

Corporate Culture and Managerial Delegation:

A Comparative Study of Japanese and American Multinational Enterprises

Keyword | Multinational enterprises (MNEs); cultural belief; managerial delegation; collectivist society

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1. Introduction

The study on the cultural aspects of multinational enterprises (MNEs) has a rich and growing literature, although the economic and institutional analysis on this subject is still in its nascency. This paper is, to the best of my knowledge, the first attempt to apply Greif's (1994) "cultural beliefs" model to a comparative institutional analysis of the nature of MNEs. As a matter of fact, there is fairly general agreement among scholars on the point that Japanese MNEs share certain collectivistic culture, as opposed to the individualistic culture of Anglo-Saxon MNEs (Kojima 1978 and Koike 1999). Although there is plenty of description about cultural aspects of Japanese MNEs in this line of literature, what is lacking is a formal tool to illustrate the essence of this subject systematically and analytically. This paper may be viewed as an attempt to provide a bridge to a more formal analysis of cultural dimensions of MNEs employing Greif's (1994) model as an analytical benchmark.

I lay a special emphasis on the hypothesis that Japanese MNEs, like Greif's (1994)

collectivist societies, are inclined to hesitate to make managerial delegation to non-Japanese talents. This paper concludes by presenting evidence consistent with the hypothesis: Japanese MNEs have a significant tendency to send more directors (both the top of the board of directors (BOD) and directors as a whole) from the headquarters to their foreign affiliates than American MNEs do. In addition to this, so far as the appointment of the top of the BOD is concerned, Japanese auto-related MNEs are segregated and collectivistic in the sense of Greif's (1994) model that they are more likely to send the top of the BOD from their headquarters. The similarity between Japanese MNEs and Greif's (1994) collectivist societies are also confirmed in respect of (i) pay for directors (or agents) and (ii) valuation on information sharing.

The rest of the paper is organized as follows. Section 2 provides a definition of cultural beliefs, and then shows some important implications of Greif's (1994) cultural beliefs model. Section 3 describes the data source, the sample selection, the variables and the specification of the empirical models. Section

4 summarizes and interprets the empirical results. Some discussions on the empirics and other broader issues are presented in section 5. Section 6 concludes the paper and suggests some directions for further research.

2. Greif's Cultural Beliefs Model and Its Implication to MNEs' Behavior

The main hypothesis of this paper is that, as shown in the introduction, Japanese MNEs share collectivistic cultural beliefs in the sense of Greif's (1994) model and have a tendency to send more directors from the headquarters to their foreign affiliates than other individualistic MNEs do. Before turning to a formal empirical analysis, I shall address three fundamental questions to the hypothesis. First of all, what are cultural beliefs anyway? Second, what are the implications of Greif's (1994) cultural beliefs model? Third, is there really any evidence to show that the characteristics of Japanese MNEs conform to the setting and implications of Greif's (1994) model?

2.1 Definition of Cultural Beliefs

"Cultural beliefs" is a terminology that I borrowed from Greif's (1994) epoch-making work which formally analyzes the relationship between the cultural constraints of the societies and their economic performance. He defines cultural beliefs as follows:

(C)ulture --- an important component of which is cultural beliefs. Cultural beliefs are the ideas and thoughts common to several individuals that govern interaction ---between these people, and between them, their gods, and other groups--- and differ from knowledge in that they

are not empirically discovered or analytically proved. In general, cultural beliefs become identical and commonly known through the socialization process by which culture is unified, maintained, and communicated" (Greif 1994, p.915).

It seems fair to say that this definition of cultural beliefs, a formalization of an aspect of culture as a whole, makes sense not only as a reflection of reality but as an analytical setting. Analytically speaking, when each player chooses his best response to these identical and commonly known beliefs, the set of permissible cultural beliefs is restricted to those that are self-enforcing. I employ this descriptive definition in the present paper.¹ This definition implies that a cultural belief is a kind of institutions, following the definition by Nabli and Nugent (1989).²

2.2 Implications of Greif's Cultural Beliefs Model

Greif (1994) offers an interestingly original historical institutional analysis dealing with the one-sided Prisoner's Dilemma (OSPD) in the context of Mediterranean trade in the medieval world. He compares the different ways in which Genoese merchants from the Latin region and Maghribi merchants from North Africa would respond to the same agency problem. In enforcing honest behavior of agents, the different beliefs in the two merchant groups (an individualistic belief for the Genoese and a collectivistic belief for the Maghribis) have implications for the historical trajectories of organizational characteristics of the societies and institutional evolutions. There is no space for an extended discussion on the article,³ but let me summarize some important implications of his model.

[Implication 1] In collectivist societies, like the Maghribis, the social structure is segregated in the sense that each individual socially and economically interacts mainly with members of a specific ethnic or familial group. On the contrary, in individualist societies, like the Genoese, the social structure is integrated in the sense that economic transactions are conducted among people from different groups. Typically, when inter-economy agency relations become possible, while collectivist merchants do not utilize such an opportunity following their segregation principle, individualist merchants may find it optimal to establish the inter-economy agency relations (proposition 4 and 5, Greif 1994, pp.933-935).

[Implication 2] In collectivist societies, social structure tends to be horizontal in the sense that each merchant serves as an agent, and vice versa. In contrast, social structure in individualist societies is likely to be vertical in the sense that the class division of merchants and agents are decisive (Greif 1994, pp. 927-929).

[Implication 3] So far as contract enforcement is concerned, while collectivist societies tend to rely upon informal institutions such as moral sanctions against deviants, individualist societies mainly resort to specialized second-party organizations such as the court (Greif 1994, pp.924-925 and 936-939).

Among these, the first two implications are, broadly speaking, the consequences of the different efficiency wages between collectivist and individualist societies (proposition 1 and 2, Greif 1994, pp.919-920). The last point comes from the two societies' different valuation on information sharing (proposi-

tion 3, Greif 1994, p.921).

2.3 Do Japanese MNEs Have Similar Features with Greif (1994)'s Collectivistic Societies?

As I mentioned earlier, there is fairly general agreement on the point that Japanese firms share certain collectivistic culture, as opposed to the individualistic culture of Anglo-Saxon firms; one of the differences in the economic literature is whether they deal with the cultural factors explicitly (Itagaki 1997a, 1997b) or not (Kojima 1978; Aoki and Okuno-Fujiwara 1996; Aoki 2010). Although there is no systematic quantitative analysis on the relationship between MNEs' nationality and their decisions on managerial delegation, it is generally said that Japanese MNEs tend not to delegate the corporate control to non-Japanese directors (Itagaki 1997). In addition, there are some interesting theoretical and empirical findings in the literature of the economic analysis of Japanese firms, namely, (i) Japanese firms are inclined to invest in information networking among their business partners (Hoshi 1994), and (ii) their organizational structures are more horizontal than the American ones (Aoki 1986, 1988). One may associate these features with the ones of Greif's collectivist societies mentioned earlier.

Thus, it seems reasonable to assume that we have solid rationale to hypothesize that Japanese companies are something like Greif's (1994) collectivist societies. Especially, I would like to focus my attention on an empirical investigation whether Japanese MNEs are segregated in the sense of Greif's (1994) [implication 1] and have a tendency to send more directors from the headquarters to their foreign affiliates than other individualistic MNEs do. In this paper, I take

Table 1: Industrial Distribution

	J. Affiliates (in U.S.)		A. Affiliates (in Japan)	
	Number	Share (%)	Number	Share (%)
1) Auto Related	43	40.2	3	11.5
2) Chemical	12	11.2	2	7.7
3) Electrics & Electronics	15	14.0	2	7.7
4) Foods	3	2.8	1	3.8
5) Service/IT	0	0.0	7	26.9
6) Service/Others	15	14.0	9	34.6
7) Machinery	14	13.1	0	0.0
8) Metals & Ceramics	3	2.8	1	3.8
9) Others	2	1.9	1	3.8
Total	107	100.0	26	100.0

Source: (1) Japanese affiliates in U.S.: Kaigai Shinshutsu Nippon Kigyo Soran, 2011, Toyo-keizai Shinposha. (2) American affiliates in Japan: Kaisha Shikihou, Fall 2011, Toyo-keizai Shinposha.

up a comparison of Japanese and American MNEs since they are a good reflection on Greif's (1994) collectivist societies and individualist societies, respectively.

It should also be added that it is not my present purpose to explore all the implications above and search for more comprehensive applications to the study of MNEs. However, some other important implications, such as (i) the differences in pay for directors (or agents) and (ii) different valuation on information sharing, are briefly examined later on to confirm the validity of my arguments.

3. The Data, Sample Selection and Empirical Models

3.1 Data Source and Sample Selection

First, to pick up American MNEs' affiliates operating in Japan (American affiliates in Japan, hereafter), I use data from the publicly available Japanese database, Kaisha Shikihou (KS, The Dictionary of Japanese Listed Companies), Fall 2011 edition, provided by Toyo-keizai Shinposha. Second, to select Japanese MNEs' affiliates operating in U.S. (Japanese affiliates in U.S., hereafter), I use data from the database, Kaigai

Shinshutsu Kigyo Soran (KSKS, The Dictionary of Japanese Companies Operating Abroad), 2011 edition, provided by the same publisher, Toyo-keizai Shinposha. These are standard databases used by academic scholars and management professionals to analyze listed companies in Japan and their foreign affiliates. The KS covers 3,596 listed companies in Japan and the KSKS does 22,400 Japanese foreign affiliates. From these databases, I obtain cross-section data on 133 affiliates, which can be decomposed into 26 American affiliates in Japan and 107 Japanese affiliates in U.S.

3.2 Statistical Outlook

Before turning to the regression modeling, let me show a statistical outlook of the 133 sample companies. I use the same sample in my empirical analysis later.

Table 1, indicating the industrial distribution of Japanese affiliates in U.S. (the second and third column) and Japanese affiliates in U.S. (the fourth and fifth column), vividly illustrates the different features of these two groups. The table proves that about two-fifths of Japanese affiliates in U.S. are concentrating only in the auto-related industry and 14 per cent in the elec-

Table 2: Summary Statistics of the Sample Companies

	SHHQ	TPHQ	P's Share	Age	Sales	Employees
[1] J. Affiliates (in U.S.)	0.639	0.692	0.876	19.1	470	920
[2] A. Affiliates (in Japan).	0.284	0.308	0.515	16.8	2,654	5,415
Differential ([1]-[2])	0.355***	0.384***	0.361**	2.3	-2,184***	-4,495***

Source: Same as table 1.

Notes: (1) Means of top's nationality are calculated using the binary measure {If from its parent company=1, if not=0}.

(2) Sales volume: Million U.S.\$.

(3) *** Significant at 1 per cent, **Significant at 5 per cent.

trical and electronics goods industry. On the other hand, for American ones in Japan, the share of service sector is remarkably high, more than three-fifths.

Next, table 2 summarizes the basic statistics of these sample companies. It compares the mean values of Japanese and American affiliates in terms of (i) the share of the directors who are sent from their headquarters, and (ii) whether the top of the BOD, such as a chairperson, the CEO, a managing director, is sent from their headquarters (yes is counted by 1; otherwise, 0), (iii) the shareholding of parent companies, (iv) age, (v) sales turnover, and (vi) the number of employees. As the table indicates, Japanese affiliates in U.S. are, relatively speaking, owned in large proportion by the parent companies (87.6 per cent vis-à-vis 51.5 per cent), old (19.1 years vis-à-vis 16.8 years), small in sales scale (470 million U.S. dollars vis-à-vis 2,654 million) and employment (920 vis-à-vis 5,415).

More noteworthy are the differentials in their decision of managerial delegation. First, the proportion of the directors from their headquarters (SHHQ in table 2) in Japanese affiliates in U.S. is markedly lower than the one of Americans in Japan (63.9 per cent vis-à-vis 28.4 per cent). Second, the probabilities that the top of the directors is sent from their headquarters also differ sharply: the probability that the top of Japa-

nese affiliates in U.S. is from their headquarters (TPHQ in table 2) is higher than the one in American affiliates in Japan (62.9 per cent vis-à-vis 30.8 per cent). The differentials between these two groups are both statistically significant at 1 per cent level. These findings appear to support my hypothesis that Japanese MNEs have a tendency to send more (top) directors from the headquarters to their foreign affiliates than American MNEs do. However, these decisive differentials may be, at least to some extent, due to the fact that the share of parent company ownership in Japanese affiliates is higher than that of Americans. The aim of the regression analysis in the next section is, therefore, to look at the difference in managerial delegation decisions between Japanese and American MNEs, after controlling the effects of the share of parent company ownership (and other controls).

3.3 The Models

The following regression models examine the hypothesis spelled out in the last section: that is, whether Japanese MNEs have tendency to send more (top) directors from the headquarters to their foreign subsidiaries than American MNEs do. Dependent variable of model 1 and model 2 are (i) the proportion of the directors from their headquarters (SHHQ) and (ii) the probability that the top of the BOD is sent from their

Table 3: Estimation Results

Dependent Variable	SHHQ		TPHQ	
	(1) OLS	(2) OLS	(3) Probit	(4) Probit
Estimation Method				
Independent Variables:				
Parent's Shareholdings	0.484*** [0.091]	0.481*** [0.098]	1.485*** [0.547]	2.948*** [0.741]
Sales Volume	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]	0.000 [0.000]
Age of the Company	-0.002 [0.002]	-0.002 [0.002]	-0.009 [0.011]	-0.005 [0.011]
Japanese MNE dummy	0.186*** [0.059]	0.200*** [0.073]	0.567* [0.350]	-0.526 [0.467]
Service Industry Dummy		0.015 [0.054]		-0.114 [0.325]
IT Industry Dummy		0.026 [0.070]		0.104 [0.433]
Auto Industry Dummy		0.007 [0.049]		1.606*** [0.406]
Constant	0.069 [0.072]	0.050 [0.087]	-1.058*** [0.442]	-1.901*** [0.591]
Adjusted R Squared	0.377	0.363	0.121	0.247
Number of Observations	133	133	133	133

Notes: (1) Standard errors in parentheses. (2) ***1% significant, **5% significant, *10% significant

headquarters, respectively. I apply OLS estimation for model 1 and probit model estimation for model 2.⁴ For each model, I include some control variables which may have impacts on the decision of director appointment.

[Model 1] SHHQ = $\beta_0 + \beta_1 \text{PSH} + \beta_2 \text{SAL} + \beta_3 \text{AGE} + \beta_4 \text{JPD} + \beta_5 \text{SVD} + \beta_6 \text{ITD} + \beta_7 \text{ATD} + \epsilon$ (OLS regression),

[Model 2] TPHQ = $\beta_0 + \beta_1 \text{PSH} + \beta_2 \text{SAL} + \beta_3 \text{AGE} + \beta_4 \text{JPD} + \beta_5 \text{SVD} + \beta_6 \text{ITD} + \beta_7 \text{ATD} + \epsilon$ (probit model regression).

The most crucial independent variable for my analysis is JPD, a Japanese MNE dummy variable which represents whether the firm belongs to Japanese affiliates in U.S. Among controls, the proportion of parent company's shareholding (PSH) is expected to have strong positive impacts on the dependent variables in each model. In addition to this, I chose sales turnover (SAL), age of the company (AGE), and three industry dummies (a service industry dummy (SVD), an IT industry dummy (ITD) and an auto-related industry dummy (ATD)) as controls. Age variable has a reasonable expectation to produce a negative effect (the older the company is, the more managerial delegation to indigenous talents).

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4. Empirical Findings

4.1 Directors Sent from the Headquarters

(SHHQ) and Japanese MNE Dummy
Column 1 and 2 of table 3 summarizes the estimation results of model 1 for all 133 Japanese and American affiliates.

First and foremost, I can find that Japanese MNE dummy has a positive and statistically significant impact on the proportion of the directors from their headquarters. This result indicates that my main hypothesis, which says that Japanese MNEs have a ten-

dency to send more directors from the headquarters to their foreign subsidiaries than American MNEs do, is strongly supported by evidence. The significance is robust whether the industry dummies are included (column 2) or not (column 1). If I take up the case with the industry dummies, Japanese MNE dummy brings 20 per cent higher proportion of the directors sent from their headquarters compared to American affiliates in Japan.

Second, among control variables, parent company's shareholding has a positive and statistically significant impact on the dependent variable, as was expected. Other controls, however, does not play any significant role in the regressions. Age of the company has a negative impact on the dependent variable as was expected, but the effect is not statistically significant.

4.2 Top of the Directors Sent from the Headquarters (TPHQ) and Japanese MNE Dummy

The results of model 2 are shown in column 3 and 4 in table 3. As I mentioned earlier, I employed probit model estimation for this model.

First, let me look at the specification without the industry dummies (column 3). In this case, Japanese MNE dummy has a positive and statistically significant impact on the probability that the top of the BOD is sent from their headquarters. Computation of marginal effect (when Japanese MNE dummy goes 0 to 1) using this specification shows that the probability that Japanese MNEs send the top of the BOD from the headquarters is 18.2 per cent higher than the one that American MNEs do. This result confirms the robustness of my main hypothesis in terms of top managerial delegation.

What is interesting, however, is the result of the specification with the industry dummies (column 4). In this setting, the significance of Japanese dummy disappears and then the auto industry dummy shows a strong positive correlation with the dependent variable. Judging from the fact that 26 out of 29 auto-related companies in the sample are Japanese affiliates in U.S., it seems reasonable to suppose that, among Japanese MNEs, auto-related ones are specifically conservative in the sense that they are more likely to send the top of the BOD from the headquarters.

So far as the other controls are concerned, the results are broadly similar with the ones in model 1. Parent company's shareholding has a strong positive effect on the dependent variable and the correlation is statistically significant. Sales, age, and the industry dummies, except for the auto industry dummy, are insignificant in the regressions.

To sum up, empirical evidence in my regression analysis is strongly consistent with the hypothesis that I spelled out in line with Greif's (1994) model. Japanese MNEs have a significant tendency to send more directors (both the top of the BOD and directors as a whole) from the headquarters to their foreign affiliates than American MNEs do. In addition to this, so far as the appointment of the top of the BOD is concerned, Japanese auto-related MNEs are segregated and collectivistic in the sense of Greif's (1994) model that they are more likely to send the top of the BOD from the headquarters.

5. Discussion

The main hypothesis of this paper is, as I have seen in the previous section, strongly supported by evidence. There may be, how-

ever, criticism which can be raised against my arguments from various aspects. In this section, I shall take up some potential objections to my arguments. Here, let me put a conclusion of my analysis first: the potential objections are not strong enough to deny the validity of my arguments.

5.1 Are Regulatory Environments Comparable?

One may point out the possibility that the frameworks to regulate foreign direct investments (FDI) are not comparable between Japan and U.S., and thus my method of pooling regressions makes little sense. For example, between these two countries, if there are remarkable differences in the rules of (i) appointment of foreign directors, (ii) appointment of outside directors and (iii) the limits of foreign ownership (they are sometimes sector-specific), my empirical results may be potentially biased.

Japan External Trade Organization (JETRO) (1995) provides useful information to examine this point more closely. The Japanese government-sponsored organization conducted a comparative study on the FDI policies in Japan and U.S. JETRO's (1995) conclusion is that there is no fundamental difference between Japanese and American regulatory environments in FDI, except for the fact that Japanese Company Act sets higher hurdles in the case of outside director appointment than American counterpart does. It seems unrealistic to suppose that this kind of minor difference causes a serious problem in my empirical study.⁵

5.2 Is the Similarity in Managerial Delegation Just a Coincidence?

Another possible objection may challenge to my arguments in the wider context. That is,

the similar behavioral pattern of Japanese MNEs with Greif's (1994) collectivist societies in managerial delegation to the agents is just a coincidence and it is an exaggeration to conclude, only from this ground, that Japanese MNEs are something like Greif's (1994) collectivist societies. Thus, in order to make my arguments more promising, it is right to pick up some other important aspects of Greif's (1994) implications, such as (i) the differences in pay for directors (or agents) and (ii) different valuation on information sharing.

The first point is a difference in pay for directors (or agents). In a widely cited article, Kaplan (1994) concludes that the top executives in large American firms earned, on average, five times what the executives in large Japanese firms earn in the early 1980s. Using the results of the more recent survey, Abowd and Kaplan (1999) show that pay for the CEOs in U.S. was three times higher than the one of the counterparts in Japan in the mid-1990s. These findings are consistent with Greif's (1994, pp.919-920) proposition 1 and 2 which imply that the efficiency wage is higher in individualist societies than in collectivist societies. It is true that Japanese executives likely receive more non-pecuniary benefits; but, even so, the differences are too huge to overlook.

Second, in respect of information sharing, Hoshi's (1994) seminal work on the Japanese business groups is an informative source. He finds that Japanese business groups (Kigyo-Shudan and/or Keiretsu) are keen to share information among members about their business partners through both periodical formal top-executive meetings (Shacho-kai) and informal gatherings (Renraku-kai and/or Shinboku-kai). It is natural that one may associate these fea-

tures with informal and collectivistic mechanisms of the Maghribis.

All the findings in this section strengthen my arguments earlier. Now it seems reasonable to conclude that the similarity between Japanese MNEs and Greif's (1994) collectivist societies can be found not only in their managerial delegation decisions but also in other respects such as pay for directors (or agents) and valuation on information sharing.

6 . Conclusion and Some Future Directions for Research

This paper is an attempt to examine a hypothesis that the behavior of Japanese companies resembles Greif's (1994) collectivist societies. My special focus is on an empirical investigation into the question whether Japanese MNEs have a tendency to send more directors from the headquarters to their foreign affiliates than American MNEs do. In short, my empirical findings are strongly consistent with the hypothesis. Japanese MNEs have a significant tendency to send more directors (both the top of the BOD and directors as a whole) from the headquarters to their foreign affiliates than American MNEs do. So far as the appointment of the top of the BOD is concerned, Japanese auto-related MNEs are segregated and collectivistic in the sense of Greif's (1994) model that they are more likely to send the top of the BOD from the headquarters. I also briefly examined some other important features, such as (i) pay for directors (or agents) and (ii) valuation on information sharing. The similarity between Japanese MNEs and Greif's (1994) collectivist societies is confirmed in these respects, too.

Since my discussion in the present paper

is just a preliminary approach to this issue, it may be fruitful to suggest a line of research which will yield rich dividends in the future. The first issue is theoretical one which is related to a stationary view of cultural beliefs in the model presented in Greif's (1994) model. The dynamics of the change of cultural beliefs should be a core of the future research since, as Basu (1995, p.32) suggests, "norms do change and undergo mutations." In this respect, to incorporate the dynamics of institutional changes in the context of evolutionary games is an interesting extension.⁶

The second issue is both theoretical and empirical. In this paper, I employ the bilateral comparison between Japanese and American MNEs due to its sharp reflection on Greif's (1994) collectivist and individualist societies. However, to test the robustness of my hypothesis here, one must inevitably introduce broader comparative perspective. Specifically, it is an interesting extension to investigate the case that Japanese and American MNEs are both penetrating into the third world, which can be either something like collectivist or individualist societies. Again, an evolutionary game-theoretic approach shows a valid direction to illustrate the dynamic interactions between different types of MNEs on the theoretical front.

Last but not least, I would like to mention about the relative efficiency of the two distinct economic systems, namely, collectivistic and individual societies. Greif (1994) suggests that individualistic system may have been more efficient in the long run in the context of Mediterranean trade competition. But, in the context of modern manufacturing competition, it seems to be the case that Japanese auto-related MNEs, which appear as collectivists especially in regard to top executive appointment, have competitive

strength in the world market. After all, relative efficiency and growth performance between the different economic organizations is, as Greif (1994) suggests, path-dependent and case-dependent. Relative growth performance and its path dependency in the different systems is an important (although too involved to treat here in detail) subject and I leave an extension of my interest to this direction for my future research topic.

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* I am extremely grateful to Timur Kuran for his valuable suggestions and comments on the direction of this research. I alone am responsible for the errors that may remain.

Notes

1 This definition naturally raises the question whether there is any analytical benefit from distinguishing between strategies and cultural beliefs. Unlike strategies, as Greif (1994, p.

- 915) claims, cultural beliefs are qualities of individuals that affect decisions in historically subsequent strategic situations. Typically, cultural beliefs provide focal points and coordinate expectations, thereby influencing equilibrium selection and society's enforcement institutions. On the other hand, Basu (1995) and Nagaishi (2003) are the examples that explicitly identify cultural norms with a game's strategy sets.
- 2 Nabli and Nugent define an institution as "a set of constraints which governs the behavioral relations among individuals or groups" (Nabli and Nugent 1989, p.1335).
 - 3 For an interpretation of Greif's (1994) model from a somewhat different perspective, see Aoki (2001, Section 3.2).
 - 4 I also tried logit model estimation and OLS estimation for model 2, but the results remain qualitatively the same.
 - 5 JETRO (1995) examines only formal regulations and pays scant attention to the informal constraints concerning appointment of directors and acquisition of company ownership in Japan and U.S. These informal aspects, however, definitely play a role in the managerial delegation decisions of MNEs. I leave the issue for a future research topic.
 - 6 Nagaishi (2008) attempts a theoretical exploration on the direction. See also Kuran and Sandholm (2008) for an inclusive survey on the recent development of the game-theoretic approach to cultural evolution.