Separating the Wealth and Entrenchment Effects of Insider Ownership on Investment Performance[*]

Klaus Gugler, Dennis C. Mueller and B. Burcin Yurtoglu

University of Vienna, Department of Economics

BWZ, Bruennerstr. 72, A-1210

Vienna, Austria

Phone: +43 1 4277 37482

Fax: +43 1 4277 37498

E-mail: dennis.mueller@univie.ac.at

Abstract:

This article makes two important contributions to the literature on the incentive effects of insider ownership. First, it presents a clean method for separating the positive wealth effect of insider ownership from the negative entrenchment effect, which can be applied to samples of companies from the US and any other country. Second, it measures the effects of insider ownership using a measure of firm performance, namely a marginal q, which ensures that the causal relationship estimated runs from ownership to performance. The article applies this method to a large sample of publicly listed firms from the Anglo-Saxon and Civil law traditions and confirms that managerial entrenchment has an unambiguous negative effect on firm performance as measured by both Tobin's (average) q and our marginal q, and that the wealth effect of insider ownership is unambiguously positive for both measures. We also test for the effects of ownership concentration for other categories of owners and find that while institutional ownership improves the performance in the USA, financial institutions have a negative impact in other Anglo-Saxon countries and in Europe.

I.   Introduction

The possibility of a conflict of interests between the managers and owners of a firm can be traced back at least as far as the classic study of Berle and Means (1932) documenting the existence of a "separation of ownership from control." Since their study appeared numerous articles and books have hypothesized about the nature of the conflict between managers and owners, and/or attempted to measure the economic consequences of this conflict.[1] This literature, implicitly or explicitly, has assumed an "Anglo-Saxon" corporate governance structure. A firm's owners are its shareholders; shares are widely dispersed, so that no outside shareholder has a strong incentive to monitor managers carefully; managers do not hold large amounts of their companies' shares, and thus do not have the same financial interest in the firm as do the shareholders. Should the managers hold a large fraction of their company's shares, as say ten percent, it was assumed that they would identify with the shareholders and maximize their wealth.[2]

In a seminal article, Mørck, Shleifer and Vishny (1988, hereafter MSV) presented evidence of a relationship between the shareholdings of a company's board of directors and Tobin's q. Tobin's q rose from around 0.75 when the board held no shares to roughly 1.0, when it held 5 percent of the shares, and then fell reaching a value of only 0.7, when the board held 25 percent of the outstanding shares. Starting at a board holding of 25 percent q again began to rise. MSV attributed this nonlinear pattern to two conflicting effects of insider ownership. (1) As the number of shares held by the board increases, the effect on the wealth of its members from a rise in the market value of the firm increases. (2) As the number of shares held by the managers increases, the likelihood of their being replaced through a proxy fight or takeover declines, and the managers have more discretion to pursue their own goals.

Several subsequent studies have reported the same up/down/up again relationship between performance and ownership concentration as MSV did (Cho, 1988; Short and

Keasey, 1999; Cosh, Guest and Hughes, 2000; and Gugler, Mueller and Yurtoglu, 2003c). McConnell and Servaes (1990, 1995) have observed only the first part of the curve – an inverted parabola – in their US data, as have Thomsen and Pedersen (2000) in data for European corporations.[3] Again the interpretation for these nonlinearities is that a single variable – ownership concentration – has two conflicting effects on company performance.

It is clearly less than ideal to have one independent variable with two conflicting impacts on the dependent variable, and to try to infer the relative strengths of these impacts from the ups and downs of a nonlinear relationship between the two variables. A more attractive approach would be to have two variables to capture the two effects, with each having a unidirectional, although not necessarily strictly linear, relationship with the dependent variable. An important contribution of this article is to employ one variable to capture the positive wealth effect on firm performance that comes with insider ownership, and a second variable to capture its negative entrenchment effect.

Nearly all studies measure the positive wealth effects of ownership by the percentage of outstanding shares held by an ownership group. Such a measure can be highly inaccurate. One percent of the outstanding shares of a large company can have the same value as ten percent of the shares of a small one. A manager owning $10 million of her company's shares has the same financial incentive to raise their price, regardless of whether her holdings constitute one percent of outstanding shares or 15 percent. A ten percent increase in her company's share price makes her a million dollars richer regardless of the *fractional* size of her holdings. Thus, the positive financial incentive effect of stock ownership by managers is better captured by the *total value* of their shareholdings not their size as a fraction of outstanding shares, and this is the variable we use to measure this effect.[4] On the other hand, the fraction of outstanding shares is an appropriate measure of managerial entrenchment. The larger this fraction is, the more difficult it is to displace the managers through a takeover or

out vote them in a proxy contest. Accordingly we include the fraction of shares held by insiders as an explanatory variable, but interpret it *solely* as a measure of entrenchment, given the presence of the value of insider shareholdings in the model.

Our use of separate variables to capture the wealth and entrenchment effects of insider ownership resembles the approach recently taken by Claessens, Djankov, Fan and Lang (2002, hereafter CDFL). They take advantage of the highly concentrated shareholdings in East Asian countries, and the fact that cash flow rights and control rights often differ for large shareholders. Using a sample of large East Asian companies, CDFL then claim to measure the positive wealth effects of ownership using a measure of cash flow rights, and the negative entrenchment effects using control rights of large shareholders.

Although we find this method for separating the two effects of ownership to be quite innovative, it nevertheless has several shortcomings compared to the approach that we take. Most significantly, it cannot be applied to the US, since the kinds of corporate pyramids and multiple-vote shares that lead to divergences between cash flow and control rights in East Asia are largely absent in the US, and many firms have no large shareholders. Furthermore, even where large shareholders are important, as in Germany, control rights and cash flow rights are the same for most firms. Nevertheless, the entrenched position of large shareholders can lead to rent extraction by these shareholders. Gugler and Yurtoglu (2003b) find for German companies, for example, that unconstrained large shareholders have detrimental effects for minority shareholders, even though cash flow and control rights may be equal, provided that they are less than 100%.

Although corporate pyramids and multiple-vote shares can produce a divergence between cash flow and control rights, in countries where these institutions are common cash flow and control rights remain identical for most firms. Claessens et al. (2000, p. 100) and Faccio and Lang (2002, p.392) report that this is the case for the median firm in East Asia and

Western Europe, respectively. The same is true for samples of companies from Germany and Turkey, where pyramids and multiple-vote shares are also important.[5] This large overlap between cash flow and control rights naturally leads to a high positive correlation between these two variables. In the sample of 382 German companies of Gugler and Yurtoglu (2003a) the Pearson correlation between cash flow and control rights was 0.71, for Turkey it was 0.47.[6] For the United States, of course, it would be near one. In contrast, the two variables that we use to measure the positive wealth and negative entrenchment effects of ownership are nearly uncorrelated (r = -0.150). Thus, our methodology can be applied to samples where large shareholders are relatively rare, to samples with large shareholders and no separation of cash flow and control rights, as well as to samples with large shareholders and a separation of cash flow and control rights, while the CDFL methodology is applicable only in the last of these three cases.

Until its recent repeal, the Glass-Steagall Act prevented commercial banks from exercising the sorts of ownership and monitoring roles that have been common in Germany and many other countries. The US's free-market ideology has ensured a limited role for the state as an outside owner and controller of companies. Thus, three classes of owners, which are regularly found outside of the US – other firms that are parts of a corporate pyramid, banks and other financial institutions, and the state – are almost unknown within this country. An additional contribution of this article is to examine the relationship between these ownership categories and corporate performance in countries other than the US.

Most contributions have followed MSV and used Tobin's q to measure company performance. Starting with Harold Demsetz (1983) several authors have questioned whether ownership concentration can properly be treated as an exogenous variable in studies of firm performance.[7] In industries in which agency problems could significantly lower a firm's market value, ownership might remain concentrated to mitigate agency problems, while in

industries in which the performance of managers could be easily judged, the advantages of diversifying shareholdings dominate and ownership would be dispersed. As explained below, such criticisms of the exogeneity of ownership seem particularly valid with respect to measures of *average* firm performance like Tobin's *q*. As an additional test for the effects of ownership, therefore, we use a measure of firm performance – namely a *marginal q* – to which these criticisms do not apply.

We proceed as follows: The main hypotheses tested are developed in the following section. The US data are discussed in Section III, with results for the US presented in Section IV. In Section V the insider ownership model is estimated for samples of countries with Anglo-Saxon or civil law legal systems. Estimates of the model for other ownership categories are presented in Section VI. Conclusions are drawn in the final section.

II.   Main Hypotheses

The incentive effects of insider ownership on firm performance are divided into a positive *wealth* effect related to the total value of the shares held by insiders, and a negative *entrenchment* effect dependant on the fraction of shares help by insiders. If *P* is our measure of firm performance, *VS* the value of the shares held by insiders, and *IS* the fraction of outstanding shares held by insiders, then the wealth effect of managerial shareholdings implies that $\partial P/\partial VS > 0$, and the entrenchment effect implies $\partial P/\partial IS < 0$.

While entrenchment can be expected to increase with the size of managerial shareholdings, keeping this fraction constant, managerial entrenchment will also increase with the *size* of the firm. Ceteris paribus, with imperfect capital markets it costs disproportionately more for an outsider group to take over a $10 billion firm than one worth one billion. We thus include in our model firm size, *S*, as an additional measure of managerial entrenchment with the prediction, $\partial P/\partial S < 0$. There are, of course, other reasons

why firm size and performance might be related. To the extent that firm size is related to market shares a positive relationship between size and performance might be expected, due to market power or efficiency effects. To the extent that size is related to diversification, a positive relationship would be expected, if one believes that diversification improves performance, a negative relationship, if diversification worsens performance. Although we treat size as a second measure of managerial entrenchment, the reader is of course free to interpret its effect on performance in other ways, if average Tobin's q is used as the measure of performance. If, however, we use marginal q as the measure of performance, there is no reason to expect that the above-mentioned factors negatively influence the quality of investment decisions at the margin - other than managerial entrenchment.

Although it is reasonable to assume that managerial shareholdings produce conflicting incentive effects, the same cannot be said for the shareholdings of outsiders. In recent years mutual and pension funds have become an important class of shareholders in the US. We expect these institutional shareholders to be interested only in share performance and predict, therefore, that managers' discretion to pursue their own goals declines with the fraction of a company's shares held by institutional shareholders, *IT*, and thus that $\partial P/\partial IT > 0$.

As an additional control variable the R&D to sales ratio, *RD,* is included in the model. Firms that have attractive opportunities to innovate are likely to spend more on R&D than other companies, and earn monopoly rents from their innovations. These firms will have relatively high infra-marginal returns on capital that will be reflected in higher *average q*s than other firms.[8] There is less reason to expect a positive relationship between *marginal q* and *RD*, however. If firms maximized shareholder wealth, all would have the same marginal q, namely 1.0, and there would be no relationship between *marginal q* and R&D. On the other hand, firms that spend a lot on R&D may have more attractive investment opportunities. These may allow managers to satisfy their desires for growth without

overinvesting, or at least without overinvesting as much as do managers of firms with limited investment opportunities. This reasoning would imply a positive relationship between *RD* and marginal q.

Leverage might be yet another candidate for inclusion in the model as a control variable. In the neoclassical world of Modigliani and Miller (1958), the market value of a firm is independent of its capital structure and there is no reason to expect a relationship between average q and leverage. In a world where managers may pursue their own goals, on the other hand, leverage might be included in a q-equation as a proxy for other, unobservable variables. For example, a company's leverage ratio might serve as a proxy for the management's proclivity to pursue growth. Mergers are the fastest way to grow, and are thus often the preferred strategy for empire builders. Active acquirers frequently finance large fractions of their acquisitions by issuing debt.[9] This reasoning would lead one to predict a negative relationship between leverage and both average and marginal qs. On the other hand, a positive relationship might be predicted if high leverage serves as a bond, which forces managers to achieve high cash flows to cover interest payments (Grossman and Hart, 1982), or because managers use leverage as a signal of their firm's high quality (Ross, 1977).

A difficulty arises in including leverage in our q-equations in that leverage is itself likely to be a function of many of the variables in our model. Indeed, several different hypotheses for why leverage should be a function of insider concentration have been advanced in the literature, with some authors predicting and finding a positive relationship between inside ownership and leverage, and others a negative relationship.[10] Thus, both leverage and firm performance as measured by either average or marginal q can be expected to be functions of the variables in our model used to measure managerial incentives and constraints. Since our goal in this paper is not to contribute to the literature on the determinants of leverage, we shall not construct a model to explain it nor include it in our

model. We justify this decision on the grounds that leverage *does not belong in a q-equation as a causal variable,* but if at all only as a proxy for other variables related to managerial incentives and constraints. Since we already include measures of these in the model, an additional proxy for them is unneeded.

We are thus left with the following specification for testing the different hypotheses about firm performance:

$$P = f\left(IS, VS, S, IT, RD\right) + \mu \qquad\qquad (1)$$

Both intuition and the results from previous studies lead us to expect a non-linear relationship between firm performance and at least some of the right-hand-side variables. We shall, therefore, experiment with several functional forms for $f\left(\cdot\right)$.

We turn now to a discussion of the data used to test the hypotheses.

III.   Data

The financial data are taken from the 1996-2000 versions of the *Global Vantage* and 1997 version of the *Compustat* databases of *Standard & Poor's.*[11] The percentage of insider ownership (*IS*) is drawn from the *Compact Disclosure* (*CD*) database. The sole source of ownership data used by *CD* is the *Securities and Exchange Commission*'s corporate proxy statements. *IS* is defined as the total number of shares held in aggregate by all officers and directors divided by the number of shares outstanding. *VS* is the value of the shares held by insiders and calculated by multiplying *IS* with the market value of equity.

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. We also exclude corporations

reporting data that are not credible (negative sales and negative debt). To minimize the weight of outliers, we cap our basic variables at both the 1st and 99th percentile of the sample. Panel A of Table 1 reports descriptive statistics of our main variables. The average *IS* of 21% is considerably higher than the 10.6 % figure reported by MSV.[12] The median value of shares held by insiders (*VS*) is $17,000,000. The mean combined stake of institutions (*IT*) is 31%. Size (*S*) is measured by the logarithm of total assets and its mean indicates that the average firm has about $150 million in total assets.

Noteworthy in Panel B of Table 1 is the high negative correlation between size and insider ownership and the high positive correlation between size and institutional shareholdings. As discussed above, the failure to allow for these relationships may help to explain the nonlinear pattern between insider ownership and *q*. The results in the next section indicate that it does.

IV.   Results for the United States

A. Results for Average (Tobin's) *q*

Equation 1 in Table 2 presents our results when average *q*, *qa*, is regressed on insider ownership. A set of two-digit industry dummies was included in this and every other equation, but their coefficients are not reported to save space.[13] The same pattern of marginal effects of insider ownership is observed in eq. 1, as in MSV and several other studies. The relationship is nonlinear with all three terms in the cubic equation being highly significant.[14]

The relationship between *qa* and *IS* remains cubic once the other variables in the model are added (eq. 2), but the signs on the three *IS* terms *reverse*. Instead of *qa* rising as insider shareholdings increase it falls, although again in a nonlinear fashion. A negative relationship is of course exactly what one expects, if the fraction of shares held by insiders captures only the entrenchment effect of ownership. That *IS*'s dominant effect on *qa* is

negative can most easily be seen by constraining *IS* to have a linear relationship with *qa* (eq. 3). Dropping the quadratic and cubic terms in *IS* actually increases the adjusted R^2 slightly, while leaving the coefficient on the remaining linear term in *IS* negative and significant.

The relationship between insiders' shareholdings (*VS*) and *qa* is quadratic with the coefficient on the linear term being positive. The value of managers' shareholdings has a positive effect on company performance as expected due to the wealth effect of managerial shareholdings. The marginal effect of *VS* on *qa* tapers off as *VS* gets large, but remains positive over the range of *VS*. A diminishing marginal effect of *VS* is consistent with the assumption of diminishing marginal utility of wealth.

The second entrenchment variable in the equation, log size (*S*), has a negative coefficient as predicted, and is highly significant. Both institutional shareholdings (*IT*) and R&D have positive and significant impacts on *qa* as predicted.

The results for average *q* in equations 1-3 of Table 2 illustrate the value of disentangling the entrenchment and wealth effects of insider shareholdings. The coefficients of both *IS* and *S* imply a strong negative effect on *qa* from managerial entrenchment as measured by either the size of managers' fractional shareholdings or the size of the firm itself. The wealth effect, captured by the value of the shares held by managers, is on the other hand positive and significant. Institutional shareholders appear to improve the performance of the companies in their portfolios.

B. Results for Marginal *q*

1. Endogeneity Issues

As noted in section I, a main criticism against using managerial shareholdings to explain company performance has been that the ownership structure of firms is not exogenous, when a measure of *average* performance like Tobin's *q* is the dependent variable.

To avoid this problem, our second test for the effects of ownership concentration uses a measure of marginal q – the ratio of a firm's return on investment to its cost of capital.[15]

If a firm's returns on investment decline with the level of its investment, then its marginal q, qm, must also be inversely related to its investment level. A management that maximizes the wealth of its shareholders chooses a level of investment such that the qm on the last dollar invested equals 1.0. If all managers maximized shareholder wealth, all firms would have qms equal to or slightly greater than 1.0.[16] Marginal q would be independent of managerial shareholdings and all other variables. If, on the other hand, managers who are secure in their positions invest more than the amount, which maximizes shareholder wealth, qms will differ across firms, and these differences will be related to the degrees to which managers' investment decisions deviate from those that would maximize their shareholders' wealth. The incentive to deviate will in turn depend upon the degree of managerial entrenchment and the wealth effects of managers' shareholdings – the variables in our model. Causality *must* run from the variables that determine managers' incentives to invest (i.e. *IS* and *VS*) to the investments themselves, which in turn determine the returns on these investments (i.e. qm). Managers choose investment levels, investment levels do not determine managers, or the characteristics of their shareholdings. If the relationships between average q and the other variables in the model also are observed for marginal q, we can be reasonably sure that the relationship is not driven by simultaneity problems. If, on the other hand, the results for the two choices of dependent variables differ, it is the results for qm that will not suffer from simultaneous equation bias.

2. The results for marginal q

We first test for the same nonlinear relationship between marginal q and insider ownership as observed with average q as the dependent variable (eq. 1).[17] Eq. 4 in Table 2 reports these results. The three *IS* terms have the same signs as in eq. 1, and all coefficients

are highly significant. Once again, however, when the other variables are added to the equation, the coefficients on the three *IS* terms reverse signs (see eq. 5). The coefficients on the other variables have the same signs as when *qa* is the dependent variable, and all are again statistically significant.

In eq. 6 we again drop the squared and cubic *IS* terms. As in eqs. 2 and 3 for *qa*, insider ownership has a significant, negative relationship with marginal *q*, as predicted under the entrenchment hypothesis. As discussed above, there is less reason to expect a positive relationship between R&D and marginal *q*, than for average *q*. *RD* does pick up a positive and significant coefficient in the *qm* equation, but both its coefficient and *t*-statistic are much smaller in the *qm* equation than they are in the *qa* equation, which matches our expectations.

When equations 3 and 6 are compared, we observe the exact same pattern of coefficients in both the *qm* and *qa* equations. The negative entrenchment effects of insider ownership and firm size appear with either *qa* or *qm* as the dependent variable. The positive wealth effects of insider ownership, and the positive effects of institutional ownership, and R&D are also present regardless of whether we use a measure of average performance, or the more appropriate measure of marginal performance – *qm.* Using *qm*, however, we are much more confident that reverse causality is not a problem.

Before closing this section, we shall contrast the relationships implied by our results between the two *q*s and insider ownership with those found in other studies. To do so we must take into account the fact that *IS* and firm size are inversely related. Managers tend to own larger stakes in small firms than in large ones. Thus, as we increase *IS* both *S* and the market value of the firm tend to fall. To predict the marginal effect of an increase in *IS,* we thus divide the range of *IS* into subintervals. For each subinterval we compute the mean value of *S* and the market value of the firm. We then multiply the mean figure for *S* by its respective coefficient in Table 2 and add this number to the coefficient on *IS*. We multiply

the mean value of the firms' market value by *IS* to create a mean *VS* for each *IS* interval, and then multiply this number and its square by the appropriate coefficients in Table 2 and add it to the figures just calculated using mean values for *S*. An analogous calculation is made for *IT*. Since *RD* is uncorrelated with *IS*, we simply multiply its mean over the entire sample times its appropriate coefficient in Table 2 and add it to the figures just calculated.

This exercise gave us a set of points in *q-IS* space. Inspection of the pattern of the points suggested a quadratic relationship between both measures of *q* and *IS*. Therefore, we fitted a quadratic function to the points and plotted the relationship (see Figure 1). At low values of insider ownership, the wealth effect dominates the entrenchment effects and both *qa* and *qm* increase with *IS*. At levels of insider ownership between 40 and 50 percent, the entrenchment effect begins to dominate. These relationships between average and marginal *q* and *IS* are similar to those observed by McConnell and Servaes (1990, 1995) and Thomsen and Pedersen (2000) for average *q*. Note also that the marginal *q/IS* curve lies entirely below the average *q* curve. This can be expected, if some firms earn infra-marginal rents, and thus have higher average than marginal returns on capital.

Given that MSV used *qa* as their measure of performance, one might wonder why our results do not imply the same pattern as in MSV when *qa* is the dependent variable. Here it is worth recalling that we *do* reproduce the MSV pattern with *qa* when *IS* is the only variable in the equation (Table 2, eq. 1). The reason why it does this is that *IS* by itself has to capture *three* effects – the entrenchment effect from insider ownership, the wealth effect from insider ownership, and the entrenchment effect from size. This one variable appears to capture these three effects less well than the three variables we use to capture these effects.

V. The Effects of Insider Ownership Concentration in Other Countries

A. Characteristics of the Sample

Our data sources do not contain enough observations on firms in each country to undertake the same kind of analysis for other countries as we have done for the United States. In examining the effects of ownership structure on investment performance, therefore, we have grouped countries according to the La Porta, Lopez-De-Silanes, Shleifer and Vishny (1997, 1998, hereafter LLSV) categorization based on the origins of the countries' legal systems. We have found in previous research that their categorization is useful for examining various aspects of corporate governance,[18] and by using it we eliminate at least one possible dimension of heterogeneity in our cross-national data. LLSV identify two broad categories of legal systems – Anglo-Saxon or common law systems, and civil law systems. We employ this same division in our subsequent tests, with the Anglo-Saxon category including five countries from the LLSV category, but excluding the United States.

In our previous research,[19] we have observed that the three Asian countries that LLSV assign to the Germanic/civil law category – Japan, Korea, and Taiwan – performed quite differently from the three European countries in this category. This difference in performance might be due to differences in corporate governance structures between the two continents that go beyond the origins of their legal systems. A notable feature of corporate governance in Japan and Korea that differs from Europe lies in the important role played by *group* firms. The existence of these group firms makes it difficult to apply the methodology used in this study to measure the effects of ownership structures. In Japan, for example, the largest shareholder of a company typically holds less than 10 percent, often less than five percent of its outstanding shares. If the firm is a member of a keiretsu, however, the managers may be well entrenched against challenges from outside of the keiretsu, because the cumulative holdings of all members of the group are sufficient to protect every member of the group against outsiders.[20] Measuring the extent of managerial entrenchment as we did for the United States, and do for the other countries in our sample, would be meaningless. We

thus limit our civil law countries to those located in Europe.[21]

Column 2 of Table 3 reports the numbers of firms in each country's sample. The next four columns report the fractions of firms in each sample, for which a family, a non-financial corporation, a financial institution, or the state is the largest shareholder. The numbers in columns 3-6 sum to one. Column 7 reports the percentage of companies in each sample for which no family or institution holds at least 10 percent of a firm's shares. These firms are defined as having dispersed ownership. Several things are noteworthy in the first seven columns of the table. First, the fraction of companies for which a non-financial corporation is the largest shareholder is much lower in the United States than in either of the other country groups. As noted above, this is due to Section 8 of the Clayton Act. Second, dispersed ownership is much lower in the United States than one anticipates from the Berle and Means view of ownership in this country. This difference can be explained by the fact that our sample for the United States is very large, and thus includes many small firms for which an individual or family is the largest shareholder. If we limited our US sample to the 500 largest firms, as many studies do, the figure for dispersed ownership in the United States would be over 40 percent. Note also, however, that the Anglo-Saxon stereotype of widely dispersed ownership does not accurately characterize all of the other Anglo-Saxon countries, although the average for this group is three times larger than for the Continental countries. Note also from column 6 that in most countries the state is the largest shareholder for very small percentages of companies.

Column 8 presents the mean shareholding of the largest shareholder in each country group, regardless of his identity. Here the numbers correspond more closely to the Anglo-Saxon stereotype. On average the fraction of shares held by the largest shareholder in the civil law countries is twice as large as in either the United States or the other Anglo-Saxon countries.

Column 9 reports the mean shareholdings of the largest shareholder, when a family is the largest shareholder, with the last three columns constructed analogously for the other ownership categories. Thus, we see that for 20 percent of the companies in the civil law countries a family is the largest shareholder (column 3), and the mean holding for these firms is 26 percent of outstanding shares (column 9). Particularly noteworthy is the importance of other firms as shareholders in the civil law countries. For 49 percent of the companies in the civil law countries a non-financial firm is the largest shareholder (column 4), a fraction which is seven times larger than for the US and double the size for the other Anglo-Saxon countries. The mean holding for these firms in the civil law countries is 51 percent of outstanding shares (column 10), a fraction which is again considerably larger than for the US and the other Anglo-Saxon countries. These figures illustrate the importance of corporate pyramids and cross-shareholdings in Continental Europe.

B. Adjustments to the Model

In the United States we identified insider holdings as the holdings of the board of directors following the precedent of MSV. In many of the other countries it was not always possible to identify whether an individual was part of management or not. Thus, in the case where an individual or a family is the largest shareholder, we have chosen to define her or it as an insider, because in the great majority of cases these persons, or at least some members of the family, are part of management. This procedure may introduce a bias into our estimates of the effects of entrenchment, to the extent that some families with large holdings of shares are not part of management. They may be able to exert more control over managers because of their large shareholdings, and produce a better performance for the firm. The other variables in the model should not be affected by this problem.

It was also not always possible in other countries to identify all of the holdings of institutional shareholders. We could identify the holdings of banks and other financial

institutions like insurance companies, however. Banks have often been thought to play a positive monitoring role on the companies in which they hold shares, particularly in civil law countries like Germany (Cable, 1985). Thus, one might expect the same positive coefficient on *Fin*, the fraction of shares held by financial institutions, as we observed for *IT* in the US results. Banks are also run by professional managers, however. If bank managers are empire builders, they may encourage the companies that they can influence to pursue growth, and *Fin* will pick up a negative coefficient in the *q* equations.

Many countries do not require firms to report their R&D. Thus, the final change to the basic model estimated for the US is to drop the R&D variable because of a lack of data in other countries.

C. The Results

In Table 4, the sample is restricted to companies in each country group for which the largest shareholder is an individual or family. We assume that this largest shareholder is part of management, and thus that the entrenchment and wealth effects from his shareholdings should be captured by the same variables used in the model for the USA. We do not concern ourselves any longer with the issue of whether performance is a cubic function of *IS*. The first thing one notes from the table is that the pattern of signs for the two key variables is *identical* to that for the United States. The entrenchment effect of insider (family) ownership is negative and highly significant for both country groups and measures of performance. The wealth effect is positive on the margin, and diminishing in *VS*. Both coefficients on the two *VS* terms are highly significant.

A comparison of the *sizes* of the coefficients reveals an important difference between the United States and the other countries, however. The coefficient on *IS* in eq. 3 of Table 2, predicts a fall in Tobin's *q* of 0.016 for a rise in an insider's shareholdings of 10 percent of

outstanding shares. The comparable estimates in Table 4 for the Anglo-Saxon and civil law countries are five times larger than for the United States, implying drops in *qa* of roughly 0.08 for both country groups. These sizeable differences imply much stronger negative effects from entrenchment for both the Anglo-Saxon and civil law samples than for the United States.

The coefficients on the two *VS* terms in the *qa* equations in Table 4 also imply a somewhat stronger wealth effect than for the United States, but the difference in the marginal wealth effects from insider shareholdings are much smaller than for the entrenchment effects.

Our second entrenchment variable – size – has a negative and highly significant coefficient in both *qa*-equations, with both coefficients being close to that for the US. The variable *Fin* is insignificant for the Anglo-Saxon countries, and *negative* and significant for the civil law countries. Thus, there is no evidence in the *qa* equations that banks and other financial institutions play a positive monitoring role as a minority shareholder. In the civil law countries they even appear to worsen company performance.

In the bottom half of Table 4, the results are presented with *qm* as the dependent variable. As was true for the United States, all coefficients on the *IS* and *VS* variables have the same signs as in the *qa*-equations, and all are highly significant. Insider entrenchment worsens investment performance, while the wealth effects of insider shareholdings positively affect investment performance. The coefficient on *IS* for the other Anglo-Saxon countries is almost identical to that for the US, while *IS*'s coefficient in eq. 4 of Table 4 implies a somewhat weaker entrenchment effect in the civil law countries than for the United States. The coefficients on *VS* in the *qm* equations are smaller than observed in Table 2 for the US, and thus imply a flatter *qm-VS* curve than for the US.

Size again has a negative coefficient in both *qm*-equations, but is significant for only

the Anglo-Saxon countries. Both coefficients are substantially smaller than for the US.

The similarities in the results in Tables 2 and 4 outweigh the differences. The entrenchment effect of insider ownership is negative and significant for both measures of performance in every sample. The wealth effect is positive and significant. Size generally has a negative effect on performance.

As we did for the US, it is interesting to plot the predicted values for qa and qm against IS taking into account changes in the market values and sizes of firms associated with changes in IS. We also add an adjustment for Fin in eq. 2, where it was significant.

Figures 2 and 3 present the plots between qa and IS and between and qm and IS for the two samples. For the Anglo-Saxon countries, the two curves start at essentially the same point. The relationship between qa and IS is quadratic as it was for the US, but the qa curve rises only slightly and peaks much earlier than for the US – at around an IS of 30 percent. The fitted relationship between qm and IS is dominated by the entrenchment effect throughout the figure with the qm curve dropping below 1.0 at an IS of around 50 percent.

The qa-curve for the civil law countries slopes continuously downward dropping below 1.0 at an IS of slightly above 70 percent. The qm curve begins significantly below 1.0, rises a little until an IS of around 30%, and gradually declines further as insider ownership increases. Marginal q stays below 0.7 over the whole range of IS. Thus, the results in Figures 1, 2 and 3 reveal rather clearly that Anglo-Saxon countries have a superior investment performance to civil law countries. Moreover, they imply that the importance of the wealth effect of insider ownership relative to the entrenchment effects is strongest in the United States and weakest in the Continental European countries. Indeed, in Continental Europe the entrenchment effects always dominate the wealth effect of insider ownership.

VI.   The Effects of Ownership Concentration for Other Categories of Owners

Tables 5-7 have been constructed analogously to Table 4. In Table 5, the sample is restricted to those firms for which a non-financial company is the largest shareholder, in Table 6, a financial institution is the largest shareholder, and in Table 7 the state is. Since the largest shareholder is no longer an insider or family, we have changed the designation of the largest shareholder's fraction of outstanding shares to *LS*. To save space and the reader's time and patience, we do not discuss the estimates for each and every entry in the tables. Instead, we describe the general patterns and highlight some exceptions to them.

The most consistent pattern is for the value of the largest shareholder's stake, *VS*. All 12 coefficients on the *VS* term are positive, 11 are statistically significant at the 5 percent level. Although the coefficients on *VS* are consistently positive, their magnitudes differ dramatically across the samples. *VS*'s coefficient in the average *q* equation for family-controlled firms in the other Anglo-Saxon countries is 0.0011, and for the civil-law countries (0.0014). *VS*'s coefficients in the *qa* equations for firms controlled by other firms are 0.00052 for the Anglo-Saxon countries, and 0.000098 for the civil-law countries, a difference by a factor of 2 in the first case, 14 in the second. Similar differences in the *VS* coefficients can be observed for the other entries in Tables 5-7, with the exception of the *qa* equation for state-controlled companies in Anglo-Saxon countries (Table 7, eq. 1). Thus, in general the magnitude of the wealth effect on performance as measured by *qa* is much larger for insiders than for the other largest-shareholder categories in both the Anglo-Saxon and civil law countries. The consistently negative coefficients on VS^2 further imply that the marginal impact of the largest shareholder's wealth on performance becomes smaller, as this wealth grows.

The two variables that measure the adverse effects of controller entrenchment also have a fairly consistent pattern of signs across Tables 5-7. Eleven of the 12 coefficients of *LS* are negative, 8 significantly so. All 12 coefficients of size are negative, with 10 being

statistically significant.

Once again there is little evidence in our data that banks play an important monitoring role. When a financial institution is the largest shareholder (Table 6), both qa and qm fall as the fraction of shares held by the financial institution rise, although only the coefficients in the two qa equations are statistically significant. These results seem to imply that banks use their positions as the largest shareholder to extract rents from the firms that they control.[22] Nor do financial institutions have a positive effect on company performance as minority shareholders. No coefficient on *Fin* in Tables 4-7 is positive and significant, 8 of the 16 coefficients on *Fin* are negative and significant at the 5 percent level, a ninth is significant at the 10 percent level. Of particular interest are the four negative coefficients on *Fin* in Table 5. When another non-financial company is the largest shareholder, a firm is generally part of a corporate pyramid, or involved in cross-shareholdings with other companies. The negative coefficients on *LS* in Table 5 imply that a company's performance declines as the firm controlling it becomes more entrenched. The negative coefficients on *Fin* in the table indicate that banks and other financial institutions only reinforce the adverse effects of these interlocking corporate relationships. The coefficients on *Fin* in eqs. 1 and 3 of Table 7 imply dramatically negative effects of outside financial institutions' holdings of state controlled firms in the Anglo-Saxon countries. Our sample is quite small for this category, however, and thus the results are driven by the observations for a handful of companies.

LS has a *positive* and significant coefficient in the average q equation for state-controlled firms in civil law countries (Table 7, eq. 2). Our interpretation of this result is *not* that entrenchment by the state improves the performance of a company, but rather that large state holdings in civil law countries signal monopoly or near monopoly industry structures, which produce high levels of average performance. Indeed, state-controlled companies with the highest *LS* values are active in industries with a natural monopoly character such as

airways, railways, refineries, and telecommunications.[23] As always a better indication of the state's role as a monitor of managers can be found by looking at the coefficient on *LS* in the *marginal q* equation (Table 7, eq. 4). It is *negative* and nearly significant at the 5 percent level. When the state is the largest shareholder in a civil law country, greater entrenchment *worsens* the investment performance of the firm.

The coefficients on *LS* in eqs. 1 and 3 of Table 7 imply substantial negative entrenchment effects for state-controlled firms in the Anglo-Saxon countries, although again one must recognize that our sample is quite small for this category.

VII.   Conclusions

This article is the first to cleanly separate the positive wealth effect of share ownership from the negative entrenchment effect. Almost without exception, we have found the wealth effect to be positive and significant and the entrenchment effect to be negative and significant across all control categories and countries. Our preferred measure of investment performance is marginal *q*, because it more accurately reflects the extent of agency problems in a firm and is not subject to simultaneous equation bias. Comparing the coefficients on *IS* and *LS* in the *qm* equations of Tables 2 and 4-7, we see that the wealth effect of insider ownership was stronger in the United States than in other countries, and generally stronger for insider owners than for other ownership categories in the other countries. Thus, when an individual or a family is in control of a firm, its performance is more sensitive to the size of the controller's stake than when another firm, a financial institution or the state is in control.[24] Individuals seem to respond more strongly to financial incentives than do institutions.

Again focussing on the marginal *q* equations, we observed that the negative effects of entrenchment by insiders were of similar strength in the United States and the other Anglo-Saxon countries, but weaker although still significant in the civil law countries. On the other

hand, the decline in marginal q for companies controlled by other firms as these controlling firms' stakes grow was three times *larger* in the civil law countries than in the Anglo-Saxon countries, with LS's coefficient not even being significant in the latter sample. Thus, in the Anglo-Saxon countries it is the entrenchment of managers that has the most adverse effect on company performance, in the civil law countries it is the entrenchment of other firms. The kinds of corporate pyramids and cross-shareholdings that are common in civil law countries are much rarer in Anglo-Saxon countries and unknown, of course, in the US. Investment performance was also observed to decline dramatically with the size of the state's holdings in a company, when it is the largest shareholder.

When we combined the wealth and entrenchment effects of insider ownership, we found for the United States that both average and marginal q initially rose with increasing insider ownership, and than fell when IS reached values of roughly 50 percent. The same was true for average q in the other Anglo-Saxon countries except that the curve peaked at an IS of some 30 percent. Both curves in the civil law countries and for marginal q in the Anglo-Saxon countries imply that the entrenchment effects dominate over the full range of IS.

Another interesting finding of our study is that institutional shareholders appear to be able to constrain managerial propensities toward overinvestment in the United States. Both qa and qm are positively related to institutional shareholdings in the US. For the other two sets of countries there was scant evidence that financial institutions improve the performance of companies either as a minority or the largest shareholder. Indeed, if anything financial institutions in other countries appear to worsen the performance of companies in which they have large majority or minority stakes.

An important theme in several recent contributions to the literature has been the simultaneity of insider ownership and firm performance. In trying to address this issue, authors have written down one set of variables that they claim explains insider ownership,

and another set that supposedly explains performance, as measured by qa. Industry dummies to capture industry specific characteristics, size, leverage and measures of risk, like the variance in share returns, have all been used to predict ownership structure. But these choices strike us as somewhat arbitrary, since all of these variables are also plausible candidates for explaining Tobin's q.[25]

Our substitution of qm for qa is an alternative way to mitigate the issue of simultaneity with respect to the right-hand-side variables in the model. As stressed above, the returns on an investment are determined by the size and quality of the investment, and these, in turn, are determined by a firm's managers. Causality must run from the incentives faced by managers to their investment decisions. These investments then determine the returns on investment, which then determine our marginal q. Our confidence in our interpretation of the variables used to measure the entrenchment and wealth effects of insider ownership is strengthened, therefore, by the fact, that we obtain substantially the same results when marginal q is the dependent variable as when average q is.

Although our results reveal a number of similarities across the three samples of countries, they also reveal some important differences. Both measures of firm performance, qa and qm, are on average significantly higher in the United States and the other Anglo-Saxon countries than they are in the civil law countries. This finding supports the hypothesis that the legal institutions in the former countries offer shareholders better protection against managerial abuses of their discretion. Moreover, while the positive wealth effects of insider ownership seem to improve company performance for low levels of insider ownership in the Anglo-Saxon countries, the negative entrenchment effect dominates at all levels of insider ownership in the civil law countries.

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Table 1

Descriptive Statistics and Correlation Matrix

Tobin's q (qa) is the ratio of the market value (M) of a firm to its total assets. $\Delta M_t/M_{t-1}$ is the change in market value from year $t\text{-}1$ to t scaled by M_{t-1}. I_t/M_{t-1} is total investment scaled by M_{t-1}. Insider ownership, IS, is defined as the total number of shares held in aggregate by all officers and directors divided by the number of shares outstanding. Insider wealth, VS, is the value of the shares held by insiders (IS times the market value of equity, MV) in Mio USD. Size (S) is the logarithm of total assets. Institutional shareholdings, IT, are the mean combined (percentage) stake of institutions. RD is R&D expenditures divided by total sales. We deflate all variables by the CPI (1995=1.00).

Panel A: Summary Statistics				Panel B: Matrix of Correlation Coefficients								
	Mean	Median	S.D	qa	$\Delta M_t / M_{t-1}$	I_t / M_{t-1}	IS	IT	VS	S	RD	MV
qa	1.54	1.08	1.35	1.00								
$\Delta M_t / M_{t-1}$	0.15	0.03	0.54	0.34	1.00							
				0.00								
I_t / M_{t-1}	0.15	0.11	0.22	-0.02	0.52	1.00						
				0.00	0.00							
IS	0.21	0.15	0.20	0.01	0.00	0.05	1.00					
				0.15	0.58	0.00						
IT	0.31	0.28	0.24	-0.02	0.06	0.06	-0.46	1.00				
				0.02	0.00	0.00	0.00					
VS	149.20	17.00	631.02	0.07	0.02	-0.02	-0.15	0.15	1.00			
				0.00	0.01	0.06	0.00	0.00				
S	5.01	4.81	2.14	-0.21	-0.02	0.00	-0.47	0.65	0.39	1.00		
				0.00	0.01	0.80	0.00	0.00	0.00			
RD	0.09	0.01	0.36	0.31	0.02	0.03	0.01	-0.07	-0.03	-0.17	1.00	
				0.00	0.01	0.00	0.15	0.00	0.00	0.00		
MV	1348.86	110.93	5745.61	0.08	0.01	-0.03	-0.19	0.19	0.60	0.44	-0.03	1.00
				0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	

Table 2

Determinants of Average (*qa*) and Marginal *q* (*qm*)

All equations include a full set of SIC two-digit industry dummies. The coefficients for the *qm* equations are obtained from a regression of the percentage change in market value on investment with each explanatory variable interacted with investment. For details, see footnote 17.

Eq.	Dependent Variable	IS	IS^2	IS^3	VS	VS^2	S	IT	RD	N	Adj-R^2
1	*qa*	1.87	-5.23	3.79						16524	0.13
		6.04	5.39	4.65							
2	*qa*	-0.60	1.05	-0.63	6.68E-04	-2.72E-08	-0.25	1.16	0.65	16524	0.21
		-1.78	1.04	-0.75	22.27	-12.28	-29.78	19.01	23.54		
3	*qa*	-0.16			6.67E-04	-2.72E-08	-0.25	1.16	0.65	16524	0.22
		-2.77			22.39	-12.36	-30.51	19.14	23.75		
4	*qm*	2.85	-7.98	5.26						14776	0.24
		6.58	6.12	4.89							
5	*qm*	0.45	-2.81	2.01	2.26E-03	-2.10E-07	-0.19	0.62	0.09	14776	0.30
		0.98	-2.11	1.89	17.03	-10.67	-15.06	8.24	2.74		
6	*qm*	-0.58			2.31E-03	-2.15E-07	-0.19	0.62	0.09	14776	0.30
		-7.50			16.62	-11.00	-16.55	8.26	2.67		

Table 3
Ownership Structure in Common Law and Civil law Countries

The table reports the fractions of firms in each sample for which a family, a non-financial corporation, a financial institution, or the state is the largest shareholder (Columns 2-6). LS in column 8 presents the mean shareholding of the largest shareholder regardless of his identity. Columns 9-12 report the mean shareholdings of the largest shareholder if the largest shareholder is a family, or non-financial corporation, a financial institution, or the state.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Country	Firms	Family	Non-financial	Financial	State	Dispersed	LS	Family	Non-financial	Financial	State
USA	3614	0.48	0.07	0.41	0.04	0.11	0.21	0.26	0.34	0.15	0.11
Australia	131	0.48	0.31	0.21	0.01	0.21	0.25	0.14	0.36	0.32	0.10
Canada	376	0.31	0.44	0.21	0.01	0.03	0.40	0.39	0.49	0.25	0.20
Great Britain	985	0.25	0.14	0.59	0.00	0.34	0.17	0.17	0.29	0.14	0.35
Ireland	33	0.36	0.25	0.38	0.00	0.31	0.20	0.26	0.25	0.15	-
New Zealand	35	0.06	0.40	0.53	0.00	0.01	0.44	0.39	0.44	0.45	-
English-Origin (non-US)	1560	0.29	0.24	0.45	0.01	0.23	0.24	0.25	0.39	0.17	0.22
Austria	55	0.06	0.59	0.20	0.14	0.00	0.62	0.59	0.67	0.54	0.57
Belgium	63	0.09	0.48	0.43	0.00	0.03	0.46	0.30	0.53	0.42	-
Denmark	65	0.39	0.36	0.22	0.03	0.33	0.25	0.21	0.38	0.10	0.41
Finland	61	0.15	0.36	0.32	0.13	0.20	0.26	0.24	0.34	0.15	0.42
France	403	0.24	0.55	0.18	0.02	0.05	0.49	0.43	0.56	0.39	0.40
Germany	353	0.27	0.46	0.19	0.04	0.04	0.53	0.54	0.61	0.36	0.45
Greece	9	0.16	0.74	0.08	0.00	0.09	0.45	0.46	0.50	0.45	-
Italy	132	0.07	0.42	0.45	0.05	0.06	0.44	0.36	0.49	0.40	0.49
Luxembourg	7	0.04	0.54	0.09	0.33	0.00	0.45	0.35	0.54	0.43	0.31
Netherlands	132	0.05	0.58	0.31	0.04	0.30	0.27	0.28	0.32	0.18	0.26
Norway	67	0.18	0.52	0.25	0.04	0.08	0.32	0.34	0.35	0.21	0.51
Portugal	20	0.07	0.46	0.26	0.21	0.02	0.44	0.24	0.49	0.44	0.46
Spain	91	0.04	0.59	0.30	0.04	0.10	0.41	0.20	0.51	0.27	0.22
Sweden	126	0.21	0.32	0.45	0.02	0.09	0.31	0.31	0.32	0.29	0.37
Switzerland	119	0.33	0.46	0.16	0.03	0.09	0.45	0.39	0.54	0.26	0.58
Turkey	27	0.14	0.49	0.33	0.04	0.00	0.43	0.41	0.41	0.40	0.95
Europe	1730	0.20	0.49	0.26	0.04	0.08	0.44	0.26	0.51	0.32	0.44

Table 4

The Entrenchment and Incentive Effects of Insider Ownership in non-US Anglo Saxon Countries and European Civil Law Countries

Dependent Variable	Country Group	IS	VS	VS^2	S	FIN	n	Adj- R^2
qa	AS-non US	-0.78	1.07E-03	-1.05E-07	-0.23	0.11	4315	0.21
		-8.00	15.13	-11.43	-18.19	0.45		
qa	Europe Civil Law	-0.82	1.35E-03	-1.17E-07	-0.28	-0.71	2411	0.23
		-9.07	18.44	-12.05	-16.10	-2.43		
qm	AS-non US	-0.56	7.29E-04	-7.32E-08	-0.08	-0.37	3700	0.26
		-4.21	4.90	-2.89	-4.36	-1.06		
qm	Europe Civil Law	-0.20	4.91E-04	-3.90E-08	-0.02	0.56	1924	0.20
		-2.18	6.26	-2.99	-0.99	1.53		

Table 5

The Entrenchment and Incentive Effects of Non-Financial Corporations in non-US Anglo Saxon Countries and European Civil Law Countries

Dependent Variable	Country Group	LS	VS	VS^2	S	FIN	n	Adj- R^2
qa	AS-non US	-0.39	5.24E-04	-6.80E-09	-0.25	-0.68	3622	0.24
		-4.86	16.50	-11.92	-18.98	-2.87		
qa	Europe Civil Law	-0.22	9.83E-05	-2.63E-10	-0.14	-0.30	6047	0.16
		-4.73	19.54	-14.26	-17.40	-2.16		
qm	AS-non US	-0.11	4.00E-04	-1.05E-09	-0.14	-0.14	3096	0.29
		-1.04	7.30	-0.90	-7.52	-0.41		
qm	Europe Civil Law	-0.31	1.01E-04	-7.87E-10	-0.03	-0.36	4990	0.23
		-5.50	7.90	-2.72	-3.12	-2.53		

Table 6

The Entrenchment and Incentive Effects of Financial Institutions in non-US Anglo Saxon Countries and European Civil Law Countries

Dependent Variable	Country Group	LS	VS	VS^2	S	FIN	n	Adj- R^2
qa	AS-non US	-0.38	1.97E-04	-2.48E-09	-0.10	-0.20	6628	0.16
		-4.45	12.35	-11.11	-13.20	-1.90		
qa	Europe Civil Law	-0.52	5.05E-04	-1.71E-08	-0.16	-0.19	3161	0.27
		-7.98	17.32	-10.20	-16.98	-1.35		
qm	AS-non US	-0.06	1.85E-05	3.09E-09	-0.05	-0.35	5768	0.27
		-0.39	0.58	6.73	-5.05	-2.26		
qm	Europe Civil Law	0.01	3.75E-054	7.37E-09	-0.02	0.25	2623	0.21
		0.20	0.89	1.62	-2.10	1.33		

Table 7

The Entrenchment and Incentive Effects of State Ownership in non-US Anglo Saxon Countries and European Civil Law Countries

Dependent Variable	Country Group	LS	VS	VS^2	S	FIN	n	Adj- R^2
qa	AS-non US	-1.32	1.55E-03	-2.14E-07	-0.05	-34.86	91	0.64
		-3.20	5.30	-3.85	-1.35	-3.91		
qa	Europe Civil Law	0.38	7.07E-05	-3.80E-10	-0.19	-1.51	515	0.32
		2.08	10.07	-6.18	-8.82	-3.59		
qm	AS-non US	-3.76	2.08E-03	-2.29E-07	-0.74	-21.67	73	0.71
		-2.15	1.98	-1.00	-5.40	-3.41		
qm	Europe Civil Law	-0.43	2.33E-05	2.07E-10	-0.01	-0.19	432	0.34
		-1.95	1.47	1.21	0.18	-0.34		

Figure 1
The Relationship between *IS* and *qa*, and *IS* and *qm* in the US
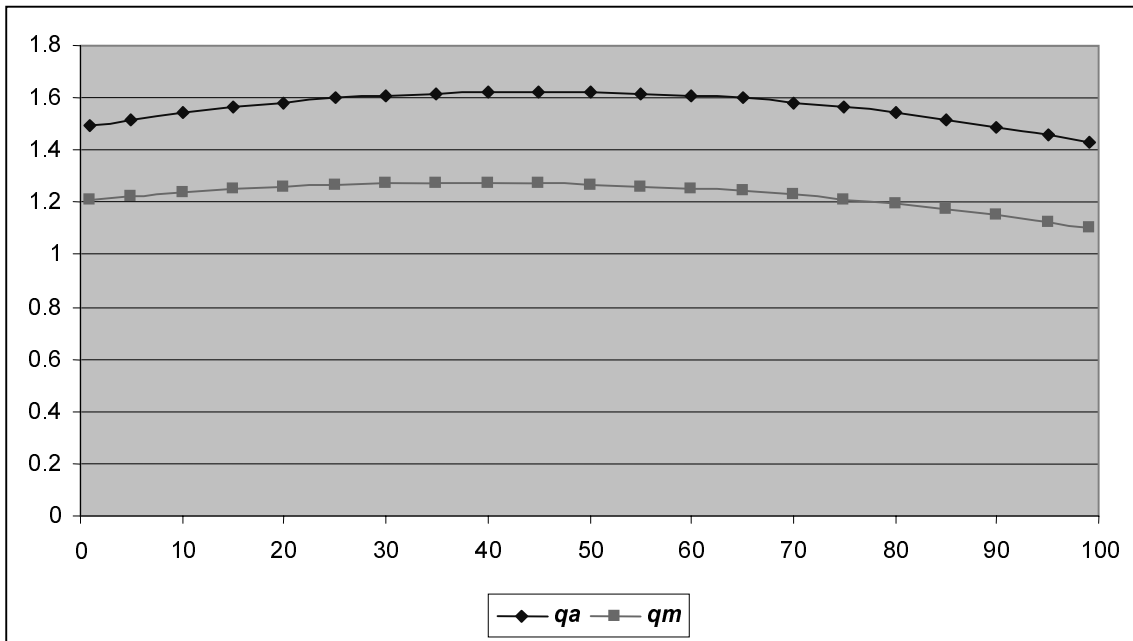
Figure 2
The Relationship between *LS* and *qa*, and *LS* and *qm* in the English-origin non-US sample
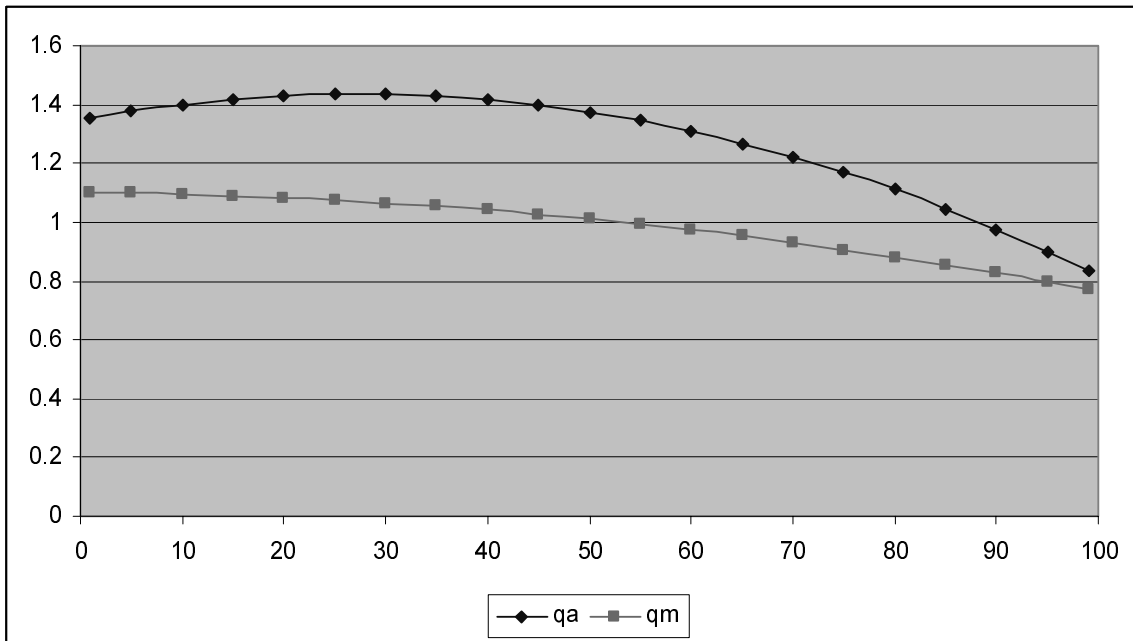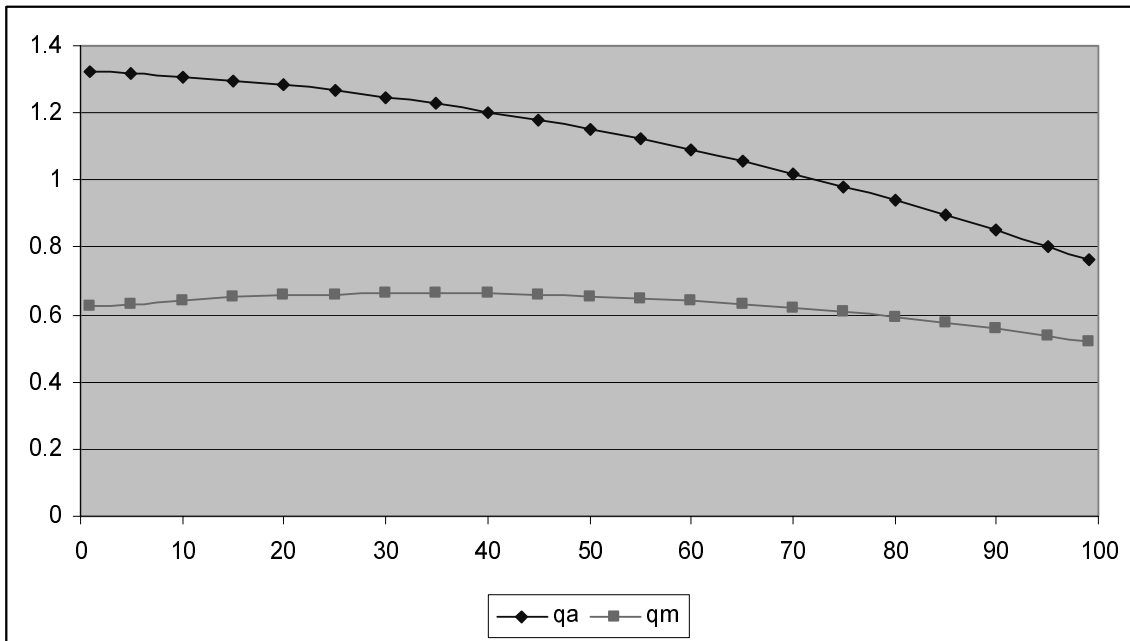
Figure 3
The Relationship between *LS* and *qa*, and *LS* and *qm* in the European Civil Law sample

Appendix: Definition of Variables

Tobin's q (qa) is defined as the ratio of the market value of a firm to its total assets (COMPUSTAT item 6) where the market value of the firm equals the market value of common equity (item 199 (share price at the end of the fiscal year) times item 25 (common shares outstanding)) plus the book value of preferred stock (items 56, 10, 130) plus the book value of short-term (9) and long-term debt (34).

Total investment is defined as the sum of income before extraordinary items (18), depreciation (14) and dividends (21), new debt (ΔD), new equity issues (ΔE), $R \& D$ expenditures (46) and advertising expenditures (45). New debt (ΔD) is the change in total debt since the previous period. Net new equity (ΔE) is sales (108) less purchases (214) of common and preferred stock. Missing values of $R \& D$ expenditures are approximated using $R \& D$-sales ratios at the 3-digit SIC code level from the FTC's Annual Line of Business Reports. Missing values of advertising expenses are approximated using 2-digit advertising to sales ratios from the 1990 IRS Reports on Corporation Returns.

Insider ownership, *IS,* is defined as the total number of shares held in aggregate by all officers and directors divided by the number of shares outstanding. Insider wealth, *VS,* is the value of the shares held by insiders and calculated by multiplying *IS* with the market value of equity. Size (*S*) is measured by the logarithm of total assets in Mn. USD. Institutional shareholdings, *IT*, are the mean combined (percentage) stake of institutions. *RD* is R&D expenditures divided by total sales. We deflate all variables by the CPI (1995=1.00).

Notes

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[1] This literature includes both the "managerial discretion" literature of the 1950s and 1960s and the more recent studies, which build on the principal/agent model. For surveys of these literatures see Marris and Mueller (1980), Shleifer and Vishny (1997).

[2] See, for example, Kamerschen (1968), Monsen, Chui and Cooley (1968), Radice (1971) and Palmer (1973).

[3] Gedajlovic and Shapiro (1998) also test for a relationship between performance and ownership concentration, but their results are difficult to compare with the other studies, since they do not distinguish among the identities of owners, and also interact ownership with diversification.

[4] Although our study is the first to test for a relationship between the value of insiders' shareholdings and q-type measures of firm performance, several studies have tested for a relationship between this variable and other measures of performance - like the returns to shareholders from takeovers, see Walkling and Long (1984), Lewellen et al. (1985), Firth (1991) and Shinn (1999).

[5] Data are for 382 German firms (Gugler and Yurtoglu, 2003a) and 300 Turkish firms (Yurtoglu, 2003).

[6] Claessens et al. (2000) do not report the correlation statistic for their sample and we lack the data to compute it.

[7] See in addition, Demsetz and Lehn (1985), Kole (1995, 1996), Loderer and Martin (1997), Cho (1998), Himmelberg, Hubbard, and Palia (1999), and Bøhren and Ødegaard (2001).

[8] Bronwyn Hall (1993) has found a positive relationship between R&D and the market value of firms in some time periods.

[9] See, for example, the large increase in leverage for a sample of active acquirers during the conglomerate merger wave of the 1960s (Weston and Mansinghka, 1971). The use of leverage was also great during the merger wave of 1984-1990 (Holmstrom and Kaplan, 2001).

[10] A negative relationship between insider ownership and leverage has been reported by Friend and Lang (1988), Jensen, Solberg and Zorn (1992), Bathala, Moon and Rao (1994), and Firth (1995). A positive relationship has been reported by Kim and Sorenson (1986),

Agrawal and Mandelker (1987), Amihud, Lev and Travlos (1990), Agrawal and Knoeber (1996), Berger, Ofek, and Yermack (1997), and Short, Keasey and Duxbury (2002).

[11] The definitions of these variables are detailed in the appendix.

[12] MSV figures are based on 371 Fortune 500 firms. If we restrict our sample to the largest 500 firms in terms of average size over the sample period, the mean and median values of *IS* are 11.39% and 4.40%, respectively.

[13] The reported intercept is the average *qa* of 26 2-digit industries. The equations include an intercept along with the full set of 26 industry dummies. By constraining the coefficients of the industry dummies to sum to zero, the intercept captures the average *qa* when *IS*=0, whereas the coefficients of the industry dummies are the deviations from this grand mean (Suits, 1984).

[14] MSV estimated a piece-wise linear regression rather than a cubic equation, but the pattern of signs on the three linear terms in their model corresponds to those in ours.

[15] The methodology for estimating marginal *q*s was first presented by Mueller and Reardon (1993). Recent applications include Mueller and Yurtoglu (2000), Gugler and Yurtoglu (2003b), Gugler, Mueller and Yurtoglu (2003a, 2003b, 2003c).

[16] The assumption of diminishing marginal returns on investment implies that our measure of marginal *q*, namely the returns on *total* investment divided by the cost of capital, should exceed 1.0.

[17] Eq. 1 expresses a firm's performance as a function of insider ownership and the other variables that are assumed to affect performance. Our measure of investment performance, *qm*, is estimated using the following equation:

$(M_t - M_{t-1})/M_{t-1} = -\delta + qm\, I_t/M_{t-1} + \mu_t/M_{t-1}$

Substituting from eq. (1) into this equation yields a series of interaction terms between a firm's investment in period *t* and the relevant explanatory variable from eq. (1). The reported coefficients in Table 2 are for these interaction terms.

[18] See Gugler, Mueller and Yurtoglu (2003b, 2003c).

[19] See, Mueller and Yurtoglu (2000), and Gugler, Mueller and Yurtoglu (2003c).

[20] For variants on this argument see, Berglöf and Perotti (1994) and Osano (1996).

[21] Some data, although not a lot, are available for Latin American countries that LLSV categorize as having civil law legal systems. The differences between Europe and Latin America in level of development, corruption and the like seem sufficiently great, however, that we have decided to confine our civil law sample to the European countries. For some evidence on the importance of stage of development for performance, see Gugler, Mueller and Yurtoglu (2003b).

[22] For further discussion and evidence of rent extraction by banks, see Sharpe (1990), Rajan (1992), Weinstein and Yafeh (1998), and McGuire (2003).

[23] These include, for example, Deutsche Bundesbahn and Deutsche Telekom of Germany, Air France and Gaz De France and Autostrade Spa of Italy.

[24] The exception to this statement is in eq. 3 of Table 7, where we have a very small sample.

[25] When all else fails, researchers often resort to lagged values of a variable as its instruments. This strategy does not seem appropriate in this case, however. The fraction of shares held by insiders varies quite slowly over time. Once the effect of last year's insider-ownership holdings on this year's holdings has been removed, there is not much left to do any explaining. For a somewhat related argument, see Zhou (2001).