 0 otherwise; $VR = 1$, if the control and cash flow rights of the dominant shareholder are equal, 0 otherwise; and $CROSS = 1$, if a company is part of a group of firms with cross-shareholdings, 0 otherwise. We again interact these three variables with the investment term on the right-hand-side of eq. 5, and include them along with investment in the equation. All t-tests are based on White (1980) standard errors. The equation includes 25 industry dummies (not reported). See table A3 in the appendix B for summary statistics on $PYRM$ and VR .

	\hat{q}_m	$PYRM$	$CROSS$	VR	N	$Adj. R^2$
Coefficient	0.68	-0.09	-0.25	0.12	10,993	0.22
t-value	24.74	-2.03	-2.76	2.50		

Table 6 The Impact of Business Groups on the Returns on Investment in Japan

The table reports the impact of group membership on the returns on investment in Japan. The information on the business group membership is gathered from the 1990/91, 1992/93, 1995/96, 1996/97 issues of Industrial Groupings in Japan which rate the degree of inclination of companies to eight of the major business groups in Japan (Mitsubishi, Mitsui, Sumitomo, Fuyo, DKB, Sanwa, Tokai and IBJ Groups). We categorize 1047 of the 2219 Japanese firms as affiliated to groups (47.2%). All t-tests are based on White (1980) standard errors. The equation includes 25 industry dummies (not reported).

	1985-2000	1985-1995	1996-2000
\hat{q}_m	0.94	1.07	0.59
t-value	42.27	40.09	15.30
$\hat{q}_m * BG$	-0.11	-0.15	-0.02
t-value	-3.32	-3.73	-0.43
N	12855	9388	3497
Adj. R²	0.17	0.20	0.14

Table 7 Estimated q_m s by Source of Funds

Panel A. By Legal System

We use eq. 5 by estimating separate coefficients on investment for each source of finance. The first row in each country group gives the estimates for the full sample of companies. The second and third rows present the estimates with the sample divided into companies for which (firm-level) $\hat{q}_{m,t} \geq 1$, and for which $\hat{q}_{m,t} < 1$ in each country group. The number of observations (Adj. R^2) is 103,722 (0.25) for the full sample, 54,051 (0.34) and 49,671 (0.18) for the $\hat{q}_{m,t} \geq 1$ and $\hat{q}_{m,t} < 1$ samples, respectively. The p-value of a Wald test that the estimated coefficient is different from 1.0 is provided below the estimates. All equations include 25 industry dummies (not reported).

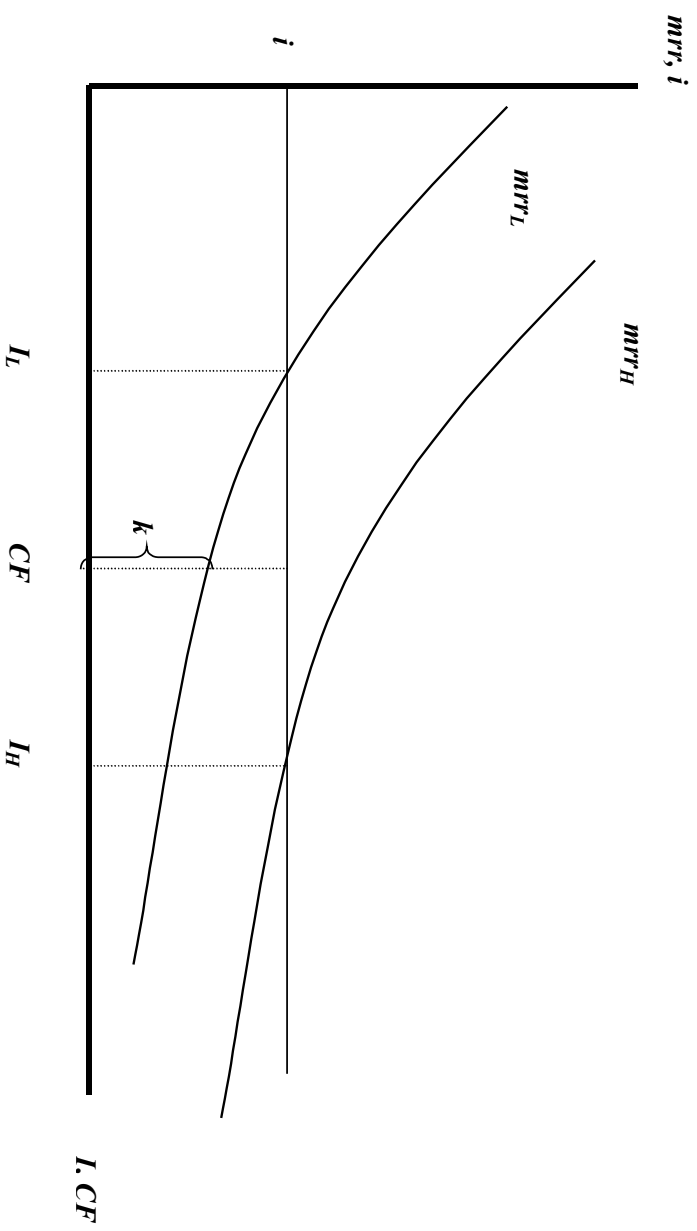
Legal System	Sample	No (%) of Firms	Median q_m	$CF_{i,t}/M_{t-1}$	$\Delta Debt_{i,t}/M_{t-1}$	$\Delta Equity_{i,t}/M_{t-1}$
English	All	11,311	1.09	0.86 0.00	1.09 0.00	1.37 0.00
	$\hat{q}_{m,t} \geq 1$	55%	1.74	1.48 0.00	1.35 0.00	1.99 0.00
	$\hat{q}_{m,t} < 1$	45%	0.51	0.36 0.00	0.77 0.00	0.63 0.00
Scandinavian	All	350	0.85	1.31 0.04	1.08 0.22	0.55 0.00
	$\hat{q}_{m,t} \geq 1$	42%	1.56	2.29 0.00	1.42 0.00	1.37 0.00
	$\hat{q}_{m,t} < 1$	58%	0.55	0.71 0.03	0.86 0.00	0.21 0.00
German	All	2,476	0.84	0.70 0.00	0.98 0.13	1.09 0.13
	$\hat{q}_{m,t} \geq 1$	39%	1.45	1.57 0.00	1.27 0.00	1.59 0.00
	$\hat{q}_{m,t} < 1$	61%	0.55	0.47 0.00	0.83 0.00	0.55 0.00
French	All	1,433	0.78	0.64 0.00	1.02 0.50	0.52 0.00
	$\hat{q}_{m,t} \geq 1$	38%	1.67	1.39 0.00	1.41 0.00	1.10 0.27
	$\hat{q}_{m,t} < 1$	62%	0.46	0.46 0.00	0.84 0.00	0.37 0.00
Transition	All	78	0.76	0.39 0.00	1.25 0.04	1.29 0.34
Africa	All	17	0.71	0.45 0.00	0.90 0.32	1.05 0.78
China	All	48	0.6	0.28 0.00	1.14 0.29	-0.46 0.00

Table 7 (Continued) Estimated q_m s by Source of Funds

Panel B reports our estimates of the returns on investments out of the three sources of funds for weak and strong accounting standards, (AS). The number under the coefficients is the p-value of a Wald test against one. The usual t-tests against zero are also provided, where *, ** and *** indicate significance at 1%, 5%, and 10%, respectively. The number of observations for the full sample is 103,722. The adj. R^2 of the $q_{m,l} \geq 1$ ($q_{m,l} < 1$) sample is 0.28 (0.14). Panel C repeats the same exercise for strong and weak creditor rights (CR). The adj. R^2 of the $q_{m,l} \geq 1$ ($q_{m,l} < 1$) sample is 0.29 (0.15). All t-tests are based on White (1980) standard errors. All equations include 25 industry dummies (not reported). Entries in bold indicate that the q_m s for “strong” are significantly different from “weak” at the 5% level or better.

Legal System	Sample	AS / CR	Panel B: Accounting standards			Panel C: Creditor rights		
			CF_t/M_{t-1}	$\Delta Debt_t/M_{t-1}$	$\Delta Equity_t/M_{t-1}$	CF_t/M_{t-1}	$\Delta Debt_t/M_{t-1}$	$\Delta Equity_t/M_{t-1}$
English	All	Weak	0.83* 0.23	1.02* 0.74	1.07* 0.60	1.32* 0.00	1.05* 0.00	2.06* 0.00
	All	Strong	1.32* 0.00	1.04 0.00	1.86* 0.00	1.34 0.00	1.03 0.29	1.06* 0.20
	$\hat{q}_{m,l} \geq 1$	Weak	1.65* 0.04	1.49* 0.00	1.69* 0.00	1.87* 0.00	1.31* 0.00	2.54* 0.00
	$\hat{q}_{m,l} \geq 1$	Strong	1.86 0.00	1.30 0.00	2.37* 0.00	2.07** 0.00	1.34 0.00	1.57* 0.00
	$\hat{q}_{m,l} < 1$	Weak	0.37* 0.00	0.69* 0.00	0.58* 0.00	0.65* 0.00	0.70* 0.00	1.06* 0.13
	$\hat{q}_{m,l} < 1$	Strong	0.65** 0.00	0.69 0.00	0.91** 0.01	0.78** 0.00	0.71 0.00	0.58* 0.00
	Scandinavian	All	Weak	1.28* 0.26	1.04* 0.73	0.64* 0.00	1.40* 0.01	0.97* 0.71
All		Strong	1.39 0.01	0.97 0.72	1.01 0.01	1.29 0.26	1.04 0.73	0.64 0.75
$\hat{q}_{m,l} \geq 1$		Weak	1.47** 0.42	1.48* 0.08	0.69** 0.34	2.37* 0.00	1.21* 0.14	2.19* 0.00
$\hat{q}_{m,l} \geq 1$		Strong	2.38 0.00	1.22 0.14	2.19* 0.00	1.46 0.42	1.47 0.08	0.69* 0.00
$\hat{q}_{m,l} < 1$		Weak	1.23* 0.26	0.99* 0.91	0.56* 0.00	0.72* 0.05	0.76* 0.00	0.48* 0.00
$\hat{q}_{m,l} < 1$		Strong	0.72** 0.05	1.75*** 0.00	1.03 0.00	1.74** 0.26	1.75*** 0.91	1.05 0.09
German		All	Weak	0.59* 0.00	0.99* 0.80	1.03* 0.69	1.09* 0.08	0.94* 0.04
	All	Strong	1.09* 0.07	0.95 0.04	1.33* 0.00	0.59* 0.00	0.98 0.80	1.03* 0.69
	$\hat{q}_{m,l} \geq 1$	Weak	0.81* 0.14	1.10* 0.22	1.58* 0.00	2.01* 0.00	1.26* 0.00	1.77* 0.00
	$\hat{q}_{m,l} \geq 1$	Strong	2.01* 0.00	1.27*** 0.00	1.77 0.00	0.81* 0.13	1.10*** 0.22	1.58 0.00
	$\hat{q}_{m,l} < 1$	Weak	0.58* 0.00	0.89* 0.01	0.66* 0.00	0.62* 0.00	0.72* 0.00	0.72* 0.00
	$\hat{q}_{m,l} < 1$	Strong	0.62 0.00	0.72* 0.01	0.72 0.00	0.58 0.00	0.89* 0.01	0.66 0.00
	French	All	Weak	0.68* 0.00	1.05* 0.29	0.65* 0.00	0.78* 0.00	1.04* 0.23
All		Strong	0.87*** 0.09	1.05 0.27	0.70 0.01	0.85 0.47	1.18 0.13	0.42 0.02
$\hat{q}_{m,l} \geq 1$		Weak	1.38* 0.02	1.48* 0.00	0.88* 0.54	1.45* 0.00	1.41* 0.00	1.08* 0.48
$\hat{q}_{m,l} \geq 1$		Strong	1.56 0.00	1.48 0.00	1.16 0.20	2.04 0.05	1.83 0.00	0.30* 0.43
$\hat{q}_{m,l} < 1$		Weak	0.47* 0.00	0.83* 0.00	0.52* 0.00	0.55* 0.00	0.85* 0.00	0.54* 0.00
$\hat{q}_{m,l} < 1$		Strong	0.58 0.00	0.86 0.00	0.52 0.00	0.41 0.00	0.84 0.13	0.36 0.00

Figure 1 Investment consistent with shareholder wealth maximization



Notes:

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¹ See Fazzari, Hubbard and Petersen (1988), Hoshi, Kashyap and Sharfstein (1991).

² See Baumol, Heim, Malkiel and Quandt (1970), Grabowski and Mueller (1975), Shinnar, Dressler, Feng and Avidan (1989), and Mueller and Reardon (1993).

³ See Schiantarelli and Sembenelli (2000), Shin and Park (1999), and Audretsch and Elston (2002).

⁴ See Demirgüç-Kunt and Maksimovic (1998), Levine and Zervos (1998), Rajan and Zingales (1998), La Porta, Lopez de Silanes, Shleifer and Vishny (2000), and Lombardo and Pagano (2000).

⁵ See Baumol (1959), Marris (1964), Grabowski and Mueller (1972, 1975).

⁶ For surveys, see Benston (1985) and Short (1994).

⁷ For further discussion and evidence see, Modigliani and Perotti (1997), Claessens, Djankov, and Lang (2000) and Gugler and Yurtoglu (*forthcoming*).

⁸ However, while hypothesis 3 posits causality in that dispersion of ownership claims leads to lower q_m s, hypothesis 4 does not. Here we argue that the existence of dispersed shareholdings implies that the managers were somehow – by an unobserved bonding device - able to bond themselves not to exploit minority shareholders or that firms with dispersed ownership in weak governance countries have such good investment opportunities that no conflict of interest between managers and shareholders exists.

⁹ For evidence that dominant owners do exploit minority shareholders in countries with weak corporate governance systems, see Doidge, Karolyi and Stulz (2001).

¹⁰ For examples and discussion, see Gugler (2001).

¹¹ See Edwards and Fischer (1994), Boehmer (2001, pp. 110-11).

¹² See Backman (2001) and Economist (1998).

¹³ The announcement of new equity issues is often accompanied by immediate share price declines, see for example Masulis and Korwar (1986).

¹⁴ The methodology was developed by Mueller and Reardon (1993).

¹⁵ Although both the market value of the firm, M , and its investment, I , carry a t subscript, equation (5) does not suffer from a simultaneous equation bias. M_t is a company's market value at the *end* of year t , while I_t is the investment flow over year t . Thus, I_t is measured *before* M_t and can be treated as exogenous. A possible bias in estimating the returns on investment relative to the cost of capital using (5)

arises, if the market anticipates the investments to be made in the future *and* the returns on them. Eq. 5 accurately estimates q_m , even if the market correctly anticipates these investments at $t-1$, if the expected returns on future investments equal a company's cost of capital ($r=i$). The methodology will yield lower (higher) estimates of q_m and δ , if at $t-1$ the market correctly anticipates investment at t with returns $r > i$ ($r < i$). See Mueller and Yurtoglu (2000) for a detailed discussion and evidence that there is no systematic bias in our estimates.

¹⁶ See Shiller (1981, 2000).

¹⁷ We have added Bermuda and the Cayman Islands to LLSV's set of English-origin countries and Luxembourg to the French-origin group.

¹⁸ The three Asian countries have a much larger fraction of companies with dispersed ownership structures compared to the European countries.

¹⁹ Consistently, Doidge et al. (2001) find that foreign companies listed in the U.S. have greater Tobin's q ratios than firms from the same country that are not listed in the U.S.

²⁰ In the French-origin countries, companies controlled by other non-financial firms have significantly *lower* returns on investment than other ownership groups, when a 10 percent cut-off for significance is used.

²¹ It is worth noting that the standard error of the estimate of q_m is larger for state-controlled companies than for other ownership categories in all five country groups. Thus, the investment performance of state-controlled companies appears to be much more heterogeneous than for other ownership categories.

²² When a 20-percent cut-off is used to define control, 17 of the 25 possible comparisons across ownership categories retain the same sign as in table 3. All significant differences carry over albeit with a lower level of significance. State owned firms in English-origin countries perform much worse than the remaining firms (0.697 vs. 1.041, significant at the 1 percent level) using the 20 percent cut-off. The difference in the investment performance of firms owned by non-financial companies in the French-origin countries becomes more pronounced (0.555 vs. 0.650 significant at the 5 percent level).

²³ Studies finding positive associations between corporate performance and some measure of the strength of legal institutions include Demirgüç-Kunt and Maksimovic (1998), LLSV (2000), Mueller and Yurtoglu (2000) and Lombardo and Pagano (2000). In contrast, relationships between company performance and the identity of owners are much weaker and often contradictory (Holderness and Sheehan, 1988; Denis and Denis, 1994; Górriz and Fumás, 1996; Loderer and Martin, 1997; Nickell, Nicolitas and Dryden, 1997; and Goergen, 1998).

²⁴ Gedajlovic and Shapiro (1998) is difficult to compare with the other studies, since they do not distinguish among the identities of owners, and also interact ownership with diversification.

²⁵ See also Gugler and Yurtoglu (*forthcoming*).

²⁶ A partial qualification of this point is necessary with respect to hypothesis 4 and our interpretation of the results for companies with dispersed ownership in civil law system countries. Here we argued that the existence of dispersed shareholdings implied that the managers were somehow able to bond themselves not to exploit minority shareholders, and thus the prediction that dispersed shareholdings are associated with relatively high returns on investment in civil-law countries. In this case both the relatively high returns on investment and the companies' dispersed ownership are determined by some unobserved third variable.

²⁷ We use the classification contained in the Industrial Groupings in Japan (1990/91 - 1996/97). See the appendix for details.

²⁸ However, cross-shareholding structures are much more prevalent in Japan than in Europe. For additional evidence of poorer performance by *keiretsu* companies, see, Lichtenberg and Pushner (1994), Nakatani (1984) and Weinstein and Yafeh (1998).

²⁹ Since we control for returns on total investment in Table 7, we do not separate the German-origin countries into the three European and three Asian countries. In the German-origin group, most of the companies with $\hat{q}_m \geq 1$ come from the Asian countries, however.

³⁰ These firm-level \hat{q}_m are obtained by estimating an equation which includes 25 industry dummies and investment-firm dummy interactions.

³¹ The index is based on the examination of 1990 annual reports on the inclusion or omission of 90 items. These fall into seven categories: general information, income statements, balance sheets, funds flow statement, accounting standards, stock data, and special items. Our breakdown of the countries into the two categories is given in table A4 of the appendix.

³² In the French-origin countries, strong accounting standards appear to benefit new equity holders a bit more than they do existing holders.

³³ LLSV (1998) use four creditor rights variables in their analysis. These are based on (1) automatic stay on assets in reorganization, (2) whether secured creditors are ranked first in the distribution of the proceeds that result from the disposition of the assets of a bankrupt firm, (3) restrictions for going into reorganization, and (4) whether management stays in reorganizations or not. Our breakdown of the countries into the two categories is given in table A4 of the Appendix.

³⁴ Here it is perhaps worth noting that the use of the book value of debt to measure a firm's market value does not bias the coefficient on the change in debt toward 1.0. Although the change in debt on the right-hand-side of the equation is identical to the change in debt in the firm's market value on the left-hand side, if the firm's investment with these funds yields an expected return $r < i$, the market value of the firm's equity will fall when it issues the debt, and the change in the market value of the firm will be less than the change in debt, leading to a coefficient on $\Delta D < 1$.

³⁵ The \hat{q}_m for the three Asian countries with German-legal-system origins is insignificantly different from 1.0, however. As noted above, the \hat{q}_m for family-controlled companies in these countries is not significantly greater than for other firms.

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