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Multinationals Do It Better:

Evidence on the Efficiency of Corporations' Capital Budgeting[*]

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Abstract

With U.S. multinational enterprises playing increasingly important roles in the global economy, it is important to understand the efficiency of their capital budgeting decisions. We examine an unbalanced panel of 332 U.S. firms from 1992-2000. Using the deviation of a firm's estimated *marginal* Tobin's *q* from a benchmark as an indicator of effective resource allocation, we find that widespread multinationals make more efficient capital budgeting decisions. We also test whether this reflects the MNEs' investment locations, but do not obtain support for the hypotheses that they might be monitored by more agents or more successfully resist pressures from interest groups and governments.

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1. Introduction

Multinational firms have become an important conduit in the global allocation of investment funds. The United States has consistently been the single largest source of outward FDI flows, generating about one-fifth of total global outward FDI flows in recent years (UNCTAD, 2006). In the 1990s global FDI grew rapidly (from US$233 bn in 1990 to US$1,379 bn in 2000), and the total stock of U.S. direct investment abroad nearly tripled (from $2.2 trillion in 1990 to $6.3 trillion in 2000) as American multinational enterprises (MNEs) generated an increasingly large share of world GDP (6.8% in 1994 and 8.6% in 2000) (Mataloni, 2002; Mataloni and Yorgason, 2002).

Feldstein (1995) argued that FDI circumvents segmented national capital markets. Inflows of foreign capital, including FDI, are associated with improvements in the capital market efficiency of the host countries (e.g., Bekaert and Harvey, 2000; Henry, 2000a, b; Morck *et al.*, 2000; Rajan and Zingales, 2003; Li *et al.* 2004). With U.S. MNEs playing an increasingly large and important role in the global economy, it is important to understand if these firms are able to allocate capital efficiently. Accordingly, we investigate whether U.S.-headquartered MNEs and purely domestic U.S. enterprises (PDEs) differ significantly in the efficiency of their capital budgeting decisions.

We use the deviation of marginal Tobin's *q*, which is the ratio of the marginal change in market value to the unexpected marginal change in assets, from the appropriate benchmark as an indicator of the quality of a firm's capital budgeting decisions. For example, if the theoretical benchmark marginal *q* is 1.0, firms with estimated marginal *q*'s above (below) this level can be classified as under- (over-) investing. This two-stage economic methodology was developed by Durnev *et al*. (2004).

We improve this methodology in two ways. First, we use a random coefficients methodology to estimate marginal *q* (instead of OLS as in Durnev *et al.* (2004)) to incorporate explicitly firm heterogeneity. Second, in a second-stage regression, marginal *q*, an estimated coefficient, is used in modified form as a dependent variable to analyze the relationship between the efficacy of the firm's capital budgeting decisions and multinationality after controlling for other firm characteristics. In this second stage, we correct for potential heteroscedasticity by using a weighted generalized least squares methodology (e.g., Saxonhouse, 1976) instead of a general White correction for heteroscedasticity as in Durnev *et al.* (2004). Moreover, in our second-stage analysis we estimate the benchmark marginal *q* for MNEs and PDEs, and then use the difference between the estimated firm-specific marginal *q*'s and the benchmark marginal *q*'s to form the dependent variable.

We examine whether effective capital budgeting is associated with a firm's multinationality, firm characteristics such as corporate governance, or characteristics of the countries in which the firm invests. Our sample is an unbalanced panel dataset of 332 U.S. manufacturing firms from 1992-2000 for which we have reliable data as to their multinational presence. Manufacturing industries represent the bulk of U.S. FDI – both in terms of the dollar stock of outstanding FDI and in terms of new FDI made in the 1990s (Mataloni, 2002; Mataloni and Yorgason, 2002). Within our sample, as has been observed repeatedly in many other empirical studies, MNEs and PDEs differ markedly. Consistent with the international business literature, we find that MNEs are larger, invest more in research and development, are more diversified, and that MNEs and PDEs differ significantly with regards to measures of internal corporate governance.

MNEs inherently differ from PDEs in that they have operations in multiple countries. We therefore examine the relationship between a company's capital budgeting decisions and the protection of creditors' rights in the countries where it locates. The presumption is that financial communities in these locations augment home financial communities' monitoring. Also, for U.S. MNEs, investing in less developed countries could raise their bargaining power against special interest groups, including the local governments. However, we find no support for the monitoring or bargaining hypotheses.

The most important finding is that more effective capital budgeting is positively associated with multinationality even after controlling for the influences just described, and this effect is most pronounced for firms that are present in ten or more foreign countries. Moreover, this result appears to reflect greater restraints on over-investment and not reduced liquidity constraints that may reflect MNEs' being able to access multiple capital markets. Thus, we conclude that MNEs may well be intrinsically more capable at making firm value-enhancing capital budgeting decisions. We are unable to comment on whether capital budgeting efficiency causes multinationality or vice versa; rather, we simply investigate whether capital budgeting efficiency and multinationality are associated with one another, and we find that they are indeed significantly related.

In Section 2 we delineate the theoretical rationale for why MNEs and PDEs might differ in their ability to invest effectively. Section 3 introduces the method for measuring investment efficiency. The data are described in Section 4. Section 5 presents and analyzes the results from empirical testing, and their implications. Section 6 concludes.

2. THEORETICAL MOTIVATION

MNEs might differ systematically from PDEs in terms of the effectiveness of their capital budgeting decisions. Some of these differences could be a function of firm characteristics (e.g., firm size), yet much of this difference may simply be a function of the firm's multinationality itself. A MNE is present in at least two distinct operating environments (e.g., the U.S. and China), and this may expose the MNE to more diverse challenges. Theoretically, it is unclear whether MNEs should be expected to make more or less effective capital budgeting decisions than would PDEs.

2.1 MNEs May Have Better Management

To use capital effectively a firm needs capable, competent managers to collect and digest information efficiently, delegate responsibilities, evaluate performance, etc. The international business literature suggests that a firm becomes multinational because it has greater management capabilities (e.g., Buckley and Casson, 1976). Another possibility is that MNEs, compared to PDEs, may have better management capability simply because their sheer size and job diversity enable them to attract and retain more capable managers. *Ceteris paribus*, larger firms pay higher salaries (Brown and Medoff, 1989), and the higher compensation attracts higher quality workers and better aligns employer and employee interests. Alternatively, MNEs are able to offer skilled employees a wider array of growth opportunities. For all of these reasons, MNEs may be able to recruit and retain higher quality staff.

2.2 Agency and Information Asymmetry and Corporate Governance

2.21 Agency and Information Asymmetry

The above arguments notwithstanding, the complexity of a multinational corporate structure could overwhelm management. The complexity might also create room for managers to pursue agency behavior. For example, managers could deliberately mis-invest in order to entrench themselves (Shleifer and Vishny, 1989), over-invest for empire building (Jensen, 1986), including wasteful multinational expansions (Morck and Yeung 1992), or be excessively risk-averse to protect personal interests (John *et al*. 2008). Thus, relative to PDEs, MNEs are larger and more complicated firms that should have greater informational asymmetry and agency problems within and across firm boundaries. Hence, it is possible that MNEs invest less optimally than do PDEs.

Another reason why a firm might invest sub-optimally is that investor recognition of potential information asymmetry and agency problems leads investors to supply external financing to firms at a premium (Myers and Majluf, 1984), which could constitute a liquidity constraint. Firms with inadequate internal funds may curtail prematurely the size of their investments (Himmelberg *et al*. 2002), thereby inducing an upward bias to observed marginal *q*. MNEs are larger firms with greater internal capital markets, which can allow conglomerates to allocate resources more effectively based on cost-benefit analysis of the marginal investment opportunities available to each segment of the corporation (Maksimovic and Phillips, 2002). This could lead to a decreased deviation of observed marginal *q* from the appropriate benchmark for MNEs.

2.2.2 Corporate Governance

Adoption of stronger corporate governance measures can decrease inter- and intra-firm agency and information asymmetry problems (Shleifer and Vishny, 1997; Himmelberg *et al*. 2002), and should lead a firm to make more effective capital budgeting

decisions. Corporate governance measures can be classified as internal or external, and we examine both types. The internal and external corporate governance measures can develop simultaneously and in a mutually reinforcing manner. It is therefore desirable to incorporate both types of measures to capture the impact of corporate governance on the quality of corporate capital budgeting decisions. It is possible that MNEs and PDEs differ systematically in terms of the quality of their corporate governance, and that these differences alone may explain any systematic differences in the efficacy of their corporate capital budgeting decisions.

We look at three internal measures of corporate governance. First, a firm's bylaws on investor protection can give investors more power to monitor and discipline managers. Gompers *et al*. (2003) report that stronger investor protection is associated with higher firm value. Bebchuk *et al.* (2004) point out that a sub-section of the Gompers *et al.* (2003) measures that more closely capture internal constraints on managerial entrenchment appear to possess all of the reported effects.

Second, a board of directors monitors and advises the firm's senior management. Publicly traded firms are required to have a board of directors, but its structure varies across firms. A board of directors could be staggered (or classified) as directors are placed into different classes that serve overlapping terms (usually for three years). Firms often adopt staggered boards in order to deter hostile take-over attempts (Bebchuk *et al.*, 2002). A firm may adopt a staggered board in order to preserve the independence of outside directors, or to promote board stability by reducing potential annual turnover of board directors but Bebchuk *et al.* (2002) are unable to find empirical evidence

supporting these theories. Instead, staggered boards are associated with lower firm value (Bebchuk and Cohen, 2005), and deter takeover battles (Daines and Klausner, 2001).

Third, insider ownership (i.e., senior management's share holdings) can align managerial and shareholder interests. Large insider ownership could also be indicative of managerial entrenchment, thereby reducing the board's ability to monitor and discipline management. Moreover, high insider ownership may induce insiders to be excessively conservative in investing. Firm value and insider ownership are positively related when insiders own a small share of the firm and the convergence of interest theory dominates, but high levels of insider ownership reduce firm value as the entrenchment theory dominates (Morck *et al*. 1988, 1990; Demsetz and Villalonga, 2001).

Next, we look at one external measure of corporate governance: institutional ownership. In the U.S., large block holding by investors, particularly institutional investors, is associated with higher levels of monitoring (Shleifer and Vishny, 1986; Gillan and Starks, 2000). Institutional investors often have preferential access to top corporate managers, are more likely to attend annual shareholder meetings, or vote for boards of directors. Therefore, they may be able to press for more corporate disclosure, thus mitigating information asymmetry, and reduce the levels of agency problems, leading to better corporate investment decisions. By the same token, institutional investment could be a signal of transparency and better corporate governance in the sense that institutional investors are attracted to firms with such characteristics (Gompers and Metrick, 1997). Finally, institutional investment can favor large stable companies because fund managers pursue "safe" investment strategies. In this case, the institutional investors may not be active in monitoring and affecting management.

It is unclear whether MNEs have stronger investor protection measures in their bylaws and higher quality boards. It is likely the case that insiders in multinational firms own a smaller percentage of shares due to the sheer size of multinationals; but that does not necessarily mean that the insiders are less likely to be entrenched because other shareholders likely have diluted ownership too. Likewise, while we would expect that multinationals have more institutional investors because of their sheer size, we expect that the institutional investors may individually have diluted ownership too. Hence, theoretically it is not straightforward to make a prediction regarding whether multinationals have better or worse corporate governance than do purely domestic firms.

2.3 Host Country Characteristics

In addition to the above, there are additional influences on managers' capital budgeting decisions that are particularly relevant to multinationals. We examine three.

First, multinational firms have a physical presence in multiple capital markets, and that may give them an advantage in bypassing location-specific liquidity constraints. To the extent that there is some degree of international capital market segmentation, investment in a given country would be affected by the supply of capital within it (Feldstein and Horioka, 1980). A firm that is present in multiple locations and that has the ability to transfer funds internally and across national borders will be subject to fewer investment funding constraints (Feldstein, 1995; Desai *et al*. 2004). Thus, by virtue of being present in multiple geographic locations, and if international capital is indeed not perfectly mobile, MNEs may simply face looser liquidity constraints and thus be able to undertake more effective capital budgeting.

Second, to the extent that MNEs raise capital in multiple locations, they face external monitors of their corporate investment behavior in these locations. Thus, MNEs may be subject to more external monitoring than are their domestic counterparts. The monitoring capabilities of a particular agent are a function of the particular institutional environment from which it originates. A large law and finance literature has shown that countries with better protection for investors and creditors have more developed markets (e.g., La Porta *et al*. 1997) and more firm-specific information (e.g., Morck *et al*. 2000), and their investments are more responsive to growth opportunities (Wurgler, 2000). When more firm-specific information is available to investors, firms undertake more effective capital budgeting decisions (Durnev *et al*. 2004). Thus, MNEs that invest in countries with strong legal and financial systems may be monitored more effectively, and thereby make more effective capital budgeting decisions.

Finally, MNEs are footloose and may leverage this to bargain with different parties. For example, special interest groups (e.g., Greenpeace, labor unions) may exert sufficient pressure that a corporation is forced to adopt practices not consistent with firm value maximization. To the extent that a MNE is present in multiple locations, however, the firm may play different governments and special interest groups against one another. This would reduce, or offset, the host governments' and local special interest groups' ability to constrain MNEs' ability to invest for firm value maximization. Note, moreover, that this footloose effect ought to be more important if a multinational invests in countries (e.g., less developed countries) that have different economic and social interests than do its home country (e.g., in our empirical case the U.S.).

3. MODEL AND EMPIRICAL METHODOLOGY

Firms derive incremental value, which should be reflected in changes in the firm's market value, from each investment that they make. Due to diminishing returns to investment, the firm will eventually have a marginal investment project with a net present value of zero. If we define marginal *q* as the ratio of incremental firm market value created by (and divided by) the unexpected marginal investment, the optimal capital budgeting decision yields a marginal *q* equal to 1.0. Positive (negative) deviation of a firm's marginal *q* from 1 indicates under- (over-) investment.[1]

Distortions in the economic environment that surrounds the firm – e.g., due to taxes – may cause the optimal benchmark to differ from the theoretical benchmark of 1.0. When the estimated marginal *q* for a firm is above (below) the optimal benchmark, the firm likely under- (over-) invests, and the distance of the estimated marginal *q* from the benchmark could be an index for the efficacy of a firm's capital budgeting decisions. We follow the methodology developed by Durnev, Morck, and Yeung (2004) but extend it by using random parameters to estimate marginal *q*, and account explicitly for latent heterogeneity in subsequent analyses.

3.1 Marginal *q* Estimation[2]

The marginal *q* of firm *i* can be written as:

$$\dot{q}_i = \frac{\Delta V_{i,t}}{\Delta A_{i,t}} = \frac{V_{i,t} - E_{t-1}V_{i,t}}{A_{i,t} - E_{t-1}A_{i,t}} = \frac{V_{i,t} - V_{i,t-1}\left(1 + \hat{r}_{i,t} - \hat{d}_{i,t}\right)}{A_{i,t} - A_{i,t-1}\left(1 + \hat{g}_{i,t} - \hat{\delta}_{i,t}\right)}, \qquad [1]$$

[1] The current framework does not address the possibility that managers may have ex ante multiple possible investment types (e.g., high risk versus low risk investments), which investors fundamentally cannot observe, and choose to invest sub-optimally – e.g., when a manager deliberately ignores some value-enhancing risky investment opportunities for the sake of self-interest. This is the focus of John, Litov, and Yeung (2008).

[2] The derivation of the empirical specification for estimating marginal *q* reported in this sub-section is essentially borrowed from Durnev *et al.* (2004).

where $V_{i,t}$ is the market value, equity plus debt, of firm i at time t, and $A_{i,t}$ is the total assets of firm i at time t. E_{t-1} is the expectations operator, which uses all information available to the firm at time $t-1$. The unexpected change in firm value between periods $t-1$ and t is the difference between the new and old firm value minus the expected return from owning the firm, $V_{i,t-1}\hat{r}_{i,t}$, plus disbursements to investors, $V_{i,t-1}\hat{d}_{i,t}$ or $D_{i,t}$, including dividends, share repurchases, and interest expenses. Meanwhile the firm's unexpected change in assets is the difference in the new and old dollar value of assets minus the expected expenditures on capital goods, $A_{i,t-1}\hat{g}_{i,t}$, plus the expected depreciation, $A_{i,t-1}\hat{\delta}_{i,t}$.

The terms in equation [1] are cross-multiplied, rearranged and simplified so that:

$$\frac{\Delta V_{i,t}}{A_{i,t-1}} = \beta_{0,i} + \beta_{1,i}\frac{\Delta A_{i,t}}{A_{i,t-1}} + \beta_{2,i}\frac{V_{i,t-1}}{A_{i,t-1}} + \beta_{3,i}\frac{D_{i,t}}{A_{i,t-1}} + \delta_t P_t + u_{i,t}. \qquad [2]$$

In this equation, which is equivalent to equation 11 in Durnev *et al.* (2004), the regression coefficient $\beta_{1,i}$ is firm i's marginal q. Because all four coefficients in [2] may reflect firm heterogeneity, all coefficients are treated as random in empirical testing.[3] The random coefficients results were used to form the dependent variables for the second-round testing, explained in Section 3.3. A series of year fixed effects, P_t, are also included to reflect cyclical factors related to the U.S. or foreign economies or the U.S. dollar exchange rate that may affect all firms.

[3] All of the coefficients are estimated as $\hat{\beta}_j = \beta + \nu_{i,j}$, where i indicates firm (1…I), and j denotes coefficient number (0…3). This yields an estimate and variance for each coefficient, $\hat{\beta}_j$, and a series of firm-specific estimates of each coefficient, $\hat{\beta}_{i,j}$. See Greene and Hornstein (2006) for a detailed explanation of this methodology. We also tested the hypothesis that just some of the coefficients might be random, but likelihood ratio tests confirmed the intuition that all coefficients should be treated as random.

3.2 Caveats and Complications

The estimated marginal *q* could be biased if the change in firm value is related to new information about previous investments but is not related to new investments.

It is important for us to use a relevant benchmark in evaluating the efficiency of capital budgeting decisions. The relevant benchmark should reflect the representative investor's tax considerations. If a firm invests its earnings in capital assets in lieu of disbursements to shareholders, then the incremental value to investors is $(1-T_{CG})(\Delta V_{i,t})$, where T_{CG} captures the capital gains tax that the investor would pay upon selling the shares. For this incremental value, the value of forgone dividends is $(1-T_D)(\Delta A_{i,t})$, where T_D is the personal tax rate on dividends. Hence, the correct expression for $\dot{q}_{i,t}$ is $\frac{(1-T_{CG})(\Delta V_{i,t})}{(1-T_D)(\Delta A_{i,t})}$. Using this definition instead of that in equation [1], we obtain equation [3], which is equivalent to equation [12] in Durnev *et al.* (2004) and is analogous to equation [2] above.

$$\frac{\Delta V_{i,t}}{A_{i,t-1}} = \beta_{0,i} + \dot{q}_{i,t}\frac{1-T_D}{1-T_{CG}}\frac{\Delta A_{i,t}}{A_{i,t-1}} + \beta_{2,i}\frac{V_{i,t-1}}{A_{i,t-1}} + \beta_{3,i}\frac{D_{i,t-1}}{A_{i,t-1}} + \delta_t P_t + u_{i,t}. \qquad [3]$$

Thus, the estimated marginal, $\hat{q}_i$, is the real marginal q_i times the relevant tax factors:

$$\hat{q}_i = q_i * \left(\frac{1-T_D}{1-T_{CG}}\right). \qquad [4]$$

3.3 Measuring Capital Budgeting Efficiency Based on Marginal *q*

We use the distance between the estimated marginal *q* and its "optimal" value as an indicator for the efficiency in capital budgeting decision.[4] Since it is not clear what the '*optimality benchmark*' for the estimated marginal *q* ought to be after taking into consideration all the systematic biases, we use a non-linear technique to estimate

$$(\hat{q}_i - h)^2 = \alpha + \lambda L_i + \tau G_i + \eta C_i + \omega_{SIC} S_{SIC,i} + \varepsilon_i \,, \qquad [5]$$

where $h = [h_{MNE} * INTL] + [h_{PDE} * (1 - INTL)]$, such that ***h*** is then the benchmark marginal *q* estimated separately for MNEs and PDEs and INTL is a dummy variable denoting whether a firm is an MNE. In Section 4 we describe the variables used to measure multinationality (***M***), location institutions (***L***), corporate governance (***G***), and the control variables (***C***). S_{SIC} are fixed effects that capture each firm's primary two-digit SIC industry code. Finally, we assume that the disturbance term is iid.

Using weighted non-linear least squares, we estimate the vector of parameters ***b*** = $\{h_{MNE}, h_{PDE}, \alpha, \tau, \lambda, \eta, \omega\}$ simultaneously.[5] Because marginal *q* was estimated with varying degrees of precision, it is appropriate to use the White heteroscedasticity correction in estimation of [5].

The efficiency of a firm's capital budgeting decisions is inversely related to the deviation of the estimated marginal *q* from the estimated benchmark value, ***h***, for that category of firm (i.e., MNE or PDE). Accordingly, we can partition these deviations by the multinational status of firm *i* and thus compare $\frac{1}{N}\sum_i |q_i - h|$ and $\frac{1}{N}\sum_i (q_i - h)^2$.

[4] Note that while the optimal value for $q_{i,t}$ is 1.0, the optimal value for the estimated marginal *q*, $\hat{q}_{i,t}$, is not 1.0 because of the biases, as equation [4] illustrates.

[5] A complete explanation of this estimation procedure is in Appendix A.4 of Durnev *et al*. (2004).

3.4 Under- and Over-investment

We also conduct separate analyses of firms that under- and over-invest; that is, when $(\hat{q}_i - \hat{h})$ is above and below zero, respectively. In these analyses, the sample is split into two sub-samples according to whether $\hat{q}_i \gtrless \hat{h}$; that is, $(\hat{q}_i - \hat{h})^+$ and $(\hat{q}_i - \hat{h})^-$ are used as dependent variables in two separate regressions on under- and over-investing firms, respectively. We can adopt the independent variables in equation [5] but add indicators of various degrees of multinationality, ***M***; that is:

$$\left\{\begin{matrix}\left(\hat{q}_i - \hat{h}\right)^+ \\ \left(\hat{q}_i - \hat{h}\right)^-\end{matrix}\right\} = \alpha + \gamma M_i + \lambda L_i + \tau G_i + \eta C_i + \omega_{SIC} S_{SIC,i} + \varepsilon_i . \qquad [6]$$

This step allows us to understand whether MNEs and PDEs differ in the extent to which they under- and over-invest, and may shed further light on the relationship between multinationality and effective capital budgeting decisions. Since the $\hat{\beta}_{1,i}$ coefficients from the estimation of [3] are used to form the dependent variables $(\hat{q}_i - \hat{h})^+$ and $(\hat{q}_i - \hat{h})^-$, the Saxonhouse (1976) technique is used to weight all observations by the inverse of the standard error associated with the estimate of marginal *q*.

When performing separate analyses of under- and over-investing firms based on the estimated marginal *q*'s, it is appropriate to use a weighted truncated regression model. We use the truncated normal distribution, which has the properties that if the truncation is from below [above] (i.e., including only firms with estimated marginal *q*s above [below] $\hat{h}$), then the mean of the truncated variable is higher [lower] than the mean of the full sample, and the variance of the truncated sample is smaller than the variance of the full

sample.[6] Because the truncated variance is between 0 and 1, the marginal effect of each variable is smaller than that of the corresponding coefficient.

4. DATA AND VARIABLES

In this section, we report our data sample and sources, as well as variable construction; we provide the details in the appendix.

4.1 Data Sample and Sources

We examine publicly listed U.S. manufacturing firms (i.e., SIC codes 2000-3999) from 1992-2000. Our data are from the CRSP/Compustat Merged Database and the CRSP Daily Stocks Database.[7] We collect information on a firm's multinational status and location of its subsidiaries, both within the U.S. and abroad, from the Directory of Corporate Affiliations (DCA).[8] Many of the firms in the Compustat dataset cannot be found in the DCA dataset and are therefore removed from the dataset in order to have reliable information about each firm's multinationality.[9] The resultant dataset contains 332 manufacturing firms in 18 two-digit SIC industry codes.

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[6] Details of the truncated regression model are presented in Greene (2003).

[7] We use only the annual data because the quarterly data are not audited and are less comprehensive.

[8] The DCA is an independent survey that contacts every firm included in Compustat.

[9] We gratefully appreciate Wilbur Chung's generosity in sharing an algorithm for matching the Compustat and DCA data. It is unclear how to classify the multinationality of firms that appear in Compustat but not in DCA. Morck and Yeung (1991) treated these firms as PDEs on the theory that larger firms would be more likely to respond to surveys, and MNEs are generally larger than PDEs. We examined the annual reports for a subset of firms that appear in Compustat but not in DCA and found that a significant number of these firms were MNEs for some or all of the years. This suggests that it would be inappropriate to classify as PDEs all firms that are not in both datasets. Our investigation revealed that firms that drop out of the DCA dataset for one or more intervening years regularly change their multinationality status in the missing years. We also checked the annual reports for a number of firms that do appear in both datasets. Among this group of firms, all firms that reported themselves to be PDEs were indeed PDEs. However, those firms that reported themselves to be MNEs occasionally under-reported their true number of foreign subsidiaries. Consequently, the international dummy variable (INTL) appears to be accurate, but the country count variables may be downward biased estimates. Accordingly, we included only those firms that are in the DCA dataset for at least five consecutive years. If a firm finds it a burden to respond to a

Our independent and control variables are based on firm-year data, and we use the average value of each variable for the years on which the marginal *q* estimate is based.

4.2 Multinationality Variables and Location Measures

We create two categories of variables to capture a firm's degree of multinationality. The first category simply indicates the extent to which a firm is multinational, on the grounds that multinational firms with operations all over the world are different from those with operations only in a few selected countries. We use the average number of countries in which the firm is present over the period (CTY) as well as a dummy variable that indicates that a firm is present in ten or more foreign countries (CTY10). The median number of countries in which a firm has subsidiaries is 2.00 (1.43 if we exclude Canada and Mexico). Thus, we created the dummy variable for presence in more than ten foreign countries to pick up the right tail of the distribution. The dataset contains 109 PDEs and 223 MNEs.[10] The average multinational firm in the dataset was in 8.6 countries (with a standard deviation of 9.5). Roughly 7% of the firms in our dataset are present in only one foreign country while 20% or 27% of the firms are present in ten or more foreign countries, depending on which measure of managerial entrenchment (see Section 4.3) is used to define the sample.

The second category indicates for a multinational firm the characteristics of the host country's capital market development and legal system. We estimate the country-specific annual average value of the location measures, and then create firm-level

survey such as the DCA, then our requirement that firms be present in the DCA dataset for five or more consecutive years could induce a large firm bias in our dataset.

[10] It has been suggested that U.S. firms whose only international investments are in Canada and/or Mexico should be classified as PDEs because the creation of NAFTA has blurred these international boundaries for practical business purposes. While this paper classifies firms as MNEs even if their only investments are in Canada and/or Mexico, the empirical results reported herein are robust to classifying U.S. firms whose only non-U.S. investments are in Canada and/or Mexico as PDEs.

variables that indicate whether a particular firm is present in countries with high or low values of a particular location characteristic.[11] An extended network of subsidiaries may raise a multinational's ability to overcome location-specific liquidity constraints, particularly if the multinational is present in locations with highly developed capital markets. Also, a presence in locations with high protection for investor rights may subject a multinational to more investor monitoring. At the same time, an extended network of subsidiaries gives multinationals bargaining power vis-a-vis special interest groups. This would particularly be the case if a U.S. MNE is present in countries whose development characteristics are very different from those of the U.S.

The quality of the host country's legal system may affect a firm's creditors' ability to exercise their rights. Since the firms examined herein are all U.S.-headquartered and U.S.-incorporated, these firms usually raise equity in the U.S. but raise debt around the world. Accordingly, we use an index of creditors' rights, as developed by La Porta *et al*. (1998), as a proxy for the strength of the host country's legal system. The construction of this index is described in La Porta *et al*. (1998); it ranges from zero to four with higher values indicating greater protection of creditors' rights.[12]

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[11] The empirical results reported herein are robust to defining high/low as relative to the group's mean or median values for each measure. PDEs have the value zero for all of these location variables. Since most MNEs are present in a range of countries that encompasses both weak and strong financial and legal systems, we use the data on whether a firm has any presence in a country with weak or strong systems.

[12] In robustness tests, we also use the International Country Risk Guide's (ICRG) assessment of the law and order environment to measure the legal system's transparency and efficiency. We use the average value of ICRG's rule of law (ROL) measure for each month for the period examined. These data are recorded on a scale of zero to six, at half-point intervals, such that a lower score indicates a weaker legal environment. (La Porta *et al*. (1998) used the average value of the April and October ratings between 1982 and 1995, and rescaled the index to range from zero to ten.) Alternatively, a MNE may be more concerned with the efficiency of a country's judicial system. We therefore use Business International Corp.'s assessment of the "efficiency and integrity of the legal environment as it affects business, particularly foreign firms". This efficiency measure (EFF), as developed by La Porta *et al*. (1998), is the average value from 1980-1983 and is scaled from zero to ten, so that lower values indicate weaker efficiency.

Almost all MNEs (96.8%) have a presence in countries with relatively low protection of creditors' rights, and 82.9% of MNEs are present in countries with relatively high protection of creditors' rights. 17.1% of MNEs are present only in countries with low protection of creditors' rights, and 3.2% of MNEs are present only in countries with high protection of creditors' rights. We employ two dummy variables (CREDR-L and CREDR-H) to indicate whether a firm has any presence in one or more countries that have low or high protection of creditors' rights, respectively.[13,14]

All results reported herein are robust to the use of a measure of host country financial market development in lieu of a measure of the legal environment. We note that collinearity concerns preclude the simultaneous inclusion of both sets of host country location characteristics in empirical estimations.

4.3 Corporate Governance

Three measures of corporate governance are used: managerial entrenchment, insider ownership, and institutional investment.

CEOs' entrenchment is allegedly more likely in firms with a staggered board. The Investor Responsibility Research Center (IRRC) has information on corporate board

[13] The simple correlation coefficient between CREDR-L and CREDR-H is 0.733; given the relatively large numbers of observations in our sample, we do not believe that this creates serious problems of collinearity.
[14] In robustness tests not reported herein, we also include a measure of the country's capital market development as a proxy for a host country's ability to monitor MNEs: the average ratio of private credit by deposit money banks to GDP from 1992 to 1997, as collected by Levine (2001). Nearly all MNEs are present in countries with relatively high private credit (96.8%), and 69.4% of MNEs are present in countries with relatively low private credit. Just 3.2% of MNEs are present only in countries with low private credit, and 30.6% of MNEs are present only in countries with high private credit. We employ two dummy variables – PRIVC-L and PRIVC-H – to indicate whether a firm has any presence in one or more countries that have low or high private credit levels, respectively. The level of a host country's financial development is measured in two additional ways for use in other robustness tests. First, we use the average ratio of stock market capitalization held by small shareholders to gross domestic product (MKT) in the period 1996-2000 (La Porta *et al*. 2006). In addition, we use the logarithm of the ratio of the average number of domestic firms listed in a given country's financial exchanges to its population in millions (DOM) in the period 1996-2000 (La Porta *et al*. 2006).

composition for 170 firms in the dataset for 1997-2000. For firms not covered by IRRC, we retrieve information from corporate proxy statements and annual reports. 61% of firms examined herein had staggered boards (STAGBD), where our dummy variable takes the value 1 if a firm has a staggered board and 0 otherwise. The Bebchuk index (Bebchuk *et al.* (2004)) is the sum of six variables that reflect managerial entrenchment, which would be inversely related to investor ability to exercise their control rights.[15] We use the presence of a staggered board and the Bebchuk index as separate measures of managerial entrenchment. We note, however, that we have more firms in our sample when we use the staggered board variable.

Insider (INSIDER) and institutional (INSTIT) ownership data were obtained from Thomson Financial Network (TFN) for 327 firms in the dataset (out of 332). Among these firms, insiders owned an average of 2.0% of outstanding shares (median of 0.2%), and institutional investors owned an average of 35.2% of outstanding shares (median of 37.9%).[16] Effective capital budgeting decisions should be associated with higher institutional and insider investments.

4.4 Control Variables

First, we control for firm size. Larger firms are more likely to be multinational, and have higher sales, and are therefore likely to have greater internal financing capabilities. They may also have already explored most available profitable investment

[15] In robustness tests not reported herein we use the Gompers index (Gompers *et al.* (2003)), which ranges in value from 1 to 24, such that a lower number indicates higher protection for shareholder rights. The average firm in the dataset for which the Gompers index could be constructed had a Gompers index of 9.8 (median of 10.0), and the range was 3 to 16 (versus 2 to 18 in Gompers et al. (2003)). It is not possible to create the Bebchuk or Gompers indexes for the firms that are not tracked by the IRRC.

[16] If we exclude from analysis those firms that are closely held (i.e., insiders own at least 10% of shares outstanding), insider ownership averages 0.8% (median 0.1%), and institutional ownership, 35.3% (37.9%).

opportunities and are therefore more likely to over-invest (Jensen, 1986). Firm size is measured as the log of average property, plant, and equipment (PPE).

Second, firms that rely more heavily on intangible assets may have more information asymmetry between managers and investors and thus face more severe liquidity constraints. The ratio of research and development to tangible assets (RD) is used to proxy for this aspect of firm-specific information asymmetry.

Third, highly leveraged firms may face greater financing constraints and yet be subject to greater corporate governance oversight and therefore make more firm-value enhancing investments (Jensen, 1986).[17] Leverage, the ratio of long-term debt to total assets, is therefore used as a control variable (LEV).

Fourth, Jensen (1986) implies that firms with high cash flow may be more prone to over-invest, while firms with low cash flow may conserve resources for future usage (Himmelberg *et al*. 2002). Cash flow, which is measured as the ratio of income and depreciation to tangible assets, is therefore included as a control variable.

Fifth, we control for corporate diversification. Segment diversification and geographic diversification are often correlated. Diversified firms are more likely to have stable earnings (Lewellen, 1971), and are thus more likely to have access to external financing (Durnev *et al*. 2001). More diversified firms are more likely cash rich and have internal capital markets of their own (Stein, 1997). Yet, more diversified firms are more complex and present greater agency and information asymmetry problems to managers

[17] On the other hand, highly leveraged firms may have less leeway to invest because they might be operating under bankruptcy protection (Myers, 1977). However, the dataset used in this paper does not include any firm-years in which a firm was bankrupt, and so this theoretical possibility does not pertain.

and investors. Firm diversification is measured as the average number of different two-digit segments that are reported in Compustat Industry Segment Data (SSIC2).

In addition, industry-specific volatility may cause marginal *q* to be estimated with greater noise in some industries. This should be addressed through the use of random parameters estimation of marginal *q*. Moreover, industry-specific characteristics may cause firms in certain industries systematically to make more or less effective capital budgeting decisions. Two-digit industry fixed effects, S_{SIC}, are therefore included.

In robustness tests, not reported herein, we use firm sales (in lieu of PPE), the ratio of advertising to tangible assets (in lieu of RD), liquidity (in lieu of LEV), and prior diversification at the three-digit segment level (in lieu of SSIC2). All results reported herein are robust to the use of these control variables instead.

4.5 Time series variation

We believe that it is appropriate to evaluate the overall efficacy of a firm's average capital budgeting decision through usage of a single marginal *q* per firm as we cannot identify the true marginal capital budgeting decisions made by the firm in each fiscal year. To construct our dataset we used a minimum of five observations per firm to estimate marginal *q*. We believe that this number is sufficiently large to mitigate any problems caused by the possible aforementioned timing mismatch and yet is sufficiently small that it does not unnecessarily restrict our dataset's size. Durnev *et al.* (2004) use a similar rule: they require that there be a minimum of 5 observations per 3-digit industry as they estimated marginal *q* at the industry level.[18] However, while we estimate

[18] Note, Durnev *et al.* had a maximum of 10 observations per 3-digit SIC code whereas we have a maximum of 9 observations per firm.

marginal *q* for only those firms that are present in our dataset for at least five years, it may be interesting to use a 'sliding ruler' approach to look at time variation in marginal *q* for firms that are present for six or more years. Accordingly, we say that if each firm is present in the dataset for six or more years, then we can divide the total number of observations into multiple, overlapping periods of five years each.

4.6 Summary

Table 1 lists the variable definitions, and Table 2 lists univariate statistics and also comparisons between multinational and purely domestic firms. We observe that on average the firms in the sample appear to over-invest relative to the theoretical benchmark marginal *q*, 1.0. The raw data indicate that MNEs over-invest less than do their domestic counterparts, and that this difference is statistically significant. On the basis of this univariate comparison, as compared to the theoretical benchmark marginal *q* of 1.0, the MNEs are significantly more efficient at capital budgeting. Table 3 indicates the industry composition of the firms in our dataset, including the mean estimated marginal *q* by industry.

[Insert Table 1 here.]

[Insert Table 2 here.]

[Insert Table 3 here.]

MNEs and PDEs differ strongly in terms of most measures of corporate governance. MNEs have boards of directors that are more likely to be staggered and higher institutional ownership, and insignificantly higher Bebchuk indices and lower

insider ownership.[19] MNEs and PDEs are strikingly different across the board when we examine the control variables; these differences are well known. Relative to PDEs, the MNEs are larger, more diversified firms with higher investment in intangible assets. The MNEs have insignificantly lower leverage but higher cash flow.

5. RESULTS

In this section, we report our results on whether and how MNEs and PDEs differ systematically in the value-enhancing quality of their capital budgeting decisions, as we described in Sections 3.3 and 3.4. In addition, we also further our examination into how multinationality and other firm characteristics are related to over- and under-investing. All results reported herein are robust to the use of 1.0 or the median estimated marginal *q*, 0.724, in lieu of the estimated *h*'s.[20]

5.1 Do MNEs make more efficient capital budgeting decisions than do PDEs?

These results are reported in Table 4. The first clear result is that the estimated benchmarks for the optimal marginal $q - \hat{h}_{MNE}$ and $\hat{h}_{PDE}$ – are not significantly different from each other. Still, we use these estimates of the optimal marginal *q* in subsequent analyses in addition to 1.0, the theoretical value of *h* absent taxes and other distortions.

[Insert Table 4 here.]

As explained in section 3.3, we can use the estimated residuals from eq. [6] as measures of the quality of MNEs' and PDEs' capital budgeting decisions. We partition the sample into MNEs and PDEs and compare their respective average estimated

[19] This is true even if we exclude from our sample those firms that are closely-held.
[20] We also examined a range of *h*'s from 0.6 to 1.3, and our results are not sensitive to the particular value of *h* that is used.

deviation, $|q_i - h|$, as well as their respective average estimated squared deviation, $(q_i - h)^2$. These comparisons are reported at the bottom of Table 4. The results indicate that MNEs have consistently smaller average absolute deviations and average squared deviations than do PDEs. These results suggest that MNEs make more value-enhancing capital budgeting decisions than do PDEs, after taking into account firm characteristics (size, intangibles, leverage, cash flow, and diversification), corporate governance, and the legal strength of the foreign countries in which they are present.

5.2 Impact of Host Country Characteristics and Corporate Governance

As MNEs often raise debt worldwide, local financiers' monitoring could press MNEs to make more firm value-enhancing capital budgeting decisions. Also, MNEs are more footloose than are purely domestic firms, and they may be more able to resist pressures from special interest groups against firm value maximization (e.g., labor unions and politicians). The results in Table 4 show that these conjectures are not supported.

The regressions reported in Table 4 also shed light on the impact of corporate governance measures on the efficiency of capital budgeting decisions. We observe that, in a puzzling manner, more value-enhancing capital budgeting decisions are associated with managerial entrenchment, as captured by the presence of a staggered board or a high Bebchuk index. While this may indicate that job protection induces executives to invest in a more value-enhancing way, we note that this result contradicts the conventional results reported by others: e.g., Gompers *et al.* (2003). On the other hand, recent work – e.g., Bruno and Claessens (2006) and Aggarwal *et al*. (2006) – also report the presence of a very weak relationship between firm value and entrenchment indices. Bebchuk *et al*.

(2004) argue that their entrenchment index should work less well among larger firms because large firms experience fewer take-over threats due to their sheer size. Still, we admit that our results for the entrenchment indexes are puzzling. Finally, we find no relationship between effective capital budgeting and insider ownership. Moreover, we find that institutional ownership is associated with less value-enhancing capital budgeting decisions. The observed relationship between the efficiency of corporate capital budgeting decisions and the presence of institutional ownership may reflect the large size of the firms examined herein and their diffuse ownership.

Finally, we note that two of our four control variables are significant. Investment in intangible assets has statistically significant positive regression coefficients in all five models. Thus, firms with high levels of intangibles appear to make less value-enhancing capital budgeting decisions. In addition, all five models reveal that larger firms make more efficient capital budgeting decisions. We note that larger firms are also likely to have higher institutional ownership, and thus this result may provide evidence that institutional investors are good monitors.

5.3 Under- and Over-Investing Firms

We next conduct separate examinations of the firms that under- and over-invest (i.e., those firms with $(\hat{q}_i - \hat{h})$ greater than and less than zero, respectively). The independent variables include the location presence indicators, corporate governance variables, and control variables (as in Table 4) plus the number of foreign countries in which a firm is present and a dummy variable that identifies firms that are present in ten

or more foreign countries.[21] The results, reported in Table 5, reveal that there are behavioral asymmetries between the firms that under- and over-invest relative to both the pair of estimated *h*'s reported in Table 4 Models D and E and the theoretical benchmark marginal *q* of 1.0.

[Insert Table 5 here.]

The most important observation is that, after controlling for the institutional characteristics of where a firm invests, the firm's corporate governance, and other characteristics, widespread MNEs – i.e., those that are present in ten or more foreign countries – consistently make more effective capital budgeting decisions regardless of whether they under- or over-invest. Thus we conclude that the MNE advantage does not result from mitigating liquidity constraints.

Alternatively, we might conjecture that an MNE advantage could stem from extra monitoring by agents in the host countries or greater bargaining with parties in the host countries. We obtain mixed evidence. While we obtain support for the bargaining hypothesis when we control for the host country's legal system strength and examine only under-investing firms (Model 1), this relationship is not observed when we examine the subsample of firms for which we have data on the Bebchuk index (Model 2). Thus, in three of our four models, the estimated coefficients for the dummy variables indicating a company's presence in countries with high or low legal system development do not provide support for these conjectures. Specifically, we observe either that these coefficients are statistically insignificant (Models 1-4) or have the incorrect sign (Model

[21] Note that the location presence indicators and dummy variables that measure the extent of a firm's network of affiliates capture different aspects of a firm's multinationality. The latter reveals the extent of a firm's MNE expansion, while the former indicates the kinds of countries in which a firm is present.

1). While most firms appear to over-invest relative to the appropriate benchmark, to the extent that we observe support for the bargaining hypothesis, it is only among firms that under-invest. Thus we conclude that the observed MNE advantage in capital budgeting does not stem from better liquidity, monitoring, or bargaining capabilities.

Superior corporate governance could mitigate agency and informational asymmetry problems, and thus be associated with more effective capital budgeting. Our results show that in both the under- and over-investment subgroups there is no relationship between effective capital budgeting and the presence of a staggered board of directors. However, we observe a puzzling result that more value-enhancing capital budgeting decisions are associated with managerial entrenchment when we use the Bebchuk index (Model 4). While our results here are consistent with those reported in the previous section, they are not in line with the conventional finding that managerial entrenchment is incompatible with optimal firm behavior. It may be that managerial entrenchment is beneficial because job protection allows executives to be less risk avoiding and thus pursue more value-enhancing investment. However, Bebchuk *et al.* (2002) found no empirical support for this argument.

Second, we find that insider ownership mitigates over-investment (Models 3 and 4) and is insignificantly associated with under-investment. When insider ownership is high, insiders, to reduce personal risk exposure to the firm, may want to curtail further corporate investment, leading to less over-investment and more under-investment.

Another possible motive is control: if the firm continues to expand, it will need to raise more equity, thus diluting insiders' control.[22]

Finally, we obtain limited evidence that less effective capital budgeting is associated with institutional investment among firms that over-invest (Model 4). Given that our larger dataset (used in Models 1 and 3) did not show any relationship between capital budgeting and institutional investment, we are unclear whether to place much stock in this result. While institutional investment is generally associated with more effective corporate behavior (e.g., Shleifer and Vishny, 1986; Gompers and Metrick, 1997; Gillan and Starks, 2000), it is possible that an individual institutional investor's power is diluted when it invests in a large firm with diffuse ownership, such as those examined herein. In such an instance, it may not be appropriate to expect the institutional investors to monitor the firm carefully (Coffee, 1991; Gillan and Starks, 2003).

5.4 Time Series Variation

When we use the 'sliding ruler' approach to partition each firm's time series into overlapping periods of five years, we obtain results that are consistent with those reported above. First, consistent with the general stock market trends of the 1990s, we observe time variation in estimated marginal q that is consistent with proportionately greater increases in firm valuations than in firm assets throughout the time period (see Table 6).

[Insert Table 6 here.]

Second, we preserve our original results regarding the significance of multinationality. To show that the multinational advantage in capital budgeting decisions

[22] The results reported herein are robust to excluding the twenty firms in which insider ownership exceeded 10% and could thus be considered closely-held.

is robust across time periods, we re-estimated [5] using the "sliding ruler" estimates of marginal q for each overlapping period of five or more years in the time period 1992-2000 to obtain a new estimated pair of h's for each time period (e.g., 1992-1996, 1992-1997, etc.) for each of our two measures of managerial entrenchment. Second, we used these new estimated marginal q's and h's to form the dependent variable in [6]. When we estimated [6] for each of our four models, we observed that the coefficients on the two focal measures of multinationality – country count and a dummy for presence in more than 10 foreign countries – retained the expected signs and significance levels in most tests, as is shown in Table 7.

[Insert Table 7 here.]

5.5 Alternative measures of multinationality

Our key independent variables, the country count and an indicator variable for presence in more than ten foreign countries, reflect the degree of a firm's multinationality. In alternative tests not reported herein, we use other measures of multinationality based on the country count variable. Our key results remain: efficient capital budgeting decisions are strongly and significantly associated with multinationality, particularly widespread multinationality.

Alternatively, it might be important to examine not the number of countries in which a firm operates but the number of subsidiaries that the firm has abroad. For example, some foreign markets may be considered to be small because of the relative market size or comparative advantages gained from operating there. On the other hand, other foreign markets might be large or generate substantial scale economies for the multinational enterprise. To serve a large market effectively, a multinational might set up

multiple subsidiaries; but the same multinational might choose to set up only a single subsidiary in a smaller country and import additional inputs or goods as needed. While our country and subsidiary count variables are highly correlated, we strongly believe that both variables, particularly the subsidiary count, are downward biased estimates of the actual numbers. Nonetheless, all results obtained using variables based on country counts were replicated using variables based on subsidiary counts.

6. CONCLUSION

In this paper we examined the relationship between the quality of a firm's capital budgeting and multinationality. This is an important topic because of the role that MNEs play in allocating capital globally, and the rapid growth of U.S. FDI outflows in recent years. By their sheer size and presence in multiple markets, MNEs likely face reduced liquidity constraints as compared with the constraints faced by purely domestic firms. Yet, compared to purely domestic firms, MNEs could have greater agency and information asymmetry problems. At the same time, they may be subject to close scrutiny by institutional investors and investors in multiple capital markets. Finally, MNEs are more "footloose" than are purely domestic firms, and are therefore more able to resist pressures from special interest groups in pursuing firm value maximization. In our empirical investigation, we therefore explicitly control for corporate governance measures such as managerial entrenchment, insider ownership, and institutional investment. We also explicitly link the quality of capital budgeting decisions with the creditor protection system of the countries in which a multinational invests.

We find that more effective capital budgeting decisions are associated with managerial entrenchment as measured using the Bebchuk index but less so with staggered

boards. Insider ownership generally is linked to restraints on investment. Institutional ownership is not related to more effective capital budgeting decisions.

After controlling for these corporate governance factors, we still find that MNEs make more value-enhancing capital budgeting decisions than do purely domestic firms. Moreover, their better capital budgeting decisions are not due to just their likely lower liquidity constraints. Relative to purely domestic firms, MNEs exhibit not just less under-investment, but also less over-investment. Moreover, MNEs that are present in ten or more foreign countries appear to make the most efficient capital budgeting decisions.

The remaining puzzle is what may explain the greater efficacy of multinationals' capital budgeting decisions. We could not find support for the idea that the advantage stems from the possibility that multinationals are monitored by agents in countries with strong creditor rights. Nor can we find any support for the idea that multinationals are more footloose and better able to hold special interest groups at bay, thus enabling the corporation better to pursue firm value maximization.

Our results thus suggest that multinationals may be intrinsically better-managed firms. These results are consistent with a number of previous findings:[23] Most directly, Bloom and Van Reenen (2007a, 2007b) find that multinational firms have stronger managerial skills; this is true both in general and when examined in the context of corporate informational technology practices. In addition, Rajan and Wulf (2006) show that senior corporate management are now responsible for overseeing more personnel and lines of business than before. Further, Brown and Medoff (1989) found that larger, more complex firms may be able to recruit and retain higher quality employees. And MNEs

[23] We thank a referee for recommending more explanation of this point.

are significantly larger and more complex than are PDEs, as we find in our sample and as Buckley and Casson (1976) found far earlier.

The implication is that MNEs are good conduits for directing international real investment flows. In light of the increasingly important role that U.S. MNEs play globally, this appears to be a positive finding as FDI is associated with improved capital market efficiency in host countries (e.g., Bekaert and Harvey, 2000). Still, future research may allow us and/or others to explore further whether multinationals are intrinsically better-managed firms and whether the implication is justified.

APPENDIX

A.1 Procedure for Estimating Marginal Tobin's *q*

We estimate $V_{i,t}$ and $A_{i,t}$ as:

$$V_{i,t} = P_t(CS_{i,t} + PS_{i,t} + LTD_{i,t} + SD_{i,t} - STA_{i,t}) \qquad [A1]$$

$$A_{i,t} \equiv K_{i,t} + INV_{i,t} + P_t STA_{i,t}, \qquad [A2]$$

where

$CS_{i,t}$ is the market value of common shares outstanding (CRSP's SHROUT) multiplied by the end of fiscal year price (CRSP's PRC).

$PS_{i,t}$ is the estimated market value of preferred shares outstanding (Data19) over the Moody's Baa preferred dividend yield. The Moody's Baa preferred dividend yield is available online at http://research.stlouisfed.org/fred/data/irates/baa.

$LTD_{i,t}$ is total long-term debt (Data9).

$SD_{i,t}$ is debt in current liabilities (Data34), the total amount of short-term notes and the current portion of long-term debt that is due in one year, less the total amount of short-term notes (Data206).

$STA_{i,t}$ is total current assets (Data4), and is included in the estimation of firm assets, $A_{i,t}$, in order to reflect the possibility of corporate spin-offs or divestitures.

P_t is the inflation adjustment using the GDP deflator, which is available online at http://research.stlouisfed.org/fred/data/ppi/ppifgs.

$K_{i,t}$ is the market value of the firm's PP&E, which is calculated using current and historical data on capital spending (Data7).

INV is calculated using total inventory (Data3) and LIFO reserve (Data240). When a firm uses FIFO accounting, inventory is Data3. However, when a firm uses LIFO accounting, inventory is Data3 + Data240.

In robustness tests, $V_{i,t}$ and $A_{i,t}$ are rewritten as:

$$V_{i,t} = P_t(CS_{i,t} + PS_{i,t}) \qquad \text{[A1']}$$

$$A_{i,t} \equiv K_{i,t} + INV_{i,t} + P_t STA_{i,t} + RD_{i,t} + ADV_{i,t}, \qquad \text{[A2']}$$

where

$RD_{i,t}$ is the ratio of research and development (Data45) to tangible assets (Data7 plus inventory).

$ADV_{i,t}$ is the ratio of advertising (Data46) to tangible assets (Data 7 plus inventory).

[A1'] is used to estimate firm value based only on firm equity, while [A2'] includes intangible assets in the estimation of firm assets.

The market value of property, plant, and equipment (PP&E) is calculated using a recursive algorithm. This is necessary because historical cost accounting does not adjust

properly for inflation. All PP&E figures are converted to 1982 dollars using P_t, the fractional change in the seasonally adjusted producer price index (PPI) for finished goods published by the U.S. Department of Labor, Bureau of Labor Statistics.[24] We assume straight-line depreciation of 10% per annum. PP&E in year *t+1* is PP&E from year *t* less 10% depreciation plus current capital spending, denoted $\Delta X_{i,t+1}$, which is deflated to 1982 dollars. More generally, we use the recursive equation:

$$K_{i,t+1} = (1-\delta)K_{i,t} + \frac{\Delta X_{i,t+1}}{\prod_{\tau=0}^{t+1}(1+P_\tau)}. \qquad \text{[A3]}$$

When fewer than ten years of historical observations are available per firm, we begin the calculation with the first available year of data. We exclude all firms for which we are unable to obtain at least five historical observations. We use an analogous method to estimate the market values of research and development (RD) and advertising (ADV) for use in estimation of [A1'] and [A2']. To ensure consistency in estimation, all variables used in estimating marginal *q* are also deflated to 1982 dollars.

When a firm reports inventory using FIFO accounting, the market and book values of inventory are the same. However, when a firm uses LIFO accounting, the LIFO adjustment can be used to derive the market value of inventory.

Finally,

d is total cash disbursements, estimated as the sum of cash dividends on common and preferred stock (Data21 and Data19), purchases of common and preferred stock (Data115) to capture share repurchases, and interest expense (Data15).

$G_{i,t}$ is goodwill (Data204).

[24] If the first observation for a firm is a different year, we use that as the firm's base year instead.

Four versions of [3] are estimated using each of the definitions of $V_{i,t}$ and $A_{i,t}$, and the empirical results reported herein are qualitatively similar to those obtained with the alternate specifications of $V_{i,t}$ and $A_{i,t}$.

A.2 Procedure for Constructing the Dataset

We discard duplicate entries for preferred stock, class B stock, and the like by discarding entries whose CRSP CUSIP issue number begins with numbers other than 10 or 11. We retain only those manufacturing firms (i.e., SIC codes 2000-3999) that are both U.S.-headquartered and U.S.-incorporated. When Compustat reports a value as 'insignificant', we set it to zero.

To ensure that shareholders are potentially well-informed about the firm, that the firm's financial reports are stable, and that extreme noise is not in our data, we exclude firm-year observations in which the firm's (i) value or assets changed by more than 300% in absolute value; (ii) annual sales were less than US$25 mn; (iii) stock was traded on fewer than 60 days; and (iv) average Tobin's Q was greater than 5.0. Re-running our tests without these filter rules does not qualitatively change our results. While we included firms in the dataset if and only if they were included in the DCA for at least five consecutive years in the period 1993-1999, the sample average is 7.2 observations (out of a maximum of 9). Of the 2,399 firm-years analyzed herein, only two firm-years included the code for a significant merger/acquisition; all empirical results reported herein are robust to the exclusion of these two firms.

A.3 Control Variables

Firm size is measured as log of average sales (Data12) and log of average PP&E.

Firm-specific volatility is captured using three measures: the ratio of research and development expenditure (Data45) to tangible assets (the sum of Data7 and inventory)[the ratio of advertising (Data46) to tangible assets; and average Tobin's *q*, the ratio of firm value to firm assets using the formulas [A1] and [A2] and operationalized as described in Appendix A.1. The latter two measures are used in robustness tests.

Financing constraints are tested in two methods: Leverage is the ratio of long-term debt (Data9) to tangible assets. Alternatively, liquidity is the ratio of average current assets (Data4) to average PP&E. Liquidity is used in robustness tests.

Prior corporate diversification is measured as the number of 2-digit SIC segments in which the firm operates. In robustness tests we use the count of 3-digit SIC segments.

Cash flow is measured as the ratio of income (Data18) and depreciation (Data14) to tangible assets.

A.4 Corporate Governance Variables

Three measures of corporate governance are used in the regression analyses. First, the Investor Responsibility Research Center (IRRC) provided data on firm-level governance provisions for 172 firms for 1993, 1995, and 1998. The Bebchuk index was constructed following the Gompers *et al.* (2003) and Bebchuk *et al.* (2004) methodologies. We use the average value of this index for the firm over the period.

Second, the percentage of board directors who are independent (IND) is measured as the average ratio of independent directors to board size over the period. Board size and composition data were obtained from IRRC when possible, and firm proxy statements and annual reports otherwise.

Finally, data on insider and institutional ownership was extracted from Thomson Financial Network. If Thomson had no data, the variable value was assumed to be zero. Twenty-seven observations had reported institutional ownership exceeding 100%, and an additional six observations reported insider plus institutional ownership exceeding 100%; these thirty-three observations were excluded. As a result insider and institutional ownership data were available for 327 firms in the dataset. Insider ownership (INSIDER) is the average ratio of the sum of all shares owned by the top management of the firm (i.e., CEO, CFO, COO, and CTO) to all shares outstanding over the period. Institutional ownership (INSTIT) is the average ratio of the sum of all shares owned by institutional investors to all shares outstanding over the period.

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Table 1: Definitions of Variables

Variable		Definition
Marginal *q*		
Marginal *q*	Q_RCM	A coefficient in the regression of the change in market value of a firm on an unexpected change in the stock of capital goods (with all variables scaled by the lagged value of the firm's sto of capital goods) and year fixed effects using annual data from 1992 through 2000. The firm's value and tangible assets are defined using [A3] and [A4], respectively. Assets are calculat as the sum of the market value of property, plant and equipment, as defined using the recursive formula [A5], inventory, and short-term assets.
M: Multinationality		
International dummy	INTL	The average of an annual dummy variable for whether a firm had any international presence in each year. This variable takes the value of 1 for each year in which the firm reported any foreign presence to the DCA.
Country count	CTY	The average number of countries in which the firm operates (in addition to the U.S.) in each year. This variable is the sum of the number of countries in which the firm reported a foreign presence to the DCA.
L: Host Country Characteristics		
Low creditors' rights country presence dummy	CREDR-L	The average of annual dummy for corporate presence in a country with a low value of creditors' rights, as measured by LLSV (1998).
High creditors' rights country presence dummy	CREDR-H	The average of annual dummy for corporate presence in a country with a high value of creditors' rights, as measured by LLSV (1998).
G: Corporate Governance		
Staggered board of directors	STAGBD	The average of annual dummy for staggered board of directors. Data obtained from IRRC when available, else from company annual reports.
Bebchuk index	BEBCHUK	The average number of corporate governance provisions in Bebchuk index of managerial entrenchment. Data obtained from IRRC.
Insider ownership	INSIDER	The average percent of total firm shares outstanding owned by insiders, using data obtained from Thomson Financial Network.
Institutional Ownership	INSTIT	The average percent of total firm shares outstanding owned by institutions, using data obtained from Thomson Financial Network.
C: Control Variables		
Property, plant and equipment	PPE	The log of average annual property, plant and equipment (PP&E), US$mn; estimated using the recursive formula [A5].
Research and development	RD	The average ratio of research and development expenditure (R&D) to tangible assets, where tangible assets are estimated using [A4].
Leverage	LEV	The average ratio of long-term debt to tangible assets, where tangible assets are estimated using [A4].
Cash flow	CASHFLOW	The average ratio of income and depreciation to tangible assets, where tangible assets are estimated using [A4].
Corporate diversification	SSIC2	The average number of 2-digit SIC codes in which the firm operates

Table 2: Univariate statistics

This table reports the univariate statistics of the variables, as defined in Table 1. The sample is an unbalanced panel of 332 U.S. manufacturing firms for which we could obtain all necessary data for a minimum of five consecutive years during the period 1992 to 2000. *** denotes significance at the 1% level; ** at the 5% level; and * at the 10% level.

	All Firms					MNEs					PDEs					T-test of the means
Variable	**Mean (S.D.)**	**Median**	**Min**	**Max**	**Number of Obs**	**Mean (S.D.)**	**Median**	**Min**	**Max**	**Number of Obs**	**Mean (S.D.)**	**Median**	**Min**	**Max**	**Number of Obs**	**MNE vs. PDE**
Marginal *q*																
Q_RCM	0.765 (0.422)	0.724	-0.299	2.771	332	0.796 (0.398)	0.762	-0.243	2.721	223	0.702 (0.463)	0.686	-0.299	2.771	109	1.821*
M: Multinationality																
INTL	0.622 (0.461)	1.000	0.000	1.000	332	0.926 (0.183)	1.000	0.200	1.000	223						
CTY	5.791 (8.809)	2.000	0.000	56.286	332	8.621 (9.549)	4.571	0.200	56.286	223						
L: Host Country Characteristics																
CREDR-L						0.968 (0.175)	1.000	0.000	1.000	222						
CREDR-H						0.829 (0.378)	1.000	0.000	1.000	222						
G: Corporate Governance																
STAGBD	0.606 (0.483)	1.000	0.000	1.000	330	0.648 (0.472)	1.000	0.000	1.000	223	0.517 (0.496)	1.000	0.000	1.000	107	2.281**
BEBCHUK	2.413 (1.207)	2.500	0.000	5.000	182	2.511 (1.161)	2.667	0.000	5.000	141	2.073 (1.315)	2.000	0.000	4.333	41	1.926*
INSIDER	0.020 (0.053)	0.002	0.000	0.366	327	0.019 (0.050)	0.002	0.000	0.299	220	0.022 (0.060)	0.000	0.000	0.366	107	-0.532
INSTIT	0.349 (0.312)	0.374	0.000	0.940	327	0.412 (0.317)	0.477	0.000	0.940	220	0.221 (0.260)	0.053	0.000	0.879	107	5.771***
C: Control Variables																
PPE	5.407 (1.811)	5.152	1.076	11.122	332	5.836 (1.833)	5.718	1.076	11.122	223	4.530 (1.410)	4.402	1.699	8.471	109	7.156***
RD	0.040 (0.060)	0.017	0.000	0.378	332	0.045 (0.059)	0.026	0.000	0.378	223	0.030 (0.061)	0.000	0.000	0.360	109	2.206**
LEV	1.726 (0.904)	1.609	0.439	8.907	332	1.673 (0.822)	1.607	0.439	8.907	223	1.835 (1.047)	1.619	0.461	6.341	109	-1.418
CASHFLOW	0.140 (0.076)	0.138	-0.352	0.491	332	0.143 (0.068)	0.139	-0.090	0.443	223	0.133 (0.091)	0.130	-0.352	0.491	109	1.051
SSIC2	1.584 (0.761)	1.125	1.000	5.875	332	1.653 (0.809)	1.250	1.000	5.875	223	1.442 (0.631)	1.000	1.000	3.500	109	2.596***

Table 3: Industry composition of firms in dataset
This table reports the number of firms in our dataset in each two-digit SIC code classification.

Two-digit SIC code	Industry name	Number of firms	Mean estimated marginal q
20	Food and kindred products	21	0.779
22	Textile mill products	10	0.646
23	Apparel and other finished products made from fabrics and similar materials	5	0.744
24	Lumber and wood products, except furniture	7	0.683
25	Furniture and fixtures	7	0.792
26	Paper and allied products	18	0.721
27	Printing, publishing and allied industries	12	0.753
28	Chemicals and allied products	41	0.919
29	Petroleum refining and related industries	12	0.823
30	Rubber and miscellaneous plastics products	18	0.800
32	Stone, clay, glass, and concrete products	10	0.740
33	Primary metal industries	24	0.775
34	Fabricated metal products, except machinery and transportation equipment	21	0.655
35	Industrial and commercial machinery and computer equipment	38	0.791
36	Electronic and other electrical equipment and components, except computer equipment	36	0.775
37	Transportation equipment	22	0.546
38	Measuring, analyzing, and controlling instruments; photographic, medical and optical goods; watches and clocks	25	0.752
39	Miscellaneous manufacturing industries	5	0.942

Table 4: Non-linear estimation of benchmark marginal *q*, including firm-level control variables, corporate governance characteristics, and host country characteristics

This table reports non-linear maximum likelihood coefficients for the estimation of $(\hat{q}_i - h)^2 = \alpha + \lambda L_i + \tau G_i + \eta C_i + \omega_{SIC} S_{SIC,i} + \varepsilon_i$, where $h = [h_{MNE} * INTL] + [h_{PDE} * (1 - INTL)]$ such that $\boldsymbol{h}$ is then the benchmark marginal q estimated separately for MNEs and PDEs as INTL is a dummy variable denoting whether a firm is an MNE. The vector L contains legal system measures, defined here as creditor's rights; the vector G contains three corporate governance measures – the presence of a staggered board or the Bebchuk index, insider ownership, and institutional ownership; and the vector C contains five control variables, PPE, R&D, leverage, cashflow, and prior corporate diversification (SSIC2). In Model A we include only the control variables; in Models B and C we include the control and corporate governance variables, including staggered board as a measure of managerial entrenchment (B) and the Bebchuk index (C); in Models D and E we include also the legal system measures. Finally, the vector S_{SIC} are fixed effects that capture each firm's primary two-digit SIC industry code, and we assume that the disturbance term is iid. Refer to Table 1 for variable definitions. *** denotes significance at the 1% level; ** at the 5% level; and * at the 10% level.

		A	B	C	D	E
Benchmark value of marginal *q*						
MNEs: $\boldsymbol{h_{MNE}}$		0.957***	0.952***	0.886***	1.022***	0.882***
		(0.078)	(0.082)	(0.128)	(0.096)	(0.145)
PDEs: $\boldsymbol{h_{PDE}}$		0.854***	0.891***	0.999***	0.892***	1.002***
		(0.104)	(0.096)	(0.119)	(0.097)	(0.119)
L: Legal system strength: Creditors' rights						
- any low (CREDR-L)					0.143	0.032
					(0.111)	(0.103)
- any high (CREDR-H)					0.003	-0.060
					(0.047)	(0.058)
G: Corporate Governance						
Staggered boards (STAGBD)			-0.079*		-0.083*	
			(0.044)		(0.044)	
Bebchuk index (BEBCHUK)				-0.068**		-0.070**
				(0.028)		(0.028)
Insider ownership (INSIDER)			-0.211	-0.025	-0.212	-0.121
			(0.453)	(0.756)	(0.452)	(0.757)
Institutional ownership (INSTIT)			0.099*	0.230***	0.091	0.235***
			(0.059)	(0.081)	(0.061)	(0.083)
C: Control Variables						
PPE		-0.020*	-0.019*	-0.030*	-0.020*	-0.029*
		(0.012)	(0.011)	(0.017)	(0.011)	(0.017)
Research & development (RD)		1.705**	1.727**	1.349*	1.731**	1.391*
		(0.712)	(0.704)	(0.732)	(0.718)	(0.742)
Leverage (LEV)		0.020	0.039	0.057	0.038	0.054
		(0.026)	(0.026)	(0.037)	(0.026)	(0.037)
Cash flow (CASHFLOW)		0.347	0.314	-0.004	0.331	0.049
		(0.283)	(0.286)	(0.489)	(0.288)	(0.489)
Prior diversification (SSIC2)		0.012	0.005	-0.001	0.004	0.002
		(0.023)	(0.023)	(0.024)	(0.023)	(0.025)
Industry Fixed Effects?		No	No	No	No	No
Log-Likelihood		-115.861	-106.168	-49.163	-105.347	-49.072
Number of Obs.		332	325	170	324	169
$\frac{1}{N}\sum_i \lvert q_i - h \rvert$	MNEs	0.328	0.326	0.295	0.368	0.343
	PDEs	0.365	0.376	0.437	0.377	0.439
	t-test of the means	1.038	1.391	2.022**	0.245	1.366
$\frac{1}{N}\sum_i (q_i - h)^2$	MNEs	0.183	0.183	0.158	0.210	0.189
	PDEs	0.236	0.241	0.340	0.241	0.342
	t-test of the means	1.078	1.198	1.721*	0.638	1.456

Table 5: Separate analyses of efficacy of capital budgeting decisions among under- and over-investing firms, including host country legal system strength, corporate governance characteristics, and firm-level control variables

The dependent variable, $(\hat{q}_i - \hat{h})$, measures the efficiency of a firm's corporate capital budgeting decisions relative to the appropriate theoretical benchmark marginal *q*, *h*, as reported in Table 4. The sample is split according to whether the firm under-invests (i.e., $\hat{q}_i > \hat{h}$) or over-invests (i.e., $\hat{q}_i < \hat{h}$); results for the under-investment sample are shown as Models 1, 2, 5, and 6 and for the over-investment sample as Models 3, 4, 7, and 8. Managerial entrenchment is measured using the presence of a staggered board (Models 1, 3, 5, and 7) or the Bebchuk index (Models 2, 4, 6, and 8). We use the values of *h* reported in Table 4 Model D for Models 1 and 3, and Table 4 Model E for Models 2 and 4; we use 1.0 as the value of *h* in Models 5-8. Refer to Table 1 for variable definitions. We include industry fixed effects for all industries in which there are at least two firms. *** denotes significance at the 1% level; ** at the 5% level; and * at the 10% level.

	Under-investment $(\hat{q}_i - \hat{h})^+$				Over-investment $(\hat{q}_i - \hat{h})^-$				Under-investment $(\hat{q}_i - 1)^+$				Over-investment $(\hat{q}_i - 1)^-$			
	1		2		3		4		5		6		7		8	
	MLE	Marginal Effects	MLE	Marginal Effects	MLE	Marginal Effects	MLE	Marginal Effects	MLE	Marginal Effects	MLE	Marginal Effects	MLE	Marginal Effects	MLE	Marginal Effects
Country count	0.045	0.031	0.023	0.011	-0.005	-0.003	-0.003	-0.002	0.052**	0.038	0.086***	0.051	-0.004	-0.002	-0.003	-0.002
	(0.029)		(0.030)		(0.006)		(0.006)		(0.026)		(0.026)		(0.006)		(0.005)	
>10 country presence	-1.809***	-1.242	-0.722	-0.342	0.409***	0.244	0.342**	0.208	-1.579***	-1.159	-1.740***	-1.036	0.390***	0.245	0.316**	0.208
	(0.663)		(0.586)		(0.127)		(0.144)		(0.573)		(0.593)		(0.128)		(0.125)	
L: Legal System Strength																
- any low (CREDR-L)	-0.525**	-0.361	-0.346	-0.164	-0.140	-0.084	0.007	0.004	-0.453*	-0.332	0.019	0.011	-0.001	-0.001	-0.037	-0.025
	(0.253)		(0.382)		(0.088)		(0.115)		(0.236)		(0.333)		(0.084)		(0.119)	
- any high (CREDR-H)	0.454*	0.311	-0.040	-0.019	-0.025	-0.015	0.078	0.048	0.107	0.079	-0.887**	-0.528	0.001	0.001	0.103	0.068
	(0.274)		(0.430)		(0.092)		(0.120)		(0.292)		(0.391)		(0.090)		(0.121)	
G: Corporate Governance																
Staggered boards	0.002	0.001			0.048	0.029			-0.120	-0.088			0.033	0.021		
	(0.156)				(0.063)				(0.156)				(0.060)			
Bebchuk index			-0.074	-0.035			0.079**	0.048			-0.319**	-0.190			0.044	0.029
			(0.107)				(0.038)				(0.128)				(0.035)	
Insider ownership	0.780	0.535	4.209	1.996	2.497***	1.489	2.366**	1.444	0.644	0.472	1.129	0.672	2.338***	1.468	1.826*	1.205
	(1.672)		(3.144)		(0.827)		(0.988)		(1.568)		(2.538)		(0.780)		(0.940)	
Institutional ownership	0.138	0.095	1.019**	0.483	-0.108	-0.064	-0.352**	-0.215	0.653*	0.479	1.613***	0.960	-0.053	-0.033	-0.244*	-0.161
	(0.320)		(0.484)		(0.114)		(0.148)		(0.374)		(0.536)		(0.107)		(0.139)	
C: Control Variables																
PPE	0.026	0.018	-0.124	-0.059	0.027	0.016	-0.003	-0.002	-0.060	-0.044	-0.322**	-0.191	0.025	0.016	-0.014	-0.009
	(0.096)		(0.109)		(0.024)		(0.033)		(0.099)		(0.138)		(0.023)		(0.030)	
Research & development	3.711***	2.547	1.702	0.807	-1.092**	-0.651	-0.529	-0.323	3.936***	2.888	5.106***	3.039	-1.056**	-0.663	-0.798	-0.527
	(0.942)		(2.963)		(0.466)		(0.626)		(0.889)		(1.646)		(0.446)		(0.597)	
Leverage	0.188	0.129	0.326	0.155	-0.108***	-0.064	-0.112***	-0.068	0.147	0.108	0.336**	0.200	-0.119***	-0.075	-0.112***	-0.074
	(0.171)		(0.282)		(0.037)		(0.043)		(0.157)		(0.159)		(0.034)		(0.041)	
Cash flow	0.390	0.268	2.010	0.953	0.165	0.098	-0.292	-0.178	-0.954	-0.700	-1.430	-0.851	0.200	0.125	-0.150	-0.099
	(1.991)		(2.305)		(0.442)		(0.761)		(2.150)		(2.394)		(0.415)		(0.673)	
Prior diversification (SSIC2)	-0.165	-0.113	-0.117	-0.056	-0.041	-0.024	0.052	0.032	-0.214	-0.157	-0.203	-0.121	-0.044	-0.027	0.022	0.014
	(0.150)		(0.178)		(0.041)		(0.051)		(0.147)		(0.200)		(0.040)		(0.046)	
Industry FE?	Yes		Yes		Yes		Yes		Yes		No		Yes		Yes	
Log-likelihood	7.715		4.822		23.034		38.730		12.611		3.551		17.435		29.427	
Number of Obs.	65		54		259		114		61		35		263		134	

Table 6: Marginal *q* estimates for overlapping periods of five or more years

This table reports the univariate statistics of the estimated marginal *q*'s obtained for overlapping periods of five or more years.

Period	Mean (S.D.)	Median	Min	Max	# obs
baseline: 1992-2000	0.765	0.724	-0.299	2.771	332
	(0.422)				
1992-1996	0.601	0.568	-0.555	2.361	296
	(0.417)				
1992-1997	0.620	0.603	-0.388	2.439	257
	(0.311)				
1992-1998	0.515	0.478	-0.209	2.123	209
	(0.282)				
1992-1999	0.526	0.501	-0.088	1.982	211
	(0.259)				
1993-1997	0.620	0.603	-0.388	2.439	257
	(0.311)				
1993-1998	0.667	0.630	-0.802	2.377	259
	(0.408)				
1993-1999	0.650	0.617	-0.490	3.377	290
	(0.345)				
1993-2000	0.777	0.753	-0.248	2.514	296
	(0.416)				
1994-1998	0.499	0.459	-0.231	2.154	210
	(0.317)				
1994-1999	0.507	0.486	-0.181	1.704	239
	(0.214)				
1994-2000	0.702	0.664	-0.380	2.381	248
	(0.397)				
1995-1999	0.552	0.533	-0.296	1.708	155
	(0.293)				
1995-2000	0.843	0.826	-0.215	2.149	163
	(0.363)				
1996-2000	0.767	0.770	0.294	1.383	154
	(0.127)				

Table 7: Separate analyses of efficacy of capital budgeting decisions among under- and over-investing firms, including host country legal system strength, corporate governance characteristics, and firm-level control variables using sliding ruler estimates of marginal *q*

The dependent variable, $(\hat{q}_i - \hat{h})$, measures the efficiency of a firm's corporate capital budgeting decisions relative to the appropriate theoretical benchmark marginal *q*, *h*, as obtained by estimating [5] using the marginal *q*'s reported in Table 6. The sample is split according to whether the firm under-invests (i.e., $\hat{q}_i > \hat{h}$) or over-invests (i.e., $\hat{q}_i < \hat{h}$); results for the under-investment sample are shown as Models 1 and 2, and for the over-investment sample as Models 3 and 4. Managerial entrenchment is measured using the presence of a staggered board (Models 1 and 3) or the Bebchuk index (Models 2 and 4). We report only the coefficients on the two measures of multinationality, country count and presence in 10 or more foreign countries. Refer to Table 1 for variable definitions. We include industry fixed effects for all industries in which there are at least two firms. *** denotes significance at the 1% level; ** at the 5% level; and * at the 10% level.

	Under-investment $(\hat{q}_i - \hat{h})^+$				**Over-investment** $(\hat{q}_i - \hat{h})^-$			
	Model 1		**Model 2**		**Model 3**		**Model 4**	
	Country count	>10 country presence	Country count	>10 country presence	Country count	>10 country presence	Country count	>10 country presence
baseline: 1992-2000	0.045	-1.809***	0.023	-0.722	-0.005	0.409***	-0.003	0.342**
1992-1996	-0.008	-0.336	-0.029	0.149	-0.006	0.337	-0.007	0.311
1992-1997	0.049*	-0.849*	0.050	-1.027*	-0.001	0.065	-0.001	0.026
1992-1998	0.149***	-2.393***	0.103*	-2.811*	0.001	-0.026	0.001	-0.010
1992-1999	0.166***	-3.628***	0.132**	-2.801**	0.001	-0.047	0.001	-0.042
1993-1997	0.049	-0.849*	0.013	-0.375	-0.001	0.065	0.035***	-0.460***
1993-1998	0.095***	-1.619***	-0.009	-0.316	0.010**	-0.006	0.002	-0.015
1993-1999	0.118***	-2.043***	0.033	-0.871	-0.002	0.127*	-0.003	0.100
1993-2000	0.049**	-1.836***	0.037***	-1.092***	0.004	0.537**	-0.000	0.051
1994-1998	0.086***	-1.996***	0.124***	-3.152***	-0.001	-0.026	-0.001	0.034
1994-1999	0.071**	-1.324**	0.026	-1.069	0.003	0.019	0.002	-0.018
1994-2000	0.040	-2.281*	0.098***	-2.149***	-0.001	0.418**	0.001	0.128
1995-1999	-0.030	0.417	-0.005	0.307	-0.004	0.101	-0.002	0.007
1995-2000	-0.013	0.373	-0.017	0.536*	0.013	0.356	0.001	0.201
1996-2000	0.026***	-0.615***	0.019**	-0.343**	0.011	0.163	0.004***	-0.008
% of all models in which key result is preserved	27%	80%	47%	33%	93%	20%	87%	7%