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Does Corporate Culture Matter? An Empirical Study on Japanese Firms

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Does Corporate Culture Matter?

An Empirical Study on Japanese Firms [*)]

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Abstract

Corporate culture does matter. Using Japanese firms' data from 1987-2000, we have shown that the strength of corporate culture significantly affects corporate policies such as employment policy, management structure, and financial structure. We have also confirmed that the culture and its embedding contribute to better corporate performance. These culture effects are found to be considerable in magnitude and at least as large as those of other factors. We suggest that it is important to recognize the existence of the culture for understanding corporate policies and performance.

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1. Introduction

Recently it seems to be widely acknowledged that corporate culture is a significant determinant of organization behavior and performance. In the press and the mass media, they sometimes mention a specific corporation's culture, such as the HP philosophy, the IBM way, and the 3M value, and attribute it to each company's competitive advantage. Also, there have been several books and various case studies on corporate culture showing how it works, how it changes and evolves, and how it influences the member's behavior and corporate performance (e.g., Deal and Kennedy 1982, Schein 1985, and Collins and Poras 1994).

Compared to the popular attention given corporate culture, the quantitative evidence for its importance seems to be limited. The exceptions are Denison (1984), Gordon and DiTomaso (1992), Kotter and Heskett (1992), and Sorensen (2002) who report that corporate culture and cultural strength are associated with superior performance. We consider that the scarcity of quantitative evidence mainly comes from two reasons. First, as corporate culture has tacit, ambiguous, and unobservable aspects, it is usually hard to measure from public information. This difficulty in measurement may impede the development of quantitative analyses. Second, previous literature exclusively focused on the impact of the culture on performance. We can easily suppose that while some cultures enhance performance, others may harm it; it is not easy to detect statistically significant effects of the culture.

In this paper, we examine the significance of corporate culture, by focusing on its impact on corporate policies. Considering corporate culture as organization capital, we derive the hypothesis that the culture affects employment policies, management structure, and financial policies. More specifically, we hypothesize that firms with

strong-culture are more likely to retain the incumbent employees, have internally promoted managers, and reduce the probability of default and hostile takeovers than weak-culture firms.

We conducted empirical analyses to test these hypotheses. We measured corporate culture and its strength by the data on a firm's mission statement and its embedding actions. Our empirical results show that corporate culture and its strength significantly affect these corporate policies. In addition, the results also indicate that corporate culture improves corporate performance.

Our study is conducted on large-sized Japanese firms for 1986-2000. Corporate cultures of Japanese firms have attracted much attention since the 1980s, since it was suspected to be a source of their competitive advantages in the world-wide markets (Ouchi 1981, Pascale and Athos 1981). Despite this attention, however, there has been little quantitative evidence on the importance of corporate culture of Japanese firms. Our empirical results show that corporate culture does matter for Japanese companies. They also provide an insight into the organizational behavior of Japanese firms.

The remainder of this paper proceeds as follows. Section 2 overviews the background of corporate culture studies and presents our ideas. Section 3 presents hypotheses on the effect of the culture on corporate policies. Section 4 explains our sample, data, measures of corporate culture, and regression equations. Section 5 shows the empirical results. Section 6 summarizes the results and discusses their implications.

2. Background

2-1. Significance of Corporate Culture: Previous Studies

It has long been discussed that corporate culture can be a significant

contributor to corporate performance. Corporate culture, sometimes called organizational culture, is defined as “a set of values, beliefs, and norms of behavior shared by members of a firm that influences individual employee preferences and behaviors” (Besanko, et al. 2000). Previous researchers claim that the culture can be a major source of efficiency in organizations and improve corporate performance (e.g. Kotter and Heskett 1992, Cremer 1993, Besanko, et al. 2000, Hermalin 2001). They argue that performance benefits of corporate culture derive from three effects. The first effect is the goal setting effect: the culture specifies the goals of the firm and helps the employees make daily decisions easily. The second effect is the coordination effect: the culture reduces the communication costs and facilitates coordination among employees. The third effect is the motivation effect: the culture raises the employees’ motivation when they believe in the company’s culture.

While the significance of corporate culture is widely accepted in academia and the media, empirical evidence seems to be insufficient. Most evidence has been anecdotal or case studies and thereby has been of little quantitative value. The exceptions are Denison (1984), Gordon and DiTomaso (1992), Kotter and Heskett (1992), and Sorensen (2002) who report that cultural strength is associated with superior performance. In our view, the scarcity of quantitative evidence stems from the following reasons. First, corporate culture and its strength are difficult to measure directly, which often prevents scholars from conducting quantitative analyses. Second, it might be difficult to detect the positive correlation between culture and performance, because some firms may have unadaptive or defective cultures that harm productivity (Kotter and Heskett 1992, Hodgeson 1996). Third, previous studies have mostly focused on the association between culture and performance, and have devoted less effort to explore

the effect of the culture on the firm's policies and strategies.

2-2. Corporate Culture and Corporate Policies

In this paper, we examine the significance of corporate culture, focusing on its effect on corporate policies, such as employment policies and financial structures. We hypothesize that the culture affects these policies because we consider corporate culture as firm-specific capital. Firm-specific capital, sometimes called organization capital, is an asset specific to and embedded into each organization. The examples are employees' skills and know-how that have use only within the firm, information on each personnel's aptitude for the job, the experience to coordinate diverse production technology, and the goodwill of customers, etc. Firm specific capital usually has the following characteristics: it is a unique productive resource of the firm and not transferable to other firms; it ceases to be productive when the firm is dissolved; it is accumulated through investment (Prescott and Visscher 1980, Iwai 2002, Lev and Radhakrishnan 2004). To summarize, corporate culture has these three characteristics; it is hard to imitate; it disappears with the destruction of the organization; it is built through the member's learning and the education given to them.

If we regard corporate culture as the firm-specific capital and it is valuable for enhancing performance, we easily predict that firms with strong culture have an incentive to maintain and utilize it, rather than to build new (different) culture. Preserving the culture and sustaining the culture-embedded organization can increase the firm value via two effects. First, it raises *current* performance. The firm takes advantage of its accumulated culture to operate efficiently. Second, it improves *future* performance. Observing that the culture and the organization continue to exist, the employees are encouraged to make culture-specific investments which helps further

accumulation of the organization capital.

Therefore, firms with strong culture are supposed to have policies for preserving the culture and the organization and making the most of its cultural benefits. This leads us to the prediction that corporate culture affects the firm's employment policy, management structure, and financial structures. We hypothesize that strong-culture firms are more likely to retain incumbent employees, have internally promoted managers, and reduce the probability of default and hostile takeovers than weak-culture firms. We will explain these hypotheses in the next section.

3. Hypotheses

We explore the effect of culture on corporate policies by analyzing whether strong-culture firms tend to determine their employment policy, management and financial structures that help preserve their own culture and organization. The strength of culture is defined by previous studies; a culture can be considered strong if norms and values are widely shared and intensely held throughout organization (O'Relly and Chatman 1996). We present the following hypotheses on the relationship between the strength of corporate culture and corporate policies and structures.

Hypothesis 1 (long-term employment):

> Strong-culture firms have a longer-term employment policy than weak-culture firms.

As long as corporate culture is embedded into employees, strong-culture firms are more likely to retain their incumbent employees than weak-culture firms. Employees with plenty of cultural knowledge are crucial components of the organization capital.

Therefore, strong-culture firms tend to hold incumbent employees, rather than hiring new workers from labor markets. At the same time, having a long-term employment policy can encourage younger employees to make cultural specific investments to increase future organization capital[1]. These arguments lead us to predict that strong-culture firms have a longer employment policy than weak-culture firms.

Hypothesis 2 (internally promoted managers)

> In strong-culture firms internally promoted managers constitute more of the management team than in weak-culture firms.

It is naturally supposed that for managers to run the firm efficiently using the corporate culture, managers themselves should fully understand its culture. Since the culture contains subtle instincts, values, and beliefs, internally promoted managers who have worked for the company for a long time have an advantage over appointed outside managers with respect to cultural knowledge. In their model, Chowdhry and Garmaise (2004) have shown that there exists a cultural complementary among members in the organization. Their argument suggests that the culture embedded into the employees is functional only when it is held by the management. Therefore, it seems optimal for strong-culture firms to have more internally promoted managers among their management teams.[2]

Hypothesis 3 (low leverage)

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[1] In their model, Carrillo and Gromb (2006) argue that even when a firm conducts restructuring, it is better to be compatible with existing culture, because culturally compatible restructuring does not discourage employees' culture-specific investments.

[2] Collins and Porras (1994) claim that in the long-sustained companies with strong cultures (in their terms, "visionary" companies), management teams consist of internally promoted managers. Ouchi (1981) also point out that Hewlett-Packard, which is known as a strong culture firm, has tended to refuse to accept outside managers.

Strong-culture firms have less debt than weak-culture firms.

Zingales (2000) argues that firms with larger organization capital suffer from higher costs of financial distress, because the financial distress destroys organization capital. His argument suggests that strong-culture firms are more eager to avoid the financial distress because they have greater amount of organization capital than weak-culture firms. As the possibility of financial distress depends not only on a firm's performance but also on the leverage, strong-culture firms should choose a lower debt ratio in their capital structure decisions. In fact, Donaldson (1984) suggests that corporate managers like to be able to rely on internally generated cashflow, rather than debt, to avoid the firm's going out of business. We conjecture that his observation is more likely to be observed in strong-culture firms.

Hypothesis 4 (interlocking shareholding)

In strong-culture firms, interlocking shareholdings are more likely to be observed than in weak-culture firms.

Iwai (2002) argues that when companies are characterized by firm-specific organization capital, weaker outside shareholders' control can increase the firm value; tighter shareholders' control will raise the probability of hostile takeovers, causing the hold-up problem that prevents employees from investing in firm-specific human assets. Zingales (2000) also raises questions about whether control should reside in the hands of shareholders, considering the importance of organization capital. He claims the possibility that "the pursuit of shareholders' value maximization may lead to inefficient actions, such as the breach of valuable implicit contracts", as described by Shleifer and Summers (1988) (pp.1635). Once we consider corporate culture as organization capital,

we predict that strong-culture firms have more incentives to weaken outside shareholders' control for the sake of protecting their employees' rights. In Japan, interlocking shareholdings are well known as the path to reducing the probability of hostile takeovers and blocking outside shareholders' intervention (Sheard 1994). Hence we can hypothesize that strong-culture firms are more likely to form interlocking relationships with banks and other affiliated companies.

4. Empirical Analysis

4-1. Measures of Cultural Strength

We explore the relationship between corporate culture and corporate policies by testing the hypotheses presented in the previous section. Our study is conducted on large-sized Japanese firms. Corporate cultures of Japanese firms have attracted much attention after the 1980s, since they were thought to be a source of their competitive edge in the world-wide markets (Ouchi 1981, Pasacle and Athos 1981). Despite this attention, however, there is little quantitative evidence about the importance of corporate culture for Japanese firms. Our study fills this gap.

In previous studies on corporate culture, it has always been an issue how to measure each firm's cultural strength. Denison (1984) measures it by the consistency of responses to his survey items across managers in a firm. Kotter and Heskett (1992) construct cultural strength indices through their questionnaire survey to the rival firms' managers in the same industry. While we recognize the advantages of these survey approaches, we adopt a different method: to utilize the information in corporate mission statements.

We measure cultural strength of each firm by i) whether a firm has a formal

mission statement, and ii) whether a firm has concrete and effective items for embedding the mission statement into the employees. A mission statement is a company's written statement on its core values, mission, purpose, goals, principles, and norms. We consider that firms with formal mission statements have stronger culture than those without mission statements, because the mission statement explicitly represents corporate culture and helps members share the values and norms of the firm. The idea appears to be valid for Japanese firms. After his interview research on Japanese firms, Ouchi (1981) suggests that defining a mission statement is the first step for creating cooperative corporate culture. Itami and Kagono (1989), in their Japanese textbook of management and business, claim that a formal mission statement is the primary method for organizational culture to be widely shared and transmitted over generations. In addition, it is naturally predicted that among firms with a formal mission statement, firms with some concrete and effective items for transmitting it to the employees have stronger culture than firms without them.

4-2. Sample

We obtained mission statements' data on Japanese firms from *Kigyo Kodo Shishin Jitsureishu* (hereafter, KKSJ) edited and published by Nikkeiren in 1997, which is based on a survey on companies' mission statements conducted by Nikkeiren in June 1997. KKSJ contains 207 responding Japanese firms' mission statements and each firm's concrete items (if any) for embedding it into the organization.

From these 207 firms we selected sample firms with a formal mission statement by the following criteria. First, a firm is listed on the Tokyo Stock Exchange in the 1st section and belongs to any industry except finance, electricity, and gas[3]. This

[3] We exclude firms in these three industries because these are regulated industries and firms may

first criterion limits our sample firms to non-financial, non-regulated, and large-sized firms. Second, a firm's formal mission statement was disclosed on its internet homepage in July 2003. This suggests that our sample firms with a formal mission statement have kept it continuously and therefore they can be considered as firms with strong culture. Third, a firm has to find its matched sample firms without a mission statement (described below). The final sample contains 64 firms with the mission statement. We call them the strong-culture firms.

For each of 64 strong-culture firms, we found a matched sample firm that is also listed on the Tokyo Stock Exchange in the 1st section in the same industry as the strong-culture firm, and seems to have no formal mission statement. We selected the matched sample firms through the following criteria, i) a firm is not included in KKSJ, ii) a firm's formal mission statement was not found on the internet home page in July 2003, iii) among firms satisfying the above two criteria, a firm's total assets are closest to those of the strong-culture firm. By these procedures we obtained 64 matched sample firms, which we call the weak-culture firms. In Table 1, we list 64 strong-culture firms and their matched 64 weak-culture firms as our whole sample firms.

For the 64 strong-culture firms, we obtained information from KKSJ on whether each firm has any practical and concrete items for embedding its mission statement into the employees. We found that 75% of strong-culture firms have some items: 31.25% of the firms put up posters or a framed copy of the mission statement in places of high visibility; 25% of the firms teach the mission statement to current employees in training programs; 21.87% of the firms deliver a mission statement booklet to employees, 18.75% of the firms' top management (president, CEO) are

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have different policies on employment, management structure, and financial structures.

engaged in embedding the mission statement through his/her speeches, written statements, direct teaching in the training programs and in day to day operations, etc.; 17.18% of the firms published the mission statement into in-house magazines; other items include the training programs for newly hired employees, the affirmations and pledges on every morning assembly, the distribution of the mission statement card, the establishment of an internal school and training centers on the mission statement, etc.

Based on this information, from 64 strong-culture firms, we chose the firms where the culture seems to be embedded more deeply and intensively. To do this, we used two measures. The first measure is whether the top management (president or CEO) is engaged in transmitting the mission statement. Schein (1985) suggests that the leader's attention to and deliberate role in teaching the culture are crucial and the most powerful primary mechanisms for culture embedding and reinforcement. As we saw above, the engagement of the upper echelon of management is observed for 18.75% of the strong-culture firms. The second measure is whether a firm has any training system in the mission statement. Itami and Kagono (1989) and Collins and Porras (1994) stress the importance of training for a transmission of the culture. Kitai and Matsuda's (2002) empirical study on Japanese firms shows that training for newly hired employees as well as the top management's teaching are significantly effective in culture embedding. We selected firms having at least one of the following training systems in the mission statement; the training programs for current employees or newly hired employees; the affirmations and pledges on every morning assembly; the internal school or training centers on the mission statement. 45.31% of the strong culture firms belong to this category.

4-3. Regression Equations

To test hypothesis 1, the relation between the cultural strength and the employment policy, we estimate the following equations.

$$EMPYEARS = \alpha + \beta\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (1\text{-}1)$$

$$EMPYEARS = \alpha + \left(\beta + \beta_1 TOP + \beta_2 TRAIN\right)\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (1\text{-}2)$$

In (1-1), EMPYEARS is the average length of service of the employees (years), CULTURE is a dummy variable that takes 1 if a firm is the strong-culture firm (the firm with a formal mission statement), lnTA is the logarithm of book value of total assets (million yen), AGE is a firm's age (years), and ε is the error term. If strong-culture firms tend to have longer employment policy, the coefficient of CULTURE (β) should be positive. In (1-2), to the coefficient of CULTURE, we add two dummy variables on the degree of culture embedding, mentioned in the previous subsection; TOP takes 1 if the top management (president or CEO) is engaged in transmitting the mission statement, and TRAIN takes 1 if a firm has at least one of the training systems in the mission statement (training programs, the affirmations and pledges in morning assembly, the school or training centers). From Hypothesis 1, the coefficients of TOP and TRAIN (β_1, β_2) should be positive.

To test Hypothesis 2, the relation between corporate culture and internally promoted management, we estimate the following equations.

$$INSIDER = \alpha + \beta\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (2\text{-}1)$$

$$INSIDER = \alpha + \left(\beta + \beta_1 TOP + \beta_2 TRAIN\right)\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (2\text{-}2)$$

where INSIDER is the inside directors ratio (%), [the number of the internally promoted directors / the number of the board of directors] × 100. In most Japanese companies, in particular until the 2000s, the management team and the board of directors had not been

separated, and the board members had been in charge of management. Therefore, the ratio of internally promoted managers among the management team can be measured by the ratio of internally promoted directors among the board. If Hypothesis 2 is valid, the coefficient of CULTURE should be positive in (2-1) and TOP and TRAIN should be positive signs in (2-2).

To test Hypotheses 3 and 4, the effects of the culture on capital structure and interlocking shareholdings, we have the following estimation equations.

$$DEBT = \alpha + \beta\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (3\text{-}1)$$

$$DEBT = \alpha + \left(\beta + \beta_1 TOP + \beta_2 TRAIN\right)\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (3\text{-}2)$$

$$INTERLOCK = \alpha + \beta\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (4\text{-}1)$$

$$INTERLOCK = \alpha + \left(\beta + \beta_1 TOP + \beta_2 TRAIN\right)\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \quad (4\text{-}2)$$

In capital structure equations, (3-1) and (3-2), DEBT is the debt to asset ratio (%) calculated as [total liabilities / the book value of the total assets] × 100. In interlocking shareholdings equations, (4-1) and (4-2), INTERLOCK is the interlocking share's ratio (%) , [the number of shares held by interlocking shareholdings / total number of shares outstanding]. If the cultural strength affects the debt ratio and the degree of interlocking shareholdings, the coefficients of CULTURE, TOP, and TRAIN would show negative signs in (3-1) and (3-2), and positive signs in (4-1) and (4-2).

Furthermore, to check the robustness of our results, we also estimate the regression equation by adding two more control variables to each of the equations. These two variables are ROA (operating income to the book value of total assets; %) and MKTBK (market-to-book ratio; market value of the total assets to book value of the total assets). Including these two variables is important because a firm's profitability

(ROA) and its growth opportunities (MKTBK) may affect corporate policies and structures. In particular, for capital structure decisions, as we know from previous studies, these two factors have significant effects on the debt to asset ratios (e.g. Harris and Raviv 1991, Rajan and Zingales 1995). Therefore adding ROA and MKTBK to the equations is necessary to avoid omitted variable bias. In addition, by including these control variables, we can compare the economic significance of the cultural effects on dependent variables with the other factors' effects.

All financial data except INTERLOCK are obtained from Nikkei NEEDS financial database. INTERLOCK is obtained from Mochiai Jokyo Chosa by Nissei Kiso Kenkyusho. We estimated the regressions by OLS, using 15 years of panel data from 1986 to 2000 for sample firms[4]. As for the cultural variables (CULTURE, TOP, and TRAIN), we used the same value (0 or 1) for the same firm throughout the sample period. We also added the year dummies to all regressions to control for year-specific effects.

5. Empirical Results

5-1. Contents of Corporate Culture

Table 2 provides details of the contents of mission statements of 64 strong-culture firms. These contents include corporate values, objectives, norms, and behavioral standards, which suggests that a mission statement is a company's written statement on corporate culture. Panel A shows corporate values, objectives, and philosophy. As can be seen, in the majority (71.9%) of the firms, mission statements include "concern for happiness of human beings". Another striking feature is that only 6.3% of the firm shows "concern

[4] If we were unable to obtain a particular year's data for either a strong culture firm or its matched weak culture firm, we did not use that year's data for both firms.

for shareholders", while many of them emphasize concern for employees. For example, 37.5% of the firms state that it is their mission to provide worthwhile work for their employees. Panel B shows contents of norms and behavioral standards. It is shown that 45.3% of the firms include "innovation and originality" in their mission statement. "conscientiousness and cordiality on the job" and "challenge and aggressiveness" is represented in the mission statement in 31.3% and 18.8% of the firms, respectively.

5-2. Descriptive Statistics

The means and standard deviations of the dependent and independent variables in the regression equations are summarized in Table 3[5]. The first column (All sample) shows the statistics for 128 firms over our sample periods (1986-2000). The second and third columns (Strong-Culture Firms, Weak-Culture Firms) represents the statistics for 64 strong-culture firms and for 64 weak-culture firms, respectively. The fourth column (Difference) is the difference in the mean of each variable between the strong-culture firms and the weak-culture firms. We notice that the mean length of service of employees (EMPYEARS) for strong-culture firms (16.35) is longer than that for weak-culture firms (15.56) and the difference (0.79) is statistically significant at less than 1% level (p-value = 0.000). This is consistent with Hypothesis 1 that strong-culture firms have a longer-term employment policy. We also observe that the mean of the insider directors' ratio (INSIDER) is significantly higher for the strong-culture firms (92.60) than for the weak-culture firms (87.89); this supports Hypothesis 2. As for the capital structure, the debt ratio (DEBT) of the strong-culture firms (63.26) is a little higher than that of the weak-culture firms (62.43), but the difference is not statistically significant. In addition, the interlocking shareholdings ratio (INTERLOCK) is

[5] Table 5 also includes the statistics of PARENT (parent firm's stockholdings ratio) and FOREIGN (foreign investors' shareholdings ratio), which will be used in the analysis in section 5.5.

significantly higher for the strong-culture firms (28.91) than for the weak-culture firms (23.59); this is also consistent with Hypothesis 4. As for the control variables, lnTA, AGE and ROA are significantly higher for the strong-culture firms than for the weak-culture firms. This reinforces our decision to control for size, age, and profitability in the regressions.

5-3. Regression Results

The regression results are summarized in Tables 4, 5, 6, and 7. First, Table 4 shows the results of the employment policy regressions. Looking at the column (1-1), we find that CULTURE has a significantly positive coefficient (0.593, p=0.001). This result holds for column (1-1)' that is the result of the regression including ROA and MKTBK. These results indicate that the length of service of the employees is longer for the strong-culture firms than for the weak-culture firms. This supports Hypothesis 1 that the strong-culture firms have a longer-employment policy than the weak-culture firms. We have found that corporate culture does affect a firm's employment policy.

In Table 4, it is also interesting to examine the results of (1-2) and (1-2)' where two variables for the degree of culture embedding are introduced in the regression. We find that in (1-2)' the coefficients of TOP × CULTURE and TRAIN × CULTURE is significantly positive at the 1% and 10% level, respectively. This suggests that once the culture is embedded into the organization, the firm is more likely to retain the current employees. Firms appear to consider employees which demonstrate the firm's culture as the accumulated organization capital.

We should also note that the effect of the culture on the firm's employment policy is not only statistically significant but also of considerable magnitude. The result (1-2)' indicates that if a firm has a strong culture which includes top management

engagement in culture transmission, its EMPYEARS is 1.227 (= 0.247 + 0.980) years longer than that of the weak-culture firms. Moreover, if this particular firm has some cultural training systems, its EMPYEARS is 1.684 (= 0.247 + 0.980 + 0.457) years longer than that of the weak-culture firms. These culture effects are much larger than other factors' effects on the employment policy. We can measure the other factors' effects by the effect of a one-standard-deviation change in other independent variables on EMPYEARS, which is computed as the estimated coefficient of each variable × one standard deviation of each variable. We computed this for each variable and found that AGE had the largest effect among the other variables: the AGE effect equals to 0.690 (= 0.040 × 17.25) years. This AGE effect is, however, only about 40-55 percent as large as the above culture effect. This implies that corporate culture and its strength are a crucial determinant of corporate employment policy.

Table 5 describes the regression results on the insider directors ratio. The results (2-1) and (2-1)' indicate that the coefficient of CULTURE is positive and statistically significant at a 1% level. These results support Hypothesis 2: firms with stronger culture tend to have more internally promoted managers. On the other hand, the results (2-2) and (2-2)' show that the effects of two culture embedding variables (TOP × CULTURE and TRAIN × CULTURE) do not have significant effects. However, from (2-2)', we confirm that the magnitude of the culture effect is considerable for the management structure as well. The estimated coefficient of CULTURE, 4.179 indicates that the insider director's ratio is 4.179 percentage points higher for the strong culture firms than for the weak culture firms. This effect is the largest among the effects of all factors, with respect to management structure. The effect of a one standard deviation change in AGE on INSIDER is only 2.2425 (= 0.130 ×17.25) percentage points, and the

effect of ROA and lnTA is 1.374 (= 0.469 ×2.93) percentage points and 0.880 (= 0.672 ×1.31) percentage points, respectively. From these figures, we can say that corporate culture significantly affects the firm's management structure.

Table 6 summarizes the regression results on the debt-to-asset ratio. The results (3-1) and (3-1)' indicate that CULTURE has a statistically significant negative effect on the firm's leverage. This supports Hypothesis 3: strong-culture firms tend to have less debt. In addition, the results of (3-2) and (3-2)' show that the coefficients of TOP × CULTURE as well as those of CULTURE are significantly negative. These results suggest that corporate culture and its strength affect even the firm's capital structure decisions. While there have been extensive studies on capital structure, we provide the first evidence that corporate culture is a determinant of the firm's capital structure choice. Our result seems intuitive once we regard corporate culture as organization capital which depreciates in the face of financial distress.

In fact, the magnitude of the culture effect is significant in the debt-ratio regressions. The result (3-2)' indicates that if a firm has strong culture with the top management engagement in embedding, the debt ratio decreases by 5.099 (2.504 + 2.595) percentage points. This magnitude is similar with the effects of other factors such as size, profitability, and growth opportunities which are well known as determinants of capital structure from previous studies (e.g. Harris and Raviv 1991, Rajan and Zingales 1995). The effect of a one standard deviation change in lnTA is 5.921 (= 4.520 × 1.31) percentage points; the effect of ROA is -4.225 (= -1.442 × 2.93) percentage points; the effect of MKTBK is -2.017 (= -3.202 × 0.63) percentage points, respectively. Our result suggests that corporate culture matters in determining capital structure and that the firm-specific capital or organization capital significantly affects corporate finance

policies.

Table 7 summarizes the regression results on the interlocking shareholdings. The results (4-1) and (4-1)' indicate that CULTURE has significantly positive effects on the interlocking shareholdings. For example, the result (4-1)' shows that the interlocking shareholdings ratio of the strong-culture firms is 5.671 percentage points higher than that of the weak-culture firms, *ceteris paribus*. This result supports Hypothesis 4: the interlocking shareholdings are more likely to be observed in strong-culture firms. On the other hand, the results (4-2) and (4-2)' show complex relationships between cultural strength and the interlocking shareholdings. In (4-2) and (4-2)', while the coefficients of CULTURE are significantly positive, the coefficients of the culture embedding variables, TOP × CULTURE and TRAIN × CULTURE, are significantly negative. This result suggests that the relationship between cultural strength and the interlocking shareholdings is non-linear; if corporate culture is formalized by the mission statement, the degree of the interlocking shareholdings increases; but as the culture is transmitted to and embedded into the organization, the degree of interlocking shareholdings decreases.

The negative relationship between the culture embedding and the interlocking shareholdings is inconsistent with Hypothesis 4. Why do we observe such a negative relationship? One explanation is that hostile takeovers are less likely to occur as corporate culture is more deeply embedded into the organization. Once cultural strength reaches a significant level and the firm enjoys a competitive advantage in its strong culture, outside investors will not take over the firm because they know that their takeovers destroy the corporate culture and decrease the firm's value. If the decline in shareholder values arising from the decreases in the firm's value is greater than the rent

exploited from the takeovers, outside investors lose their incentives for hostile takeovers. In that case, the employees do not have to worry about the hold-up problem and the necessity of the interlocking shareholdings decreases. This may be the reason we obtained the negative signs on the culture embedding variables in (4-2) and (4-2)'.[6]

5-4. Corporate Culture and Performance

We have found that corporate culture is an important determinant of a firm's employment policy, management structure, capital structure, and the interlocking shareholdings. Lastly, we examine whether corporate culture affects corporate performance. We predict that if the culture is critical organization capital, it raises the productivity and contributes to superior performance. Therefore we can have the following hypothesis.

Hypothesis 5 (superior performance)

Strong-culture firms perform better than weak-culture firms.

From previous studies, however, it is not necessarily clear that this hypothesis is valid. While a plethora of literature has long discussed that corporate culture improves corporate performance, there are also studies pointing out that culture, especially an unadaptive one, may undermine the performance (Kotter and Heskett 1992). In addition,

[6] This explanation is consistent with interview evidence on organization capital and the possibility of hostile takeover. We interviewed an executive of the Japanese general trading company whose competitive edge comes from human assets. He said that hostile takeovers are unlikely to occur to general trading companies. He explained that the takeover, if successful, will eventually decrease the shareholders' value because it would lead to the departure of core employees and depreciation of organization capital. Rajan and Zingales (2000) report that in the U.K. this actually happened to a British advertising agency, Saatchi and Saatchi. In addition, we also interviewed an executive of Japanese precision machinery company in which their excellent performance appears to come from their R&D capabilities. He said that "raiders may be able to take over our company, but they are unable to manage it". He seemed to imply that any outside investors, recognizing their inability to manage this company, are not going to attempt a takeover. These interview results suggest that hostile takeovers are less likely to occur to the companies in which the competitive power mainly comes from organization capital.

as we mentioned before, there has not been enough quantitative evidence for the positive effect of culture on performance. Therefore, we examine whether the culture and its strength affect performance, using Japanese firms' data.

We run the following regression equations.

$$ROA = \alpha + \beta\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \qquad (5\text{-}1)$$

$$ROA = \alpha + \left(\beta + \beta_1 TOP + \beta_2 TRAIN\right)\ CULTURE + \gamma\ \ lnTA + \delta\ AGE + \varepsilon \qquad (5\text{-}2)$$

As a performance measure, we adopt ROA (operating income to the book value of total assets; %). The culture variables (CULTURE, TOP, and TRAIN) and the size and age variables (lnTA, and AGE) were defined in subsection 4-3. From Hypothesis 5, we predict the coefficient of CULTURE in (5-1) and the coefficients of TOP and TRAIN in (5-2) will be positive. We also estimate each regression equation including two control variables. These two variables are PARENT, parent company's shareholdings ratio (%; the ratio of the shares held by the top shareholder whose holdings ratio exceeds 15%), and FOREIGN, the foreign investors' shareholdings ratio (%; the ratio of the shares held by the foreign investors). These variables are included to control for the effects of the external managerial disciplines on corporate performance. The data of PARENT and FOREIGN are obtained from Mochiai Jokyo Chosa by Nissei Kiso Kenkyusho and Okabunusi Data by Toyokeizaishinposha, respectively. Their means and standard deviations are shown in Table 2.

As before, we estimated the regressions by OLS, using 15 years of panel data from 1986 to 2000 for 128 firms. Table 8 summarizes the regression results. The results (5-1) and (5-1)' show that CULTURE has significant positive coefficients. These results support Hypothesis 5: strong-culture firms perform better than weak-culture firms.

Therefore we have found that corporate culture does enhance corporate performance of Japanese firms.

In addition, the results (5-2) and (5-2)' show that culture embedding is crucial for better performance; while the coefficients of TOP × CULTURE are insignificant, those of TRAIN × CULTURE are significantly positive at the 1% level. The result (5-2)' indicates that if a firm has a strong culture with the some cultural training systems, its ROA is 0.836 (= 0.013 + 0.823) percentage points higher than that of weak-culture firms. This culture effect is much larger than the size and age effects on ROA. The effect of a one standard deviation change in lnTA and AGE on ROA is only -0.267 (= -0.204 ×1.31) percentage points and -0.155 (= -0.009 ×17.25) percentage points, respectively. At the same time, we also know that the magnitude of the culture effect (0.836) is greater than the external discipline effect on ROA. The effect of a one-standard-deviation change in PARENT and FOREIGN on ROA is 0.442 (= 0.029 × 15.27) percentage points and 0.832 (= 0.110 ×7.57) percentage points, respectively. From these figures, we can say that corporate culture and its strength are one of the important determinants of corporate performance in Japan.

6. Concluding Remarks

Corporate culture does matter. Using Japanese firms' data from 1986-2000, we have shown that corporate culture and its strength significantly affect corporate policies such as employment policy, management structure, and financial structures. At the same time, we have also confirmed that the culture and its embedding enhance corporate performance. These culture effects are found to be considerable in magnitude and greater than other factors. Corporate culture, usually viewed as unobservable,

ambiguous, and hard to measure in academia, is a crucial determinant of corporate policies and performance.

Japanese companies have been thought to develop corporate cultures and obtain competitive advantages from these developed corporate cultures (Ouchi 1981, Pascale and Athos 1981). There has been, however, little quantitative evidence for the importance of culture to Japanese firms. We provide the evidence that Japanese firms with strong culture consider it to be organization capital, which significantly affects their strategies and policies.

Our empirical results also help understand the organizational behavior of recent Japanese firms. During the long economic downturn from the 1990s-2000s in Japan (sometimes called “the lost decade”), Japanese firms were criticized for their resistance to change in the press and the mass-media. As for the employment policy, they did not appear to layoff employees in spite of their lower profitability. It was also said the Japanese firms put too much importance on financial stability and not enough on dividends to shareholders. In addition, most firms did not seem to have made a transition to the shareholder-oriented, U.S. style corporate governance system; only a limited percentage of Japanese firms adopted outsider directors in their management boards. However, from our empirical results, these seemingly conservative behaviors of Japanese firms can be considered as rational decisions to maintain their corporate culture that is a source of their competitive advantages. We suggest that by recognizing the importance of the culture, we can view corporations and corporate policies from different perspectives than before.

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Table 1 Sample Firms

Strong Culture Firms		Weak Culture Firms	
TSE Code	Company's Name	TSE Code	Company's Name
1332	Nippon Suisan Kaisha, Ltd.	1377	Sakata Seed Corp.
1801	Taisei Corp.	1886	Aoki Corp.
1802	Obayashi Corp.	1812	Kajima Corp.
1804	Sato Kogyo Co., Ltd.	1833	Okumura Corp.
1824	Maeda Corp.	1821	Mitsui Construction Co., Ltd.
1911	Sumitomo Forestry Co., Ltd.	1868	Mitsui Home Co., Ltd.
1941	Chudenko Corp.	1946	Toenec Corp.
2202	Meiji Seika Kaisha, Ltd.	2211	Fujiya Co., Ltd.
2502	Asahi Breweries, Ltd.	2501	Sapporo Breweries, Ltd.
3105	Nisshinbo Industries, Inc.	3106	Kurabo Industries Ltd.
3407	Asahi Chemical Industry Co., Ltd.	4005	Sumitomo Chemical Co., Ltd.
3591	Wacoal Co., Ltd.	3501	Suminoe Textile Co., Ltd.
4023	Kureha Chemical Co., Ltd.	4186	Tokyo Ohka Kogyo Co., Ltd.
4204	Sekisui Chemical Co., Ltd.	4063	Shin-Etsu Chemical Co., Ltd.
4205	Nippon Zeon Co., Ltd.	4028	Ishihara Sangyo Kaisha, Ltd.
4403	NOF Corp.	4409	Harima Chemical, Inc.
4452	Kao Corp.	4461	Dai-ichi Kogyo Seiyaku Co., Ltd.
4613	Kansai Paint Co., Ltd.	4612	Nippon Paint Co., Ltd.
5014	Japan Energy Corp.	5009	Fuji Kosan Co., Ltd.
5101	The Yokohama Rubber Co., Ltd.	5110	Sumitomo Rubber Industries, Ltd.
5105	Toyo Tire & Rubber Co., Ltd.	5106	The Ohtsu Tire & Rubber Co., Ltd.
5201	Asahi Glass Co., Ltd.	5202	Nippon Steel Glass Co., Ltd.
5403	Kawasaki Steel Corp.	5406	Kobe Steel, Ltd
5471	Daido Steel Co., Ltd.	5476	Nippon Koshuha Steel Co., Ltd.
5482	Aichi Steel Corp.	5632	Mitsubishi Steel Mfg. Co., Ltd.
5602	Kurimoto, Ltd.	5633	Kanto Special Steel Works, Ltd.
5991	NHK Spring Co., Ltd.	5716	Nippon Mining & Metals Co., Ltd.
6473	Koyo Seiko Co., Ltd.	6480	Nippon Thompson Co., Ltd.
6501	Hitachi, Ltd.	6503	Mitsubishi Electric Corp.
6645	Omron Corp.	6954	Fanuc Ltd.
6701	NEC Corp.	6704	Iwatsu Electric Co., Ltd.
6703	Oki Electric Industry Co., Ltd.	6815	Uniden Corp.
6708	Toyo Communication	6759	Tokin Corp.
6752	Matsushita Electric Industrial	6758	Sony Corp.
6764	Sanyo Electric Co., Ltd.	6765	Kenwood Corp.
6768	Tamura Corp.	6705	NEC Infrontia Corp.
6798	SMK Corp.	6717	Fujitsu Denso Ltd.
6845	Yamatake Corp.	7735	Dainippon Screen Mfg. Co., Ltd.
6931	Japan Storage Battery Co., Ltd.	6934	Shin-kobe Electric Machinery Co., Ltd.
6991	Matsushita Electric Works, Ltd.	6810	Hitachi MaXell, Ltd
7004	Hitachi Zosen Corp.	6273	SMC Corp.
7011	Mitsubishi Heavy Industries, Ltd.	6412	Heiwa Corp.
7205	Hino Motors, Ltd.	7269	Suzuki Motor Corp.
7272	Yamaha Motor Co., Ltd.	7222	Nissan Shatai Co., Ltd.
7282	Toyota Gosei Co., Ltd.	7275	Unishia Jecs Corp.
7701	Shimadzu Corp.	7744	Noritsu Koki Co., Ltd.
7723	Aichi Tokei Denki Co., Ltd.	7724	Kimmon Mfg. Co., Ltd.
7751	Canon Inc.	6594	Nidec Corp.
7752	Ricoh Co., Ltd.	6146	Disco Corp.
7753	Minolta Co., Ltd.	7732	Topcon Corp.
7936	Asics Corp.	7955	Cleanup Corp.
8001	Itochu Corp.	8063	Nissho Iwai Corp.
8002	Marubeni Corp.	8031	Mitusi & Co., Ltd
8013	Naigai Co., Ltd.	8193	Suzutan Co., Ltd.
8231	Mitsukoshi, Ltd.	8242	Hankyu Department Stores, Inc.
8233	Takashimaya Co., Ltd.	8245	Maruei Department Store Co., Ltd.
8238	Isetan Co., Ltd.	8232	Tokyu Department Store Co., Ltd.
9020	East Japan Railway Co.	9022	Central Japan Railway Co.
9031	Nishi-Nippon Rail Road Co., Ltd.	9009	Keisei Electric Railway Co., Ltd.
9064	Yamato Transport Co., Ltd.	9062	Nippon Express Co., Ltd.
9065	Sankyu Inc.	9075	Fukuyama Transporting Co., Ltd.
9101	Nippon Yusen K.K	9104	Mitsui O.S.K. Lines, Ltd.
9201	Japan Airlines Co., Ltd.	9231	Kokusai Kogyo Co., Ltd.
9310	Japan Transcity Corp.	9302	Mitsui - Soko Co., Ltd.

Table 2 Contents of Corporate Culture

(represented in mission statements)

Panel A: Value / Philosophy/ Objective of the Firm	
Concern for the happiness of human being	71.9 %
Concern for shareholders	6.3 %
Respect employees' dignity, sense of security in the job	12.5 %
Skill formation of employees	14.1 %
Worthwhile work for employees	37.5 %
Concern for customers	37.5 %
Commitment to high quality product	35.9 %
Commitment to higher technology	29.7 %
Concern for growth	15.6 %
Concern for survival	9.4 %
Concern for environment	17.2 %
Concern for local community	10.9 %

Norms and Behavioral Standards	
Conscientiousness and cordiality on the job	31.3 %
Innovation and originality	45.3 %
Challenge and aggressiveness	18.8 %
Cooperation	10.9 %
To live together with neighbors in harmony	9.4 %
Fairness and transparency	6.3 %

Table 3 Descriptive Statistics

	All Sample	Strong Culture Firms	Weak Culture Firms	Difference
EMPYEARS	15.95	16.35	15.56	0.79 ***
(%)	[3.73]	[3.35]	[4.03]	(0.000)
INSIDER	90.25	92.60	87.89	4.71 ***
(%)	[11.61]	[8.85]	[13.43]	(0.000)
DEBT	62.85	63.26	62.43	0.83
(%)	[18.63]	[16.32]	[20.69]	(0.367)
INTERLOCK	26.25	28.91	23.59	5.32 ***
(%)	[11.11]	[9.65]	[11.82]	(0.000)
ln TA	12.56	12.92	12.20	0.71 ***
(million yen)	[1.31]	[1.21]	[1.32]	(0.000)
AGE	57.31	58.72	55.90	2.82 ***
(years)	[17.25]	[16.57]	[17.79]	(0.001)
ROA	3.13	3.26	3.00	0.26 *
(%)	[2.93]	[2.74]	[3.10]	(0.072)
MKTBK	1.50	1.48	1.53	-0.04
	[0.63]	[0.53]	[0.73]	(0.115)
PARENT	7.65	3.94	11.36	-7.42 ***
(%)	[15.27]	[10.56]	[18.10]	(0.000)
FOREIGN	7.34	8.30	6.38	1.92 ***
(%)	[7.57]	[8.02]	[6.97]	(0.000)
Sample Size	1628	814	814	

Numbers in the columns of All sample, Strong Culture Firms, and Weak Culture Firms are sample means. Standard deviations are in brackets.

Numbers in the Difference column are the differences in means between the strong culture sample and the weak culture sample. ***, **, * indicate that the difference is significant at 1, 5, 10% level, respectively. P-values are in parentheses.

Table 4 Corporte Culture and Employment Policy

	Dependent variables: EMPYEARS			
	(1-1)	(1-1)'	(1-2)	(1-2)'
Intercept	11.39 ***	12.56 ***	11.43 ***	12.67 ***
	(0.000)	(0.000)	(0.000)	(0.000)
CULTURE	0.593 ***	0.648 ***	0.268	0.247
	(0.001)	(0.000)	(0.143)	(0.177)
TOP × CULTURE			0.930 ***	0.980 ***
			(0.001)	(0.001)
TRAIN × CULTURE			0.284	0.457 *
			(0.281)	(0.083)
ln TA	0.097	0.083	0.099	0.078
	(0.115)	(0.180)	(0.127)	(0.233)
AGE	0.045 ***	0.042 ***	0.043 ***	0.04 ***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA		-0.167 ***		-0.185 ***
		(0.000)		(0.000)
MKTBK		-0.134		-0.073
		(0.462)		(0.689)
Year Dummy	Yes	Yes	Yes	Yes
R^2	0.088	0.107	0.095	0.116
Sample Size	1628	1628	1628	1628

***, **, and * indicate that the coefficient is significant at the 1%, 5%, 10%, level , respectively. Numbers in parentheses are p-values, calculated by White's (1980) heteroskedastic-consisitent standard errors.

Table 5 Corporate Culture and Management Sturucture

	Dependent variables: INSIDER			
	(2-1)	(2-1)'	(2-2)	(2-2)'
Intercept	74.66 ***	71.74 ***	74.66 ***	71.50 ***
	(0.000)	(0.000)	(0.000)	(0.000)
CULTURE	3.924 ***	3.771 ***	4.124 ***	4.179 ***
	(0.000)	(0.000)	(0.000)	(0.000)
TOP × CULTURE			-0.627	-0.749
			(0.406)	(0.330)
TRAIN × CULTURE			-0.147	-0.586
			(0.820)	(0.366)
ln TA	0.622 ***	0.658 ***	0.618 ***	0.672 ***
	(0.001)	(0.001)	(0.002)	(0.001)
AGE	0.121 ***	0.128 ***	0.121 ***	0.130 ***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA		0.452 ***		0.469 ***
		(0.000)		(0.000)
MKTBK		0.252		0.206
		(0.631)		(0.697)
Year Dummy	Yes	Yes	Yes	Yes
R^2	0.079	0.092	0.080	0.093
Sample Size	1628	1628	1628	1628

***, **, and * indicate that the coefficient is significant at the 1%, 5%, 10%, level , respectively. Numbers in parentheses are p-values, calculated by White's (1980) heteroskedastic-consisitent standard errors.

Table 6 Corporate Culture and Capital Structure

	Dependent variables: DEBT			
	(3-1)	(3-1)'	(3-2)	(3-2)'
Intercept	2.815 (0.544)	16.92 *** (0.001)	2.801 (0.551)	18.18 *** (0.000)
CULTURE	-3.046 *** (0.000)	-2.626 *** (0.002)	-2.222 ** (0.023)	-2.504 *** (0.009)
TOP × CULTURE			-2.542 * (0.089)	-2.595 * (0.099)
TRAIN × CULTURE			-0.633 (0.553)	0.996 (0.345)
ln TA	4.776 *** (0.000)	4.608 *** (0.000)	4.764 *** (0.000)	4.520 *** (0.000)
AGE	0.163 *** (0.000)	0.137 *** (0.000)	0.166 *** (0.000)	0.137 *** (0.000)
ROA		-1.457 *** (0.000)		-1.442 *** (0.000)
MKTBK		-3.044 *** (0.002)		-3.202 *** (0.001)
Year Dummy	Yes	Yes	Yes	Yes
R^2	0.149	0.222	0.151	0.223
Sample Size	1628	1628	1628	1628

***, **, and * indicate that the coefficient is significant at the 1%, 5%, 10%, level , respectively. Numbers in parentheses are p-values, calculated by White's (1980) heteroskedastic-consisitent standard errors.

Table 7 Corporate Culture and Interlocking Shareholdings .

	Dependent variables: INTERLOCK			
	(4-1)	(4-1)'	(4-2)	(4-2)'
Intercept	27.13 ***	29.63 ***	27.05 ***	33.23 ***
	(0.000)	(0.000)	(0.000)	(0.000)
CULTURE	5.385 ***	5.671 ***	7.737 ***	7.684 ***
	(0.000)	(0.000)	(0.000)	(0.000)
TOP × CULTURE			-7.154 ***	-6.897 ***
			(0.000)	(0.000)
TRAIN × CULTURE			-1.855 ***	-1.309 *
			(0.008)	(0.062)
ln TA	-0.617 ***	-0.653 ***	-0.648 ***	-0.707 ***
	(0.003)	(0.001)	(0.001)	(0.000)
AGE	0.135 ***	0.123 ***	0.144 ***	0.132 ***
	(0.000)	(0.000)	(0.000)	(0.000)
ROA		-0.743 ***		-0.646 ***
		(0.000)		(0.000)
MKTBK		0.675		0.251
		(0.196)		(0.616)
Year Dummy	Yes	Yes	Yes	Yes
R^2	0.144	0.174	0.186	0.210
Sample Size	1628	1628	1628	1628

***, **, and * indicate that the coefficient is significant at the 1%, 5%, 10%, level , respectively. Numbers in parentheses are p-values, calculated by White's (1980) heteroskedastic-consisitent standard errors.

Table 8 Corporate Culture and Profitability

	Dependent variables: ROA			
	(5-1)	(5-1)'	(5-2)	(5-2)'
Intercept	5.279 ***	5.132 ***	5.779 ***	5.677 ***
	(0.000)	(0.000)	(0.000)	(0.000)
CULTURE	0.356 ***	0.419 ***	-0.099	0.013
	(0.010)	(0.003)	(0.534)	(0.934)
TOP × CULTURE			0.332	0.205
			(0.137)	(0.334)
TRAIN × CULTURE			0.887 ***	0.823 ***
			(0.000)	(0.000)
ln TA	-0.068	-0.168 ***	-0.102 *	-0.204 ***
	(0.193)	(0.005)	(0.054)	(0.001)
AGE	-0.016 ***	-0.007 **	-0.018 ***	-0.009 ***
	(0.000)	(0.036)	(0.000)	(0.007)
PARENT		0.031 ***		0.029 ***
		(0.000)		(0.000)
FOREIGN		0.111 ***		0.110 ***
		(0.000)		(0.000)
Year Dummy	Yes	Yes	Yes	Yes
R^2	0.090	0.174	0.103	0.185
Sample Size	1628	1628	1628	1628

***, **, and * indicate that the coefficient is significant at the 1%, 5%, 10%, level , respectively. Numbers in parentheses are p-values, calculated by White's (1980) heteroskedastic-consisitent standard errors.