The importance of national culture in the design of and preference for management controls for multi-national operations

Chee W. Chow\textsuperscript{a}, Michael D. Shields\textsuperscript{b, *}, Anne Wu\textsuperscript{c}

\textsuperscript{a}San Diego State University
\textsuperscript{b}Department of Accounting, Michigan State University, Broad Graduate School of Management, East Lansing, MI 48824-1121, USA
\textsuperscript{c}National Chengchi University

\section*{Abstract}

This study investigates the effects of national culture on firms' design of and employees' preference for management controls. Data for testing two hypotheses are collected from 159 Taiwanese managers working in six each of Japanese-, Taiwanese-, and U.S.-owned, size-matched, computers/electronics firms in Taiwan. Overall, the results are consistent with national culture affecting these firms' design of and employees' preference for seven management controls, though there also are anomalies. These findings are combined with prior research for identifying desirable improvements in research design and method, variable measurement and selection, and, most important, the theoretical foundation for culture-based research on management controls.

Management control systems (MCSs) help organizations to increase the probability that employees make decisions and take actions which are in the organizations' best interest. Prior research on the determinants of MCS design has reported that MCSs are contingent on technology, competition, environmental uncertainty, and organizational size (Otley & Wilkinson, 1988; Fisher, 1995). Extant research also has reported that organizational structures are contingent on these variables (Hall, 1987; Lincoln & Kalleberg, 1990). However, while similarities exist across countries in the relationship between organizational context (e.g. technology, size, uncertainty) and organizational design (e.g. formalization, standardization, decentralization), considerable variation remains across countries which these contingency variables do not explain (Child, 1981; Lincoln & Kalleberg, 1990). In addition, extant research on the preferences for and design of MCSs has reported cross-national differences. (Examples of such research will be presented later.) Together, these latter findings are consistent with the existence of nation-specific factors which affect the design of and preference for controls within a country.

The purpose of this study is to advance understanding of how national culture affects preferences for and the design of MCSs. This is an important topic in the current era of global operations, as companies increasingly need to know whether management controls that are effective in one national setting will have alternate levels of effectiveness if used in a different national setting. A number of prior studies have investigated this issue (Birnberg & Snodgrass, 1988; Harrison, 1992, 1993; Ueno & Wu, 1993; Chow et
al., 1994, 1996; Harrison et al., 1994; Merchant et al., 1995; O’Connor, 1995). While some support has been found for the predicted effects of national culture on MCS preference and design, the results of many tests have been either non-significant, or significant but either the sign of the mean difference or the form of the detected interaction was opposite to prediction.

An important cause of these mixed within-study results may be ineffective control for the effects of contingency variables. For example, many prior studies have used samples of managers who work for firms in different countries. But there can be great variation in such firms’ technology, uncertainty and size, which could drive or confound the test results. In addition, firms that operate in different national settings may be subject to different laws, regulations and local competitive factors (e.g. labor supply) which can impact their MCS design. Thus, while it seems appropriate to test for the effects of national culture on MCSs by comparing samples from different national cultures, not controlling for other factors, such as firm size and industry, can significantly reduce the reliability of the results.

A consideration in the design of the current study was to preserve comparability to prior studies in order to facilitate an integrative evaluation of these studies. Thus, we retained Hofstede’s taxonomy of national culture—which all of the prior related studies (except Birnberg & Snodgrass, 1988) had used—as the basis for deriving predictions. To control for the effects of other contingency variables, data are collected from managers of a common ethnicity (Chinese) who are employed by 18 firms from the same geographic location (a high-tech industrial park outside Taipei) and industry (electronics and/or computers). Six each of these firms are Japanese-, U.S.-, and Taiwanese-owned, and they are matched on size across national ownership. Inferences about the importance of national culture are drawn based on comparing the Japanese- and U.S.-owned firms’ controls in their Taiwanese operations against those of the local Taiwanese-owned firms.

The remainder of this paper is organized into five sections. The first section provides a review of prior research on national culture and management control and then develops predictions about Japanese-, US - and Taiwanese-owned firms’ MCSs in their home-country and Taiwanese operations. The second section develops two hypotheses and analyzes issues related to the design of the empirical study. The third and fourth sections describe the empirical method and results. The final section discusses the empirical results and provides suggestions for future research.

1. Literature review

This section provides a brief review of theoretical taxonomies of work-related national culture. Then it reviews cross-national studies which have tested predictions based on Hofstede’s (1980, 1991) taxonomy concerning either MCS preference or design, or the effects of a national culture-by-management control interaction. Next, Hofstede’s taxonomy is used to develop predictions about the design of and preference for seven management controls in Japanese- and US-owned firms’ home-country operations as well as the controls they and Taiwanese-owned firms use in their Taiwanese operations. Predicted Japan–US home-country differences are compared to extant research findings to shed further light on the efficacy of Hofstede’s taxonomy and to provide a basis for inferring culture-driven changes that Japanese and U. S. firms need to make to their domestic MCSs for transfer to their Taiwanese operations. (Only minimal comparative findings for Taiwan are available.)

1.1. Theoretical taxonomies of national culture

Several taxonomies exist that identify and operationalize components of national culture (Hellriegel et al., 1992; Smith, 1992; Adler, 1996; Hodgetts & Luthans, 1997). The initial appearance of these taxonomies spans a considerable time period, with two recent additions being those of Schwartz (1994) and Trompenaars (1994). Schwartz (1994) has 10 national culture types—Achievement, Benevolence, Conformity, Hedonism, Power, Security, Self-Direction, Stimulation, Tradition, and Universalism—which have a two-
dimensional structure—Openness to change vs conservatism, and self-enhancement vs self-transcendence. Trompenaars (1994) has seven cultural orientations. Five of these are based on how people relate to each other: Universalism vs Particularism, Individualism vs Collectivism, Neutral vs Emotional, Specific vs Diffuse, and Achievement vs Ascription. The remaining two orientations are people’s attitudes toward time and the environment. Extending Trompenaars’ work, Smith et al. (1996) using a sample of 8,841 workers in 43 countries identified a three-dimensional model with two primary dimensions (achievement–ascription, individualism–collectivism). Because of their recency, these new taxonomies have not been extensively validated, nor have they been used in MCS research. Also, theoretical linkages between their national culture constructs and management controls have yet to be developed.

In contrast, Hofstede’s (1980, 1991) taxonomy has been extensively validated (Chinese Cultural Connection, 1987; Bochner, 1994; Søndergaard, 1994; Smith et al., 1996) and widely used in prior MCS research (Soeters & Schreuder, 1988; Chow et al., 1991; Harrison, 1992, 1993; Ueno & Wu, 1993; Harrison et al., 1994; Merchant et al., 1995; O’Connor, 1995). Consequently, we rely on Hofstede’s framework to increase comparability of our results to those of prior research.

Hofstede’s taxonomy has five dimensions: individualism, power distance, uncertainty avoidance, masculinity, and Confucian dynamism. For the three countries examined in the current study, Hofstede (1980, 1991) has reported the following cultural scores, along with summary statistics for a large number of countries from around the world:

<table>
<thead>
<tr>
<th></th>
<th>Japan</th>
<th>Taiwan</th>
<th>U.S. Mean</th>
<th>Range</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individualism</td>
<td>46</td>
<td>17</td>
<td>91</td>
<td>51</td>
<td>2–91</td>
</tr>
<tr>
<td>Power distance</td>
<td>54</td>
<td>58</td>
<td>40</td>
<td>51</td>
<td>11–94</td>
</tr>
<tr>
<td>Uncertainty avoidance</td>
<td>92</td>
<td>69</td>
<td>46</td>
<td>64</td>
<td>8–112</td>
</tr>
<tr>
<td>Masculinity</td>
<td>95</td>
<td>45</td>
<td>62</td>
<td>51</td>
<td>5–95</td>
</tr>
<tr>
<td>Confucian dynamism</td>
<td>80</td>
<td>87</td>
<td>29</td>
<td>46</td>
<td>0–118</td>
</tr>
</tbody>
</table>

Some of these dimensions have been shown to be empirically related to constructs in other national culture taxonomies.

Hofstede (1980, 1983, 1984, 1991) has suggested specific predictions of each of his cultural dimensions for preferences or practices related to controls. Further below, we will use Japan, Taiwan and U.S. scores on each dimension to derive predictions of how their home-country MCS designs would differ if national culture is an important determinant of the design of and preference for MCSs and, by inference, the needed changes in Japanese and U.S. firms’ home-country MCSs for conformance to Taiwanese culture-based preferences. To gain some insights into the applications and applicability of Hofstede’s taxonomy and to provide an empirical basis for our cross-cultural predictions, first consider the summaries in Table 1 of nine prior studies based on Hofstede’s cultural dimensions. The dependent variables in these studies range from preferences for controls (e.g. selection of controllability filters in Chow et al. (1994)), to the design of controls [e.g. control system tightness in Chow et al. (1996) and team rewards in Merchant et al. (1995)], to the effects of controls [e.g. performance in Chow et al. (1991) and job tension and satisfaction in Harrison

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1 These two dimensions are aspects of individualism (Schwartz, 1992; Ralston et al., 1996).

2 Individualism relates to individuals’ emphasis on self interest vs the interests of the group. Power Distance is the extent to which the members of a society accept that power in institutions and organizations is vertically distributed unequally. Uncertainty Avoidance is the degree to which members of a society feel uncomfortable with uncertainty and ambiguity. Masculinity is the preference for achievement, heroism, assertiveness and material success, as opposed to an emphasis on interpersonal relationships, modesty, caring for the weak, and the quality of life. Confucian Dynamism relates to long- vs short-term orientation.

3 Importantly for the present study, Hofstede’s framework has been validated from an Asian perspective by the Chinese Cultural Connection (1987). They used Asian literature to develop an a priori cultural model and then tested it with data from Asian and Western countries. Importantly for our study, there was a high level of correlation between their and Hofstede’s models. In addition, Hofstede’s individualism and power distance are associated with Smith et al.’s (1996) achievement and with Schwartz’s (1994) openness to change/conservatism. Several other studies also have a replicated Hofstede’s framework using a variety of samples during the 1980s and 1990s (Søndergaard, 1994).
Table 1
Descriptions of prior studies which are based on Hofstede (1980, 1991)

<table>
<thead>
<tr>
<th>Study and national cultures included</th>
<th>Control</th>
<th>Culture dimensions*</th>
<th>Prediction</th>
<th>Result = prediction</th>
<th>Non-significant results</th>
<th>Significant unpredicted result; sign or form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chow et al. (1991): Singapore and U.S.</td>
<td>Team pay</td>
<td>I</td>
<td>Performance = f(I \times Team pay \times Task interdependence)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chow et al. (1996): Japan and U.S.</td>
<td>Control system tightness</td>
<td>I</td>
<td>Control system tightness = f(I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Procedural controls</td>
<td>UA</td>
<td>Procedural controls = f(UA)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Centralized directives</td>
<td>PD</td>
<td>Centralized directive = f(PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chow et al. (1994): Japan and U.S.</td>
<td>Controllability filter (CF)</td>
<td>UA</td>
<td>CF = f(Uncertainty \times UA)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Centralized planning (CP)</td>
<td>PD</td>
<td>CP = f(Centralization \times PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Japan and U.S.</td>
<td>Team rewards (TR)</td>
<td>I</td>
<td>TR = f(Interdependence \times I)</td>
<td>From</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison (1992): Australia and Singapore</td>
<td>Participative budgeting (PB)</td>
<td>I/PD</td>
<td>Job tension, satisfaction = f(PB \times BE) and not = f(PB \times BE \times I/PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Budget emphasis in performance evaluation (BE)</td>
<td>I/PD</td>
<td>Job tension, satisfaction = f(RAPM \times I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison (1993): Australia and Singapore</td>
<td>Reliance on accounting performance measures for performance evaluation (RAPM)</td>
<td>I</td>
<td>Job tension, satisfaction = f(RAPM \times I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Harrison et al. (1994): Australia/U.S. and Hong Kong/Singapore</td>
<td>Decentralization</td>
<td>I/PD</td>
<td>Decentralization = f(I/PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Responsibility centers</td>
<td>I/PD</td>
<td>Responsibility centers = f(I/PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term planning</td>
<td>CD, I</td>
<td>Long-term planning = f(CD, I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Formalization of planning and control</td>
<td>PD</td>
<td>Formalization = f(PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Team rewards (TR)</td>
<td>I,UA</td>
<td>TR = f(I,UA)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term incentives (LTI)</td>
<td>CD, I</td>
<td>LTI = f(CD, I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Subjective performance evaluation (SPE)</td>
<td>PD, UA</td>
<td>SPE = f(PD, UA)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>O’Connor (1995): Singapore (local- and foreign-owned firms)</td>
<td>Participative budgeting (PB)</td>
<td>PD</td>
<td>Role ambiguity = f(PB \times PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Participative performance evaluation (PE)</td>
<td>PD</td>
<td>Role ambiguity = f(PB \times PD)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ueno and Wu (1993): Japan and U.S.</td>
<td>Participative budgeting</td>
<td>I</td>
<td>Participative budgeting = f(I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-range budgets</td>
<td>UA</td>
<td>Long-range budgets = f(UA)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Structure of budget process</td>
<td>UA</td>
<td>Long-range budgets = f(UA)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Budget slack</td>
<td>I</td>
<td>Structure = f(UA)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Controllable budgets</td>
<td>I</td>
<td>Budget slack = f(I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Long-term performance - evaluation horizon</td>
<td>I</td>
<td>Controllable Budgets = f(I)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*I = Individualism; M = Masculinity; PD = Power distance; UA = Uncertainty avoidance; I/PD = the joint effects of I and PD.

*CD = Confucian dynamism; I = Individualism; M = Masculinity; PD = Power distance; UA = Uncertainty avoidance; I/PD = the joint effects of I and PD.
A characteristic of most of these prior studies is that each has included only a few management controls which are hypothesized to have an unambiguous relationship with one or more of Hofstede’s (1991) national culture dimensions.

Table 1 reveals that extant empirical support for Hofstede’s cultural dimensions is uneven. Only one of the predictions based on uncertainty avoidance, but most of those linked to individualism, are supported. One implication of these divergent results is that not all of Hofstede’s cultural dimensions are equally applicable across nations. Complicating this interpretation is that some authors have made different interpretations and potentially inconsistent applications of Hofstede’s cultural dimensions. Thus, for example, Harrison et al. (1994, 1994) posited and found that the use of long-term planning is related to Confucian dynamism and individualism, while Ueno and Wu (1993) predicted, though they did not find, that use of long-range budgets increased with uncertainty avoidance.

Factors limiting the reliability and comparability of the prior studies’ findings also need to be noted. First is that they are subject to the potential influences of non-controlled contingency variables. For example, while both Chow et al. (1996) and Merchant et al. (1995) compared firms matched on industry and size, the samples were located in different countries, and the data from each country were collected several years apart. Second, the industries sampled have varied across studies. For example, while most of the other studies had examined manufacturing firms, Harrison’s (1992, 1993) data were collected from the merchandising sector. And even though O’Connor (1995) controlled for local conditions by using firms operating in the same national setting (Singapore), they were from a broad range of manufacturing industries and sizes.

In addition, these studies had collected data from divergent sources. For example, Chow et al. (1996) focused on profit center managers, O’Connor (1995) used mid-level manufacturing managers, the sample in Harrison et al. (1994) was senior accounting and finance executives, and Chow et al. (1991, 1994) used student subjects. These diverse subject groups are likely to have different experiences and employment contexts and, given the results of contingency-theory research, it is reasonable to expect that they also would face, or prefer, different controls. This may be why, for example, even though Chow et al. (1991, 1994) had both focused on the relation between individualism and team-based pay, the former obtained a non-significant result, while the latter had a significant result which was opposite in form to that predicted.

In total, considering the range of unresolved issues in the prior studies, their findings, both individually and in aggregate, are insufficient for reliable conclusions about the importance of national culture—as operationalized using Hofstede’s taxonomy—in the design of and preference for individual management controls and especially for a set of controls. As will be discussed later, many aspects of the current study are aimed at reducing limitations of the prior research.

1.2. National culture and predicted differences in home-country use of controls

Our study focused on seven controls, most of which have been extensively studied in unnational contexts (Otley & Wilkinson, 1988; Merchant, 1989; Birnberg et al., 1990; Fisher, 1995; Young & Lewis, 1995). Together, they provide relatively complete coverage of the major control functions, including organizing, planning, evaluating, and rewarding (Otley, 1980; Flamholtz et al., 1985; Birnberg & Snodgrass, 1988). The advantage of considering a large number of controls is that it enables a comprehensive evaluation of culture’s effects. However, it also has a disadvantage in that for some of the controls it is not possible to develop unambiguous directional predictions without making some assumptions about the relative importance of different cultural dimensions. This issue is further elaborated on in the ensuing analysis.

Below, Hofstede’s taxonomy is first used to derive directional predictions about differences in Japanese, Taiwanese and U.S. home-country preference for and design of the seven controls. These predictions are presented in Table 2 and compared
The predictions in Table 2 are predicated on national culture being an important determinant of the preferences for and design of alternate controls. For each control, column two lists the relevant cultural dimension(s). The third column presents the implication of each operant cultural dimension for the control. Column four combines these implications across cultural dimensions to yield an overall prediction of how Japanese, Taiwanese and U. S. home-country practices would differ. The table also contains relevant prior findings in columns five and six.4

An important note about the predictions is that the cultural dimensions are not expected to be equally important to predicting national culture–management control relationships, particularly for the three countries investigated. First, Hofstede (1980, 1991) has cautioned that uncertainty avoidance may be more relevant to describing Western than Oriental cultures while Confucian dynamism may be more applicable to Asian cultures.

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**Table 2**

Japanese, Taiwanese and U.S. firms' home-country management controls: predictions based on Hofstede's taxonomy of national culture and Japanese–U.S. comparative evidence

<table>
<thead>
<tr>
<th>Management control</th>
<th>Relevant culture dimension(s) in order of assumed importance (direction of expected influence in parentheses)</th>
<th>Univariate predictions by each relevant cultural dimension</th>
<th>Feasible overall directional prediction</th>
<th>Extant comparative studies of Japanese and U.S. firms' home-country practices and preferences</th>
<th>Direction of findings</th>
</tr>
</thead>
</table>

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The evidence to date also indicates that individualism is the most important dimension of national culture, especially when contrasting Western and Oriental culture (Triandis, 1995; Smith et al., 1996).

Second, Japan, Taiwan and the U.S. have varying degrees of divergence across the cultural dimensions and the extent to which countries differ on a relevant cultural dimension should affect the degree to which they vary on the related management control. Based on the distribution of national scores, Hofstede (1980, 1991) has suggested that only differences of 20 or more on a cultural dimension can be considered to be material. For Japan, Taiwan and the U.S., all pairwise differences on individualism and uncertainty avoidance are greater than 20, while even the largest between-nation difference on power distance (Taiwan vs U.S.) is only 18. For masculinity, all pairwise differences are greater than 20 except that between the U.S. and Taiwan. Finally, for Confucian dynamism, all pairwise differences are greater than 20 except between Japan and Taiwan.

Third, Harrison (1992) and Harrison et al. (1994) have noted that most countries’ individualism and power distance scores are negatively associated: countries that are high on one tend to be low on the other. Given this highly significant negative correlation between them, the effects of either cultural dimension on controls would have to be considered in conjunction with those of the other.

Based on the preceding considerations, we assume that for the three nations in this study, when multiple national-cultural dimensions are potentially operative and directional predictions based on them individually conflict, individualism has the largest effect on the design of and preference for management controls, masculinity has the next largest effect, with power distance, Confucian Dynamism and uncertainty avoidance having lesser effects.

1.2.1. Organizing

Decentralization is the extent to which decision making responsibility is delegated to lower levels in a vertical hierarchy. Hofstede (1980, 1983, 1984, 1991) suggests that because power distance relates to the acceptance of vertical power inequality among people, the preference for decentralization is negatively related to it. On the other hand, preference for this control can be expected to increase with individualism because people from individualistic cultures would prefer to have more control over their own actions. Based on our assumption about the relative importance of these two dimensions to the three countries in our sample, U.S. firms’ home-country MCSs are predicted to have more decentralization than those of the Japanese firms, while the Taiwanese firms’ MCSs would have the least.

Structuring of activities refers to the existence of written policies, rules, standardized procedures, and manuals which specify how to and, sometimes how not to, perform activities (Rockness & Shields, 1984; Merchant, 1985). Hofstede (1980, 1983, 1984, 1991) suggests that people higher in uncertainty avoidance are less comfortable with uncertainty and ambiguity, and prefer to cope with them by relying on rules of behavior, structuring of activities, and standardization of procedures. Power distance and individualism also are potentially relevant. People low (high) on individualism (power distance) would prefer, or at least accept, having less control over their own work-related actions. Based on our assumption about the relative importance of these three cultural dimensions, we predict that structuring of activities will be highest in the Taiwanese firms, lowest in the U.S. firms, with the Japanese firms being in the middle.

1.2.2. Planning

Participative budgeting refers to the extent to which subordinates have input into the development and selection of the performance plan which their superiors will hold them responsible for achieving (Shields & Young, 1993). Hofstede (1984) posits that low power distance implies a preference for more equality in vertical relationships. In low power distance cultures, because of this vertical equality, employees prefer or expect to be involved with, or have input into, their organization’s decision making process, including determining their budgets. In contrast, in high power distance cultures, since superiors are expec-
ted to unilaterally make decisions about subordinates, less use of participative budgeting would be expected. Individualism also is relevant, as people higher on this cultural dimension prefer to have more influence over their own actions.\(^5\) The power distance–individualism combinations of the three countries support the prediction that participative budgeting would be highest (lowest) within U.S. (Taiwanese) firms, with Japanese firms being in between.

**Standard tightness** refers to the ex ante probability that an employee can attain his or her performance plan (Chow, 1983; Merchant & Manzoni, 1989). The preference for standard tightness is subject to the influences of two cultural dimensions. People with higher uncertainty avoidance prefer looser standards since they are more likely to be achieved. Higher masculinity, however, implies the opposite, as tighter standards are more challenging. Using our assumption about the relative importance of these two dimensions, we predict that Japanese firms would use the tightest standards in their home country, U.S. firms would be next, and Taiwanese firms would have the loosest standards.

### 1.2.3. Evaluating and rewarding

**Participative performance evaluation** refers to the extent to which employees have input into the evaluation of their own performance (Briers & Hirst, 1990). Hofstede (1980, 1983, 1984, 1991) suggests that the preference for this control is negatively related to power distance because individuals in a lower power-distance culture are less willing to passively accept superiors’ evaluations. And as with participative budgeting, people higher on individualism can be expected to prefer having more influence on how their performance is evaluated. The three countries’ power distance–individualism combinations lead to the prediction that U.S. firms would have the highest level of participative performance evaluation, followed by Japanese firms, with Taiwanese firms having the lowest level.

**Controllability filters** reduce the degree to which employees’ performance evaluations are subject to factors beyond their control (Demski, 1976; Merchant, 1989). In Hofstede’s framework, higher uncertainty avoidance implies a greater preference for being insulated from uncertainty and its effects. However, individualism also is potentially relevant, as people high on this cultural dimension are more desirous of being accountable for their personal actions. The three countries’ uncertainty avoidance scores imply that Japanese (U.S.) firms would have the highest (lowest) use of controllability filters, with Taiwanese firms being in between. Their individualism scores, however, imply that U.S. firms would have the highest, Japanese firms the second highest, and Taiwanese firms the lowest, use of controllability filters. This latter prediction is assumed to dominate given uncertainty avoidance’s potential lack of universal applicability and the presumed greater influence of the individualism dimension.

**Performance-contingent financial rewards** relate to the extent that financial compensation is determined by comparing budgeted to actual performance (Demski & Feltham, 1978; Waller & Chow, 1985). Preference for this control potentially is subject to the conflicting influences of three cultural dimensions. First, a greater preference for performance-contingent rewards is expected for a culture higher in masculinity. However, such rewards also tend to introduce or accentuate pay differences across co-workers, which is contrary to low-individualism cultures’ preferences for relatively equal pay and avoidance of interpersonal comparisons and conflict (Bond et al., 1982). Uncertainty

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\(^5\) We are indebted to a reviewer for reminding us that participative budgeting has both involvement and influence aspects. As can be seen from how we measure this variable, our focus is the influence aspect. We reason that preference for influence on the budget would increase with individualism, as higher individualism implies a preference for controlling one’s own destiny. We also expect the preference for influence to decrease with power distance, as this cultural dimension relates to the acceptance of directives from superiors. It is of interest to note that our directional prediction on the effect of individualism is opposite to that of Harrison (1992), who argued for a negative relation between it and the preference for participative budgeting. This divergence can be explained by his focus on the involvement aspect of participative budgeting, where lower individualism would imply a stronger belief in group decisions (thus involvement of individuals in the budgeting process). Given our focus on influence, the three nations’ combinations of individualism and power distance scores produce mutually supporting predictions that U.S. firms would have the highest degree of participative budgeting in their home-country, followed by the Japanese firms, with Taiwanese firms being lowest.
avoidance also may be relevant. Since performance-contingent rewards increase the variance of the total compensation, preference for them can be expected to decrease with uncertainty avoidance. Based on our assumption about the relative importance of these three cultural dimensions, we predict that the U.S. (Taiwanese) firms would have the highest (lowest) performance contingent rewards, with Japanese firms in the middle.

In summary, while Hofstede’s taxonomy of national culture can be used to derive three-country directional predictions for all seven controls, predictions for structuring of activities, standard tightness, performance-contingent rewards, and controllability filters are possible only by making assumptions about the relative impacts of the various cultural dimension(s) and/or are limited by lack of significant divergence in the relevant national culture scores across the three countries.

1.3. Comparison of predictions to prior comparative findings

A comparison of columns four and six in Table 2 shows that for these seven controls, the predictions for decentralization, participative budgeting, performance-contingent rewards and controllability filters are consistent with the majority of the available evidence. The predictions are inconsistent with the findings of prior studies for structuring of activities and standard tightness, while there is a lack of prior evidence on participative performance evaluation. Thus, out of six controls for which prior empirical evidence is available, the predictions are consistent with the evidence on four controls and inconsistent for two controls.

Taken together, the mixed findings summarized in Tables 1 and 2 suggest that national culture may only be important to the design of and preference for some, but not all, of the seven controls. Another possibility is that Hofstede’s taxonomy has not adequately uncovered the underlying cultural dimensions for application to the level of specific controls and/or that the dimensions have not been tightly enough defined to guide consistent applications. This possibility is manifest in the challenges in deriving directional predictions for each control, and in the variance across prior studies’ use of Hofstede’s dimensions in generating predictions. Yet another possibility is that the prior results are confounded by different characteristics of samples taken from different national origins and local environmental conditions. Since the extant studies lack comparability across multiple controls (and whether their focus is design, preference or effects) and/or samples (nations, industries, subjects), they cannot simply be compared or aggregated for differentiating among these potential explanations.

2. Hypotheses and research design

Assuming that national culture is an important determinant of the design of and preference for management controls, the preceding discussion and review provide the basis for stating two hypotheses. The first hypothesis is that firms operating in countries with cultures different from their home-countries would modify their home-country MCSs so that the controls they use in the latter would not differ from those of locally-owned firms:

H1: The controls used by firms operating in the same foreign country would not differ from each other or those of the locally-owned firms.

The second hypothesis deals with the similarity of MCS design and foreign employees’ MCS preferences. In addition to modifying their home-country controls, firms also can increase their foreign employees’ acceptance of such controls by altering their preferences. One way to attain this outcome is to engage in socialization (e.g. recruitment, selection, indoctrination, training, mentoring, career ladders, and reward systems) (Van Maanen & Schein, 1979; Pascale, 1985; Chatman, 1989). A firm could hire local employees who have predispositions toward their home-country national culture (e.g. because of having studied and/or worked there). Alternatively or in addition, a firm could de-emphasize its reliance on administrative controls such as those embodied in a formal MCS. Instead, it could put more emphasis on socializing its foreign employees to its home-country national and organizational culture, as some
U.S. electronics firms reportedly have done in managing their foreign subsidiaries (Jaeger, 1983). If firms emphasize this hiring and socialization approach, then their MCSs in a foreign country can differ from those of locally-owned firms, yet the similarity between their MCSs and local employees’ preferences still would not differ from that of locally-owned firms. Thus:

H2: The similarity between local employees’ preferred MCS and the design of the MCS would not differ between foreign and locally-owned firms.

Testing the two stated hypotheses required using firms from at least two national origins, and comparing both their home-country and cross-border use of controls because either comparison alone is subject to the effects of omitted variables. In the case of Japanese- and US-owned firms, if the former’s home-country controls were simply compared to those that they used in the US, any differences found could be due to the effects of local conditions. U.S. firms’ home-country practices would provide a control for such variables. Because data were not available for comparing the MCSs that firms from Japan and the U.S. use domestically as well as in each other’s country, we elected to compare their controls in a common third location: Taiwan. In conducting this comparison, we were denied the opportunity to measure the Japanese and U.S. sample firms’ home-country MCSs, and had to rely on the prior findings reported in Table 2 to infer where these differed. This lack of home-country findings for the sample firms weakened our ability to derive reliable inferences. For example, if the Japanese and U.S. sample firms’ controls are similar in Taiwan, this can be due to their being similar in their home-countries, rather than to modifications to be consistent with Taiwanese national culture. Alternatively, such a finding could reflect both the Japanese and U.S. firms having modified their controls for use in Taiwan, but in a direction opposite to that of their local employees’ culture-based preferences. Our inclusion of a set of Taiwanese-owned firms was an attempt to reduce this limitation by providing a locally-based benchmark.

To attempt to control for the effects of environmental uncertainty, technology, and firm size, the sample firms were matched on industry (electronics and/or computers) and size (sales and number of employees). All of the Japanese- and U.S.-owned firms in the sample only had manufacturing operations in Taiwan. But because they were all large, the only available size matches for them among Taiwanese-owned firms were ones which included both corporate headquarters and manufacturing operations. To control for this difference, the top-level headquarters managers of the Taiwanese-owned firms were excluded from the sample.

Another consideration in the research design is that some controls operate at the interface between a firm and its environment. For example, many accounting methods are required for use by regulatory agencies (e.g. tax regulations can stipulate transfer pricing methods, securities markets can drive how performance is measured), while others are much more internally focused (e.g. participative budgeting). An important consideration in the choice of controls to include in this study was that management had freedom to choose their particular levels.

3. Empirical method

This section contains two parts. First is a further description of the sample used to test the hypotheses. The second part describes the survey instrument and dependent variables.

3.1. Sample

The sample was comprised of the top two levels of Taiwanese managers working in six each of Japanese-, Taiwanese, and U.S-owned firms. All of these firms were among the largest electronics and/or computer firms with manufacturing facilities in Taiwan, and all were located in an industrial park in a Taipei suburb. The sample firms had the following average numbers of employees and annual sales (in New Taiwanese Dollars (NT$), approximately equal to U.S.$0.04 each): Japanese firms: 1904, NT$4,327,666,667; Taiwanese firms: 2184, NT$4,548,666,667; and U.S. firms: 1964,
NT$4,043,000,000. There was no significant difference across national origins in either size measure, as tested by Kruskal–Wallis one-way ANOVA (both $X^2 < 1.0$, $p > 0.60$).

Within each firm, a member of top management distributed the survey instrument using the firm’s internal mail system. (Each anonymous response was returned directly to the research team.) This contact person selected the managers to receive the questionnaire, subject to the requirement that the recipient be in the top two levels of Taiwanese managers. A total of 391 questionnaires were distributed and 206 responses (53%) were received. Of these, 159 provided complete information for constructing the variables for statistical analysis. All 159 respondents were of Chinese ethnicity. They had worked for their firms for a mean of 10.7 years (S.D. = 6.9) and had been in their current positions for an average of 3.6 years (S.D. = 2.9). On average, they were responsible for 174 employees (S.D. = 274) and had an annual cost budget of NT$558,678,082 (S.D. = NT$1,166,230,591).

3.2. Instrument and dependent variables

The survey instrument was developed using a two-stage process. In the first stage, the entire research team visited the Taiwanese headquarters of four electronics and/or computer firms operating in Taiwan. Two were Taiwanese-owned, and one each was a Japanese and a US subsidiary. Each visit included interviews with members of top management, line managers and managers from the accounting and finance functions. These interviews provided an understanding of the operations and control systems in the Taiwanese electronics and/or computer industry to ensure that the management controls selected for study were applicable in this setting. They also identified variables that the Taiwanese managers considered too sensitive for inclusion in the survey.6

In the second stage, information gained from the interviews was combined with related prior research to develop the survey instrument in English. Then it was translated into Chinese for administration. Following Brislin’s (1980) prescription for research involving different languages, the Chinese version was first prepared by a person who had not developed the English original. Then it was independently back-translated into English, and differences from the English original were noted and resolved.

Measures for the seven controls (see Appendix) were adapted from prior research to the extent possible. The design of each control was measured by having each respondent rate his or her perception of its current level.7 The response format for each item was a seven-point scale anchored by $1 =$ Extremely Low and $7 =$ Extremely High. We also asked each respondent to indicate his or her most preferred level of each control, using the same response format as for the MCS design variable. Subtracting the preferred level from the design level yielded the measure of design-preference similarity.

The measures of decentralization and structuring of activities were based on those developed by Khandwalla (1977), Pugh et al. (1968), Pugh (1969) and Gordon and Narayanan (1984). Minor modifications were made to fit the context of this study. Participative budgeting was measured with questions adapted from Brownell (1982), Brownell (1985), Kenis (1979), Merchant (1981), Milani (1975), and Shields and Young (1993). The standard tightness measure was adapted from Kenis (1979), Simons (1988), and Merchant and Manzoni (1989).

Since no established measure existed for participative performance evaluation, we developed one patterned after the participative budgeting measure. An established measure for controllability

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6 One topic that the Taiwanese managers refused to discuss was the compensation and promotion/demotion system. As an example of their sensitivity to this topic, we asked several managers how many times they had been promoted or granted bonuses in the past 3 years. None was willing to answer this question. This experience led us to conclude that both the willingness of companies to participate and the response rate would be severely reduced if we were to include questions on compensation.

7 Strictly speaking we have measured the respondents’ perceptions of their firms’ realized MCS design which may differ from their firms’ intended design. We assume that since these managers typically had worked for their employer for many years, their perception of the controls would be highly correlated with the actual controls, assuming these controls exist independent of perception.
filters also was unavailable, and we developed one based on the framework and findings of Merchant (1989). Merchant’s literature review and field study identified five types of situations in which firms have policies for risk exposure, and we developed a question for each type. Finally, the measure of performance-contingent financial rewards was based on the measures used by Shields and Young (1993) and Simons (1988).

4. Results

This section is divided into three parts. The first part reports descriptive statistics for MCS design and design-preference similarity. The last two parts report inferential statistics for each dependent variable with respect to the hypotheses.

4.1. Descriptive statistics

Table 3 reports the means, standard deviations, and Cronbach alphas for the design levels of the seven controls classified by national ownership. Table 4 presents these statistics for the design-preference similarity measures. All of the variables’ measures had an acceptable level of reliability since each Cronbach alpha was greater than 0.60 (range: 0.63–0.93).

<table>
<thead>
<tr>
<th>Management control</th>
<th>Cronbach alpha</th>
<th>Theoretical range: minimum, maximum</th>
<th>Taiwan N = 59 mean (S.D.)</th>
<th>Japan N = 56 mean (S.D.)</th>
<th>U.S. N = 44 mean (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decentralization</td>
<td>0.80</td>
<td>8,56</td>
<td>33.49 (10.08)</td>
<td>30.32 (8.72)</td>
<td>30.05 (8.58)</td>
</tr>
<tr>
<td>Structuring of activities</td>
<td>0.93</td>
<td>16,112</td>
<td>70.39 (18.63)</td>
<td>63.61 (20.21)</td>
<td>73.47 (19.97)</td>
</tr>
<tr>
<td>Participative budgeting</td>
<td>0.87</td>
<td>4,28</td>
<td>21.66 (4.53)</td>
<td>18.32 (4.64)</td>
<td>21.59 (4.17)</td>
</tr>
<tr>
<td>Standard tightness</td>
<td>0.63</td>
<td>3,21</td>
<td>15.81 (3.28)</td>
<td>14.95 (2.50)</td>
<td>16.57 (2.13)</td>
</tr>
<tr>
<td>Participative performance evaluation</td>
<td>0.86</td>
<td>3,21</td>
<td>15.29 (3.79)</td>
<td>14.46 (3.06)</td>
<td>16.80 (2.91)</td>
</tr>
<tr>
<td>Controllability filters</td>
<td>0.75</td>
<td>5,35</td>
<td>22.71 (5.62)</td>
<td>23.43 (5.58)</td>
<td>22.80 (4.81)</td>
</tr>
<tr>
<td>Performance-contingent financial rewards</td>
<td>0.66</td>
<td>4,28</td>
<td>11.83 (5.18)</td>
<td>11.39 (5.29)</td>
<td>12.48 (4.23)</td>
</tr>
</tbody>
</table>

Inspection of Tables 3 and 4 indicated that dispersion exists both within nations across controls, and across nations for a control. For example, in Table 3, the design level of structuring of activities ranged from a low of 63.61 for the Japanese firms to a high of 73.47 for the U.S. firms, and participative budgeting ranged from 18.32 for the Japanese firms to 21.66 for the Taiwanese firms. In Table 4, design-preference similarity for the Taiwanese firm employees ranged from −0.92 for standard tightness to −12.46 for structuring of activities, and, across nations, participative budgeting ranged from −1.39 for the Taiwanese firms to −3.63 for the Japanese firms. Also note that all of the means in Table 4 were negative, indicating that the Taiwanese managers preferred more of each control than they perceived to be present.

4.2. MCS Design

A four-part analysis was used to test H1. First, a 3×6×7 MANOVA was performed to test whether the seven controls varied among the firms with Japanese, Taiwanese, or U.S. ownership (see upper left quadrant in Table 5). National ownership was a fixed-effect, three level, between-subjects variable, firm with six levels was nested within national ownership as a random factor, and controls were a seven-level, within-subject variable.
The dependent variable was a subject’s rating of a control. After controlling for the significant firm-within-national-ownership effect ($F=1.64$, $p=0.000$), national ownership was significant ($F=2.51$, $p=0.002$). Thus, there was a significant difference in the design levels for these seven controls due to whether the firms had Japanese, Taiwanese or U. S. national ownership.

Second, to provide more disaggregated evidence on the nature of this three-nation effect on the design of the seven controls, differences were tested for each of the three national ownership pairings using three $2 \times 6 \times 7$ MANOVAs (one MANOVA for each nation pairing) (upper right quadrant in Table 5). The results of these three MANOVAs revealed that the significant national ownership effect in the three-nation $3 \times 6 \times 7$ MANOVA was due to the Taiwanese-owned firms being different from their Taiwanese and U.S. counterparts (respectively, Japan vs Taiwan, $F=3.24$, $p=0.004$ and Japan vs U.S., $F=2.83$, $p=0.11$).

### Table 4
Descriptive statistics for design-preference similarity (=design level minus preferred level of each management control)

<table>
<thead>
<tr>
<th>Management control</th>
<th>Theoretical range: minimum, maximum</th>
<th>Taiwan $N=59$ mean (S.D.)</th>
<th>Japan $N=56$ mean (S.D.)</th>
<th>U.S. $N=44$ mean (S.D.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decentralization</td>
<td>-48,48</td>
<td>-4.97 (5.42)</td>
<td>-6.36 (5.02)</td>
<td>-5.55 (5.84)</td>
</tr>
<tr>
<td>Structuring of activities</td>
<td>-96,96</td>
<td>-12.46 (15.20)</td>
<td>-11.84 (10.56)</td>
<td>-9.91 (12.05)</td>
</tr>
<tr>
<td>Participative budgeting</td>
<td>-24,24</td>
<td>-1.39 (2.64)</td>
<td>-3.63 (3.63)</td>
<td>-2.21 (3.04)</td>
</tr>
<tr>
<td>Standard tightness</td>
<td>-18,18</td>
<td>-0.92 (2.62)</td>
<td>-1.09 (2.23)</td>
<td>-0.48 (1.75)</td>
</tr>
<tr>
<td>Participative performance evaluation</td>
<td>-18,18</td>
<td>-1.63 (2.65)</td>
<td>-1.91 (2.37)</td>
<td>-1.23 (1.57)</td>
</tr>
<tr>
<td>Controllability filters</td>
<td>-30,30</td>
<td>-2.73 (4.62)</td>
<td>-1.98 (3.31)</td>
<td>-2.50 (4.08)</td>
</tr>
<tr>
<td>Performance-contingent financial rewards</td>
<td>-24,24</td>
<td>-6.76 (6.33)</td>
<td>-5.11 (5.69)</td>
<td>-5.59 (4.99)</td>
</tr>
</tbody>
</table>

### Table 5
Inferential statistics for management control design

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>MANOVAs</td>
<td>$F=2.51$ $p=0.002$</td>
<td>$F=3.24$ $p=0.004$</td>
<td>$F=1.57$ $p=0.156$</td>
<td>$F=2.83$ $p=0.011$</td>
</tr>
<tr>
<td>ANOVAs:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Decentralization</td>
<td>$F=1.75$ $p=0.178$</td>
<td>$F=1.55$ $p=0.123$</td>
<td>$F=1.45$ $p=0.149$</td>
<td>$F=0.51$ $p=0.613$</td>
</tr>
<tr>
<td>Structuring of activities</td>
<td>$F=5.12$ $p=0.007$</td>
<td>$F=2.93$ $p=0.004$</td>
<td>$F=0.38$ $p=0.702$</td>
<td>$F=3.06$ $p=0.003$</td>
</tr>
<tr>
<td>Participative budgeting</td>
<td>$F=3.95$ $p=0.021$</td>
<td>$F=2.67$ $p=0.008$</td>
<td>$F=0.04$ $p=0.965$</td>
<td>$F=2.59$ $p=0.010$</td>
</tr>
<tr>
<td>Standard tightness</td>
<td>$F=0.40$ $p=0.674$</td>
<td>$F=0.15$ $p=0.880$</td>
<td>$F=0.88$ $p=0.379$</td>
<td>$F=0.45$ $p=0.651$</td>
</tr>
<tr>
<td>Participative performance evaluation</td>
<td>$F=2.39$ $p=0.095$</td>
<td>$F=0.15$ $p=0.884$</td>
<td>$F=2.04$ $p=0.043$</td>
<td>$F=1.52$ $p=0.129$</td>
</tr>
<tr>
<td>Controllability filters</td>
<td>$F=0.37$ $p=0.688$</td>
<td>$F=0.86$ $p=0.389$</td>
<td>$F=0.20$ $p=0.844$</td>
<td>$F=0.69$ $p=0.489$</td>
</tr>
<tr>
<td>Performance contingent financial rewards</td>
<td>$F=0.82$ $p=0.443$</td>
<td>$F=0.85$ $p=0.400$</td>
<td>$F=0.67$ $p=0.505$</td>
<td>$F=1.27$ $p=0.207$</td>
</tr>
</tbody>
</table>

$^a$ For the pair-wise (two nations) $t$-tests, Bonferroni contrasts are used with the overall alpha of 0.05 divided equally among the three pairwise contrasts. The critical $p$-value is 0.017. Significant effects are in bold.

$^b$J = Japan; T = Taiwan; U.S. = United States.
Third, seven 3×6 ANOVAs were performed to test whether each of the seven controls was designed differently for the three national ownerships (one ANOVA per control) (lower left quadrant in Table 5). These results indicated a significant national ownership effect for structuring of activities \((F=5.12, p=0.007)\) and participative budgeting \((F=3.95, p=0.021)\).

Fourth, to test for design differences for each of the three national ownership pairings for each of the seven controls, 21 \(t\)-tests with Bonferroni contrasts were performed (lower right quadrant in Table 5). The results were four significant differences: the Japanese-owned firms’ design of structuring of activities and participative budgeting differ from both the Taiwanese and U.S.-owned firms \((p<0.01)\). Table 3 shows that the Japanese-owned firms had the lowest means for both of these controls.

Overall, we interpret these test results as providing support for H1. While the most global \((3\times6\times7)\) MANOVA had a significant national ownership effect, there was no significant difference between the U.S. and Taiwanese firms for any of the seven controls. And while four of the 14 between-country comparisons involving the Japanese firms at the individual control level were significant, these were limited to two of the seven controls.

Despite our overall conclusion that the tests support H1, the four significant between-country differences involving the Japanese firms do leave open the nature of their MCS design policy. In the case of structuring of activities, recall from Table 2 that the prior studies had found home-country structuring in the U.S. to be equal to or higher than that in Japan. The persistence of a Japan–U.S. difference in Taiwan, in conjunction with the absence of a Taiwan–U.S. difference, is consistent with the Japanese-owned firms not having modified this control for transfer to Taiwan.

The findings for participative budgeting, however, convey a different picture. Both the culture-based predictions and the preponderance of prior findings had suggested that home-country use of this control would be lower in Japan than in the U.S., with Taiwan being lowest. That the Japanese-owned firms’ mean in Taiwan is lower than the U.S.-owned firms’ mean is consistent with the former not having modified this control for transfer to Taiwan. But the puzzle that remains is why the Japanese-owned firms’ mean was below that of the Taiwanese-owned firms, though this finding is consistent with prior findings that Japanese-owned firms tend to adopt a more centralized and autocratic mode of management in China and South-East Asia than in their home-country (Smith, 1992).

### 4.3. Design-preference similarity

To test H2, a four-part analysis, patterned after that for MCS design, also was performed for the

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>(F)</td>
<td>1.54</td>
<td><strong>2.55</strong></td>
<td>1.09</td>
<td>1.52</td>
</tr>
<tr>
<td>(p)</td>
<td>0.098</td>
<td><strong>0.019</strong></td>
<td>0.380</td>
<td>0.170</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Decentralization</td>
<td>1.48</td>
<td>0.232</td>
<td>1.72</td>
<td>0.87</td>
</tr>
<tr>
<td>Structuring of activities</td>
<td>1.96</td>
<td>0.144</td>
<td>1.57</td>
<td>0.117</td>
</tr>
<tr>
<td>Participative budgeting</td>
<td>2.32</td>
<td>0.102</td>
<td>2.05</td>
<td>0.041</td>
</tr>
<tr>
<td>Standard tightness</td>
<td>0.49</td>
<td>0.612</td>
<td>0.99</td>
<td>0.323</td>
</tr>
<tr>
<td>Participative performance evaluation</td>
<td>0.68</td>
<td>0.508</td>
<td>0.91</td>
<td>0.364</td>
</tr>
<tr>
<td>Controllability filters</td>
<td>0.13</td>
<td>0.878</td>
<td>0.51</td>
<td>0.610</td>
</tr>
<tr>
<td>Performance contingent financial rewards</td>
<td>0.63</td>
<td>0.532</td>
<td>0.81</td>
<td>0.418</td>
</tr>
</tbody>
</table>

\(^a\)For the pair-wise (two nation) \(t\)-tests, Bonferroni contrasts are used with the overall alpha of 0.05 divided equally among the three pairwise contrasts. The critical \(p\)-value is 0.017. Significant effects are in bold.

\(^b\)J = Japan; T = Taiwan; U.S. = United States.
similarity between MCS design and employees’ preference. First, the $3 \times 6 \times 7$ MANOVA indicated that, after controlling for the significant firm-within-national-ownership effect ($F = 1.34, p = 0.17$), variation in the design-preference similarity of the seven controls for the three national ownerships was not significant ($F = 1.54, p = 0.098$) (upper left quadrant in Table 6). Second, a $2 \times 6 \times 7$ MANOVA for each of the three national ownership pairings indicated that, for these seven controls, there was a significant difference between the Japanese- and Taiwanese-owned firms ($F = 2.55, p = 0.019$) (upper right quadrant in Table 6). Third, focusing on individual controls for the three national ownerships, none of the seven $3 \times 6$ ANOVAs comparing the three national ownerships on each control was significant (lower left quadrant in Table 6). Fourth, 21 $t$-tests with Bonferroni contrasts revealed no significant differences for any of the seven controls for any of the three national ownership pairings (lower right quadrant in Table 6). Overall, these results provided support for H2.

5. Discussion and summary

This study has used Hofstede’s national culture taxonomy to derive predictions about Japanese-, Taiwanese- and U.S.-owned firms’ design of seven management controls in their Taiwanese operations. Culture-based reasons were provided for U.S. and Taiwanese home-country designs to differ for all seven controls (Table 2). Thus, finding no significant U.S.–Taiwan mean difference for both design level and design-preference similarity in their Taiwanese operations is consistent with the U.S. firms having adjusted their home-country controls so that the controls they used in their Taiwanese operations were similar to those of the Taiwanese-owned firms and their Taiwanese employees’ preferences.

Differences in home-country design for these seven controls also were predicted for Japan and Taiwan (Table 2), and five of these were found not to differ between the Taiwanese applications of the Japanese and Taiwanese companies. This finding is consistent with the Japanese companies also having modified their home-country controls for transfer to Taiwan. But their modifications seemed to have been less extensive than those of the U.S. firms, as the Japanese firms’ mean design levels differed significantly from the Taiwanese firms for structuring of activities and participative budgeting. For both controls, the Japanese firms had the lower mean. Considering design-preference similarity, the Japanese firms were similar to the Taiwanese and U.S. firms on all of the controls despite their two MCS design differences from the Taiwanese firms. In conjunction with the findings for the controls’ design levels, this latter result suggests that the Japanese firms had relied relatively more on other methods (e.g. socialization) to increase their Taiwanese employees’ preference for their controls.

Thus, the results as a whole are consistent with Taiwanese national culture being an important determinant of the MCS designs used by the Japanese and U.S. firms in their Taiwanese operations. The (inferred) relatively greater U.S. response may be due to U.S. culture being more different from Taiwanese culture than is Japanese culture, so that companies from the U.S. have more to gain from modifying their home-country controls to fit local preferences. But cultural similarity cannot explain why, relative to the Taiwanese firms, the Japanese firms’ design level for participative budgeting was contrary to the predicted ordering based on Hofstede’s framework. In conjunction with the prior studies’ mixed results and the challenges we faced in deriving unambiguous directional differences among the three nations’ home-country controls, this unexplained finding suggests a need to examine whether this stream of research based on Hofstede’s taxonomy has problems stemming from ineffective research design and/or method, poor selection and/or measurement of variables, and/or inaccurate theory. Below, we discuss how addressing each of these non-mutually-exclusive possibilities can advance future culture-based research on management controls.

5.1. Research design/method and variable measurement

As was pointed out previously, many prior studies have inadequately controlled for the effects of
contingency variables such as uncertainty, technology, organizational size, and regulations. Many have gathered data from multiple locations, and two have collected data at different points in time. While the current study has attempted to control for these factors, it also contains limitations of its own. Most importantly, it lacked direct measures of the Japanese and U.S. firms’ home-country controls, and had to rely on prior studies with different samples, instruments, and design limitations for inferences relating to this variable. Also, its reliance on a survey instrument limited the depth with which controls and management processes could be probed, and could have been strengthened by triangulation with other research and measurement methods (Birnberg et al., 1990). This is especially so because cultures may differ in their sensitivity to different topics. For example, while prior research (e.g. Merchant, 1985, 1989) suggests that managers in the U.S. have no reluctance to discuss compensation and promotion issues, the Taiwanese managers that we interviewed were uniformly unwilling to address such questions (cf. footnote 6). One reason may be that members of collective cultures have a greater concern for avoiding interpersonal comparisons. A field/case study method, which involves more extensive and prolonged interaction between researcher and subject than surveys, may help to build the trust needed to probe such sensitive yet important aspects of controls.

In addition, culture can affect the management process in subtle ways. For example, Birnberg and Snodgrass (1988) has found that within Japanese as compared to U.S. companies, there is a markedly greater difference between explicit controls and implicit controls. Along the same vein, Chow et al. (1996) has found that as compared to its U.S. counterpart, a major Japanese corporation relies more on interpersonal controls. The case/field method has distinct advantages in detecting and probing below the surface of such phenomena.

5.2. Theory and variable selection

More fundamental than issues of research design and method and variable measurement is the theoretical basis of the investigation. While there is support from both prior research and the current study for the usefulness of Hofstede’s cultural taxonomy, this support is not without important caveats. As we had shown earlier, Hofstede’s definition of each cultural dimension is insufficiently precise to guide consistent applications across studies, at least at the level of specific controls. Our application of his taxonomy also was hampered by its lack of guidance on the tradeoffs across multiple cultural dimensions when they exert influences in opposite directions. The latter limitation can be remedied, at least in part, with empirical research which measures the strengths of different dimensions’ effects. The former can benefit from considering other proposed taxonomies. Instead of simply conducting yet more studies which rely indiscriminately on Hofstede’s taxonomy, future research needs to test its limits and compare it to alternate ways of operationalizing or structuring national culture.8

Even if national culture is relevant to preferences for and design of controls, this would not preclude other factors from also being important. Our study has found a significant firm-within-national-ownership effect, indicating that, while we had attempted to control for location-related variables (e.g. regulation), technology and uncertainty (as proxied by industry) and organizational size, other (omitted) variables were present which differed between firms with the same national ownership. Likely variables include organizational culture, competition, and competitive strategy. For example, Merchant et al. (1995) has suggested that Taiwanese firms’ performance evaluation and reward systems are affected by the firms’ market focus and stage of development. Dent (1996) has argued that differences in the global economy (e.g. global competition, trade barriers, regulations) and global strategy (e.g. product standardization, global marketing, world-scale and world-class

8 The possibility also exists that the concept of national culture is not meaningful and that culture varies in important ways within nations that should be considered by future research. For example, Garreau (1981) argues that the U.S. consists of several cultural regions (e.g. New England, Dixie, MexAmerica), each with its own beliefs and values. A potential implication is that the relationships between culture and control may vary by region within a nation.
efficiencies, cross-product subsidization for market penetration) have had significant effects on the design of organization and management control systems.

An implication of this line of argument is that management controls are determined by a national culture-by-competition interaction. Consistent with this view, Firth (1996) has reported that the degree to which Chinese firms adopt their foreign partner’s management accounting systems is positively associated with the extent of their market competition. Modeling the linkages among national culture, competition and management controls will not be easy and research with this focus must be informed by a large set of interdisciplinary literatures. One way to start is to select controls that vary by their internal vs external orientation, and test the relative impacts of national culture and other factors (e.g. national/global competition, technology) on their design and preference.

Ultimately, factors like national culture, competition and the environment affect MCS design because they affect the perceived costs and benefits of alternate designs. When a firm operates across numerous national boundaries, comparability across organizational sub-units for planning and control is another factor that can increase the perceived costs of culture-based MCS tailoring. An interesting example of convergent organizational design and management systems is provided by Asea Brown Boveri which has a common management structure and systems for control, information, and rewards which are used throughout its world-wide operations to promote information sharing and coordination (Simons, 1992a,b; Simons & Bartlett, 1992). To the extent that a common global control system is consistent (or, conversely, inconsistent) with local employees’ culture-based preferences, it should affect such outcome variables as job effort, stress, performance, satisfaction, and turnover intentions. Extending the scope of investigation to include these other variables and tradeoffs can produce a more complete understanding of the importance of national culture in MCS design and preference.

Finally, concurrent with firms modifying their MCS and engaging in socialization activities to be consistent with or influence employees’ culture-based preferences, individuals also may adjust to the new realities of global competition. Thus, for example, people from individualistic cultures like the U.S. may voluntarily adopt more team-oriented practices when such design is demanded by the global environment (Andreoni, 1988; Dawes & Thaler, 1988; Mansbridge, 1990; Awasthi et al., 1996). Conversely, people from collectivist cultures like Japan and Taiwan may internalize more individualistic values as they increasingly engage in exchange with Western nations (Wang, 1994; Yang, 1996). Such cultural shifts do not need to occur for the population as a whole to impact MCS design. For example, as long as a sufficient pool of local residents in Taiwan has been educated or worked in the U.S. or Japan, U.S. or Japanese companies can focus on hiring local employees who identify with their home-country cultures and directly transfer their home-country MCSs to Taiwan (Merchant et al., 1995).

In summary, understanding where and how national culture is important to MCS design and preference is both important and highly challenging. While the current study and prior research have contributed useful insights into the topic, much more remains to be investigated. Meaningful advances will require a coordinated research strategy which attends to theory development, research design and variable measurement, and a depth of inquiry which goes beyond developing and testing surface- or generic-level models.

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Appendix

Measures of the Seven Management Controls
(Scale Anchors: 1 = Extremely Low and 7 = Extremely High)

(1) Decentralization
The extent to which authority is delegated to you to make each of the following classes of decisions for your organizational unit:
(a) Development of new outputs
(b) Purchase of capital equipment
(c) The hiring and firing of personnel
(d) Sourcing of inputs
(e) Operating procedures and schedules
(f) Pricing of outputs
(g) Distribution of outputs
(h) Making tradeoffs within your unit’s current period budget

(2) Structuring of activities
Two sets of questions (1, 2), each with the same activities (a–h):
(1) The extent to which your company has standardized procedures that you must follow for the following classes of activities:
(2) The extent to which your company has written manuals that specify how you have to perform the following classes of activities:
(a) Development of new outputs
(b) Purchase of capital equipment
(c) The hiring and firing of personnel
(d) Sourcing of inputs
(e) Operating procedures and schedules
(f) Pricing of outputs
(g) Distribution of outputs
(h) Making tradeoffs within your unit’s current period budget

(3) Participative budgeting
(1) The extent to which your immediate superior seeks your input in the budgeting process.
(2) The importance your immediate superior places on including in your unit’s budget changes that you have suggested.
(3) The importance your immediate superior places on not finalizing your unit’s budget until you are satisfied with it.
(4) Overall, the influence you have in setting your unit’s budget.

(4) Standard tightness
(1) Typically, at the time your unit’s budget is approved, the degree to which you believe it will at least be achieved.
(2) The amount of effort it typically takes you to achieve your unit’s budget.
(3) In general, the tightness of your unit’s budget.

(5) Participative performance evaluation
(1) The extent to which your immediate superior seeks your input when he evaluates your unit’s performance relative to your unit’s budget.
(2) The importance your immediate superior places on your explanations for your unit’s performance relative to your unit’s budget.
(3) The importance your immediate superior places on not finalizing his evaluation of your unit’s performance relative to your unit’s budget until you are satisfied with it.

(6) Controllability filters
When your immediate superior evaluates your unit’s performance relative to your unit’s budget, the extent to which he takes into account the effects of the following factors on your unit’s performance:
(a) Actions taken by other units at the same organizational level as your unit (e.g. adherence to schedule, quality of work).
(b) Decisions made and actions taken by personnel at higher organizational levels (e.g. changing capacity, product mix).
(c) Competitive factors (e.g., competitors’ prices, cost of direct material).
(d) Changing economic factors (e.g. inflation, currency exchange rates, regulations).
(e) Acts of nature (e.g. fires, earthquakes, typhoons, floods).

(7) Performance-contingent financial rewards
1. The extent to which your compensation contract clearly specifies how your compensation is related to your unit’s performance relative to your unit’s budget.
2. The extent to which your financial rewards increase as your unit increasingly outperforms your unit’s budget.
3. The extent to which managers whose units’ performance relative to their budgets are among the top 25% are given larger financial rewards than those given to unit managers among the bottom 25%.
4. The percentage of your total annual compensation typically coming from a pre-set salary as opposed to a bonus based on your unit’s performance relative to your unit’s budget.

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