“Is coordination influenced by culture? A comparison of Sweden and China”

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SECTION 2. Management in firms and organizations

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Is coordination influenced by culture? – A comparison of Sweden and China

Abstract

Coordination theories analyze market imperfections, organizational contingencies and transactional characteristics to explain the choice of coordination mechanisms. In this article the authors argue that national culture also matters. National culture systematically influences individual preferences, therefore national culture may provide an additional explanation of the choice of coordination mechanisms. The problem is studied in the context of two nations, Sweden and China, and in the context of two coordination mechanisms, market and hierarchical mechanisms. It is suggested that market mechanisms are preferred in cultures characterized by high levels of performance orientation, assertiveness, and in-group collectivism and low levels of institutional collectivism, power distance, and uncertainty avoidance. A preference for hierarchical mechanisms is suggested in cultures that have the opposite characteristics. Based on the cultural characteristics of Sweden and China, as identified in the Globe report, this leads to the hypothesis that China is biased towards market mechanisms whereas Sweden is biased towards hierarchical mechanisms.

An experimental study was designed to test the hypothesis, involving groups of students of Swedish and Chinese origin. The students performed roles as principals/agents in repeated production. Before each period the pairs negotiated contracts and chose between piece-rate payments (a market mechanism) or fixed-rate payments (a hierarchical mechanism). The result supports the hypothesis. A comparison found that Swedish students preferred hierarchical mechanisms whereas Chinese students preferred market mechanisms.

Keywords: culture, coordination mechanisms, market and hierarchical mechanisms, experimental study.
JEL Classification: L14, M55.

Introduction

The coordination problem is a central theme in economic theory as well as in organization and management theories, and different traditions discuss a wide array of mechanisms for obtaining coordination. Economic theory provides an analysis of coordination by the price mechanism of markets, including an analysis of why market imperfections might call for interventions by authorities and regulators. Organization and management theories, on the other hand, turn to the coordination problem within firms and identify alternative mechanisms such as centralization, bureaucratization/formalization and socialization (Edström & Galbraith, 1977; Bartlett & Ghoshal, 1992). In this context, the choice of mechanism is related to firm contingencies, that is, type of production technology and business environment (for an overview, see Mintzberg, 1982). Another approach, which integrates coordination in both markets and firms, is presented in the new institutional economics and the tradition of transaction cost analysis. Here coordination mechanisms are categorized in two broad categories, market mechanisms and hierarchical mechanisms, and the characteristics of the transaction explain the choice of mechanism (i.e., Roberts, 2004; Williamson, 1975, 1985, 1991). Market mechanisms coordinate economic activities by means of the price (reward) paid for output. The agent is directly compensated for the results that have been created. Hierarchical mechanisms, on the other hand, use means such as commands and regulations to monitor activities. Rewards are linked to measures of input, such as the time spent on work or the qualifications of an employee, rather than output. Within firms, the use of market mechanisms is illustrated by piece-rate payments (piece wages), whereas the use of fixed payments (time wages) signals the use of hierarchical mechanisms. Extensions of these analytical approaches have identified coordination by "trust" or "ideology" as a third mechanism of coordination, used, for example, in clans, networks, or brotherhoods (Ouchi, 1980; Braddach & Eccles, 1989; Powell, 1991; North, 1992). Attempts to integrate different approaches have been made, for example, by identifying four broad coordination mechanisms: price, authority, rules, and ideology (Pihl, 2000).

These perspectives neglect the role that individual preferences might play in the choice of coordination mechanisms; certain individuals might prefer certain mechanisms whereas others have different preferences. To the extent that individual preferences are idiosyncratic they are theoretically negligible. But individual preferences are influenced by differences in national cultures; national cultures have a sys-

tematic influence on individual preferences. Therefore, national cultures might have a systematic influence on the choice of coordination mechanisms.

Research on coordination needs to further investigate the possible influence of national culture on the choice of coordination mechanisms in order to gain additional understanding of why one coordination mechanism is chosen and not another. Examples of similar approaches can be found in adjacent areas. There are studies that discuss international differences in management practices (Newman & Nollen, 1996), in corporate governance (Lubatkin, Lane, Collin & Very, 2005), in cross-border acquisitions (Calori, Lubatkin & Very 1994), in budget control practices (Ueno & Sekaran 1992), in the use of entry modes (Kogut & Singh 1988), in management controls (Chow, Sheilds & Wu, 1999), in organization of knowledge (Boisot, 1986), and in management teams (Umans, 2008). Here, international differences in management are observed and explained by variations in administrative heritages and national cultures, often by comparing Europe and the US.

This paper examines cultural influence on the choice of coordination mechanisms in Sweden and China. Will individuals from Sweden and China, *ceteris paribus*, show different preferences for using market and hierarchical coordination mechanisms? If so, can these differences be explained as cultural differences? To investigate these questions, cultural characteristics of Sweden and China are identified, based on the Globe report (House et al., 2004). Propositions are then developed on how dimensions of national culture influence choice of coordination mechanisms, leading to the hypothesis that the specific cultures of China and Sweden will influence their choice of coordination mechanisms, China being biased towards market mechanisms and Sweden towards hierarchical mechanisms. Finally, an experimental study is conducted in which Chinese and Swedish students perform roles as principals and agents and agree on the choice of either market mechanisms (piece-rate payments) or hierarchical mechanisms (fixed-rate payments).

1. Market mechanisms and hierarchical mechanisms

Traditional neoclassical economic theory analyzes coordination by the market mechanism. With perfect information, zero transaction costs, and many alternative exchange partners the relative price of markets will coordinate activities so that resources are allocated efficiently. New institutional economics, however, observes that these conditions are not always fulfilled and extends economic theory by introducing assumptions of imperfect information and positive transaction costs. New institutional economics analyzes a variety of institutions and how they affect transaction costs. In this context, the use of hierarchical mechanisms is explained as an institutional solution that lowers transaction costs relative to market mechanisms (Coase, 1937; Williamson, 1991). Hierarchical mechanisms can have advantages in transactions with few partners and when there are measurement problems (Roberts, 2004). Transaction-specific investments, in which one party specifically adapts to fit another party, illustrate few party exchanges. Such investments can motivate vertical integration within a hierarchy to reduce the risk of opportunistic behavior (Williamson, 1985; Alchain & Woodward, 1987). Measurement problems can be exemplified by teamwork production (joint production), when the output of one actor is difficult to evaluate and separate from the outputs of others. Here the hierarchy is needed for communication, decision making, and for imposing sanctions (Alchain & Demsetz, 1972; Williamson, 1975; Alchain & Woodward, 1987). Another example is the transfer of unique knowledge, a heterogeneous asset that explains competitive advantages (Penrose, 1959, 1980; Barney, 1991). Transferring knowledge through the market mechanisms might lead to high transaction costs due to the information paradox (Arrow, 1973) and difficulties in securing ownership rights. Horizontal integration within hierarchies allows for the exploitation of unique knowledge (Teece, 1982; Williamson, 1985; Liebeskind, 1996).

These problems present reasons for using hierarchical mechanisms, but hierarchical coordination also has its disadvantages. First, hierarchical mechanisms provide weak and biased incentives because rewards do not directly correspond to results (Alchain & Demsetz, 1972; Williamson, 1985). Another disadvantage is the costs of engaging superiors and the risk of "moral hazard" when superiors pursue their self-interest. These principal-agency problems raise the question of how to control managers and create incentives for efficient performance (Fama, 1980; Fama & Jensen, 1983; Williamson, 1985). A way to reduce these problems in firms is to introduce more market-based mechanisms. Internal market mechanisms can be established by firms, as illustrated by the design of profit centers and the use of piece-rate payments.

A situation that might be especially problematic occurs with multitask problems, as discussed by Holmström and Milgrom (1991). This type of problem occurs when the individual, or organizational unit, has multiple objectives and when some tasks are measurable and others not. Measurable outputs are adequate for market mechanisms whereas outputs that are difficult to measure might be better coor-

dinated by hierarchical mechanisms. The problem might be solved by changing the tasks so that all activities fit one mechanism, or by introducing a mix of mechanisms to balance strong and weak incentives. If strong incentives crowd out weak incentives, which they tend to do, one could use only weak incentives. If weak incentives do not sufficiently encourage initiative and exploration, they can be combined with high-commitment efforts to develop trust (Roberts, 2004).

These two different kinds of mechanisms used in firms will encourage different kinds of behavior, which creates trade-offs that managers need to handle. Roberts (2004) discusses the problem and argues that the output-oriented incentives of market mechanisms make agents focus on improving their own performance; they encourage initiatives and innovative explorations. In contrast, weak and input-oriented incentives encourage more cooperative behaviors and are a way to encourage exploitation. The agent will be more encouraged to work with others to improve overall performance, and more willing to contribute in teamwork. Rewarding input can also motivate the participant to behave in a predictable way, securing the exploitation of earlier developed skills and know-how.

The analysis of coordination mechanisms accounts for differences in transactions and includes motivational aspects. However, the analysis ignores the possibility that individual preferences may influence choices of coordination mechanisms. If managers and employees prefer market-based mechanisms one could expect tendencies to design organizations around single-task activities and to make the outcomes measurable, allowing for shifting the balance of incentives towards more piece-rate payments and organizations with many profit centers, etc. If managers and employees prefer to use hierarchical mechanisms they will develop their activities into more group-based work, using more fixed lump-sum payments. National cultures differ from each other and systematically influence individual preferences. Therefore, national cultural differences might cause such tendencies.

The importance of culture has been observed in new institutional economics at a societal level, as illustrated by North, who distinguishes between formal and informal institutions (North, 1984, 1990, 1992) and by Williamson (2000), who identifies culture at a high, and very slowly changing, level of institutions, looking at informal institutions such as customs, traditions, norms, and religion. At a lower level Williamson identifies the formal institutional environment or the formal structure of property rights. Then follow institutions of governance, that is, the types of coordination mechanisms used. Finally, at the lowest level, resource allocation and employment take place, which are determined by prices, quantities, and incentives.

The different levels influence each other. For example, the development of private property rights at a high level is crucial for the development of coordination by market mechanisms at a lower level. The theory does not explain how the institutional development of informal institutions and national culture influence the choice of coordination mechanisms. Therefore, the introduction of national culture in the theoretical analysis of coordination mechanisms might provide additional understanding of the question of choice of coordination mechanisms. This is the case in situations where there is no clear "best choice", for example, in multi-task transactions when advantages and disadvantages of different mechanisms have to be carefully balanced against each other. Other situations, in which cultural influences may be important, are those in which imperfect feedback makes individual belief systems prevail even if they are inefficient, as discussed by North (2005).

2. Cultural dimensions and coordination

An analysis of national cultures is presented in the Globe study of 62 societies (House et al., 2004). It is partly based on the contribution of Hofstede (1994) but provides more dimensions and a more extended and updated investigation of the culture in today's societies. The cultural dimensions of the Globe study are presented in Table 1.

Table 1. Cultural dimensions of the Globe study

Cultural dimension	*Characteristics…(* The extent to which society encourages)
Performance orientation	Emphasis on performance excellence and improvements. Preference for challenge and being in control of ones destiny.
Assertiveness	The individuals express and communicate one's thoughts, feelings, beliefs and rights.
Future orientation	Future-oriented behaviors such as planning and delaying gratifications.
Humane orientation	Improving human conditions. Laws and norms emphasize and reinforce moral behavior.
Institutional collectivism	Collective behavior and norms, rather than the enactment of individual freedom and autonomy.
In-group collectivism	Pride in membership of group members and general affective identification towards family, group, community and nation.
Gender egalitarianism	Men and women perform common tasks and are treated equally with respect to status, respect, privilege and rewards.
Power distance	Members of a culture expect and agree that power should be shared unequally and that power holders should be granted greater status, privileges and material awards.
Uncertainty avoidance	People seek ordiness, consistency, structure, formalized procedures, and laws to deal with naturally occurring uncertainty as well as important events in their daily lives.

Source: House et al. (2004).

The question is whether cultural differences, as specified in the nine dimensions above, will affect actors in society so that they prefer market-based mechanisms over hierarchical mechanisms, and vice versa. Different dimensions will probably have different impacts, and some dimensions might not influence the choice of coordination mechanisms at all. The following discussion analyzes which dimensions will affect the choice of coordination mechanisms and how the identified dimensions will influence the choice between market and hierarchical mechanisms.

Performance orientation: Market mechanisms are directly linked to results and ensure that improvement in performance is rewarded. A society with a strong emphasis on performance, excellence, and improvements, where individuals have a preference for challenge and being in control of their destinies, will probably prefer market-oriented mechanisms over hierarchical mechanisms.

Assertiveness: Individuals are better able to express and communicate their thoughts, feelings, beliefs, and rights when market-based mechanisms are used, allowing the individual more autonomy in performance. Hierarchical mechanisms use authority and require degrees of individual subordination, which hinders assertiveness. A society that emphasizes assertiveness will, therefore, probably prefer market-oriented mechanisms over hierarchical mechanisms.

Future orientation: Future-oriented behavior, such as planning and delaying gratification, might increase acceptance for the weaker and indirect rewards used in hierarchical coordination mechanisms, if these rewards come after the results are created. If the outcome is delivered in a distant future, market-based incentives might be more accepted in a more future-oriented society. Therefore, future orientation will probably not have a systematic influence on the choice of coordination mechanism.

Humane orientation: When it comes to improving human conditions neither market mechanisms nor hierarchical mechanisms can be identified as having certain advantages. Hence, a humane orientation will probably not have a systematic influence on the choice of coordination mechanism.

Institutional collectivism: A society that holds a preference for collective behavior and norms, rather than the enactment of individual freedom and autonomy, will probably be more apt to use hierarchical mechanisms since these are more group oriented and indirect than the more outcome-related and individually oriented market mechanisms.

In-group collectivism: In a society with high levels of pride in group membership and general affective identification with family, group, community, and nation, individuals might be more group oriented and, therefore, might favor hierarchical solutions. But they might also be reluctant to join new groups, such as hierarchies that are outside their "in-groups". The latter argument follows Fukuyama (1995), who claims that family or clan societies lack general trust, which hinders the development of a rich variety of organizations. This leads to the claim that societies with in-group collectivism will tend to prefer market mechanisms.

Gender egalitarianism: No type of coordination has special advantages when it comes to improving gender equality. Thus, gender egalitarianism should not have a systematic influence on the choice of coordination mechanism.

Power distance: Hierarchical mechanisms use coordination by authority and individual subordination. If members of a culture agree that power should be shared unequally, and that power holders should be granted greater status, privileges, and material rewards, they will probably have a higher acceptance of hierarchical mechanisms.

Uncertainty avoidance: Hierarchical mechanisms provide more foreseeable rewards and formalized procedures. If people seek order, consistency, structure, formalized procedures, and laws to deal with naturally occurring uncertainty, they will probably have a preference for using coordination by hierarchical mechanisms.

The culture of a society might influence the choice of coordination mechanism, and different aspects of the culture might, as the discussion above showed, tilt the balance in different directions. In Table 2 the developed propositions are summarized.

Table 2. The influence of cultural dimensions on coordination mechanisms

Cultural dimension (high)	*Will influence the choice of coordination mechanism*
Performance orientation	Market mechanisms
Assertiveness	Market mechanisms
Future orientation	No influence
Humane orientation	No influence
Institutional collectivism	Hierarchical mechanisms
In-group collectivism	Market mechanisms
Gender egalitarianism	No influence
Power distance	Hierarchical mechanisms
Uncertainty avoidance	Hierarchical mechanisms

Based on this discussion, one can identify the characteristics of societies with composite dimensions of culture that favor the use of market mechanisms and, by reversing the propositions, societies that favor the use of hierarchical mechanisms. This is expressed in the following proposition:

A culture characterized by a high level of performance orientation, assertiveness, in-group collectivism, and low levels of institutional collectivism, power distance, and uncertainty avoidance will have a preference for coordination by the use of market mechanisms. A society with the opposite profile will have a culture that favors the use of hierarchical coordination mechanisms.

How do Sweden and China differ when it comes to the identified cultural dimensions? The Globe report presented by House et al. (2004) divides the nations of the world into ten clusters. Sweden belongs to the "Nordic Europe" cluster and China belongs to "Confucian Asia". The Globe report then summarizes the results of surveys made in these clusters under three categories: high-score clusters, mid-score clusters, and low-score clusters and divides the results between measures of practices (how it is) and measures of values (how one thinks it should be). Based on the proposition developed above, the clusters can be categorized according to whether they have cultural dimensions that favor the use of market mechanisms (high or low score, depending on dimension) or if they have a disposition that favors hierarchical solutions (high/low score), as summarized in Table 3, using the measures of practices. The use of measures of practices is based on the assumption that "how it is" says more about biases than what people think "should be".

Table 3. Confucian Asia, Nordic Europe and preferences for coordination mechanisms

Cultural dimension	*Preference for market mechanisms*	*Middle-score*	*Preference for hierarchical mechanisms*
Performance orientation	*(High-score)* Confucian Asia	Nordic Europe	*(Low-score)*
Assertiveness	*(High-score)*	Confucian Asia	*(Low-score)* Nordic Europe
In-group collectivism	*(High-score)* Confucian Asia		*(Low-score)* Nordic Europe
Institutional collectivism	*(Low-score)*		*(High-score)* Confucian Asia, Nordic Europe
Power distance	*(Low-score)* Nordic Europe	Confucian Asia	*(High-score)*
Uncertainty avoidance	*(Low-score)*	Confucian Asia	*(High-score)* Nordic Europe

There are differences between Confucian Asia and Nordic Europe in five of the six chosen dimensions. Only in one dimension – institutional collectivism – do both show similar scores. Further, Confucian Asia shows cultural characteristics that are more market oriented than the cultural characteristics of Nordic Europe in four of the five remaining dimensions. Confucian Asia is more performance oriented, more assertive, more in-group collectivistic, and less uncertainty avoiding than Nordic Europe. This implies a stronger orientation towards market mechanisms in Confucian Asia. Only in one dimension – power distance – does Nordic Europe show a cultural characteristic that is more in favor of market mechanisms than is the case in Confucian Asia.

In sum: Sweden and China, as parts of the two clusters of Nordic Europe and Confucian Asia, differ in five of the six cultural dimensions of relevance for the choice of coordination mechanisms. If the cultural influence of the dimensions of performance orientation, assertiveness, in-group collectivism, and uncertainty avoidance together outweigh the dimension of power distance, it should be expected that China would be more market oriented than Sweden. This leads to the hypothesis that China has a cultural bias towards market coordination mechanisms whereas Sweden has a cultural bias towards hierarchical coordination mechanisms.

4. An experimental study

An experimental study was conducted to test the hypothesis. In the experiment business students from Sweden and China performed and coordinated similar tasks under controlled conditions, allowing for variations to be observed in their choice of coordination mechanisms. Using an experiment in this context has advantages compared to more traditional surveys and case studies. Actual behaviors can be more directly observed and a comparison of behaviors can be made in a setting where other influencing factors are controlled.

The experiment was conducted during the autumn semester of 2006 at the University College of Kristianstad, Sweden, as part of a bachelor dissertation conducted by three of the authors of this article (Bornholt, Elfversson & Johnsson, 2006).

Two groups of students, one Chinese and one Swedish, participated in simulated production. Each group had ten participants and the experiment in-

volved twenty individuals in total. The students were selected on a purposive self-selecting sampling basis (partly due to the limited number of Chinese students at the University). All students were studying at Kristianstad University, Sweden, during the fall semester 2006. (The Chinese students were exchange students). All students were in the same age range (20-25 years old) and they were business students at the same educational level (undergraduate). Choosing similar students from the two cultures reduced the possible influence of other factors such as age, educational level, and professional specialization.

The ten students in each group were divided into five pairs, and the two participants in each pair were given the roles of principal and agent. The principal was then instructed to act as the manager of a company, offering the agent contracts, supervising the work, and accepting or rejecting the quality of the product produced by the agent. The agent performed the tasks required and accepted or rejected the contracts offered. The principals and agents continuously had to agree on which type of contract to use: a piece-rate payment system represented the use of a market coordination mechanism, and a fixed-rate payment (with a possibility to add a bonus) represented the use of a hierarchical coordination mechanism. Each group performed work during six periods and each period lasted five minutes. Before each period, a contract (piece-rate or fixed-rate) was negotiated.

Thus, the principal suggested a contract to the agent, giving the agent the option of either accepting or rejecting it. If the contract was rejected, no task was performed during the period and a new contract was not presented until the next period. After each time period the quantity and quality of the work achieved were checked by the principals and also by the supervisors of the experiment, who also acted as the customers.

The agents' task was to color circles on papers in red or blue. Each agent had a set of watercolors, a brush, a glass of water, and a paper towel. Papers, each with 28 printed circles, were handed to the agent. The circles were to be colored red and blue alternately. The agent was not allowed to color several circles in the same color, one after another; that is, the agent had to paint a circle one color, then paint the next circle the other color, and so on.

The task was designed with both quantitative and qualitative dimensions, and the agent had to perform the actual coloring as well as maintenance tasks (cleaning brushes etc.), which gave the assignment a multi-task character. The task was made simple enough to result in a rather high quantity during a short period of time, but it was still restricted by quality considerations. The colors were not allowed to mix, the whole circle had to be colored, the whole area had to be covered, and color outside the circle area was not accepted. The requirement of changing colors kept the agent busy with maintenance work, keeping the watercolors and the brush clean and changing water and paper towels. Not maintaining the equipment meant that the colors would mix, which would lead to rejections. The idea behind this was that, by creating a multi-task situation, the coordination mechanisms would not be too obvious, allowing cultural preferences to influence the outcome.

The experiments were supervised by three of the authors (Bornholt, Elfversson, Johnsson). The supervisors had the role of both instructor and customer, deciding which products to buy from the principal. An imaginary currency was introduced, named "gold" (g) and the payment to the principal was 12 g for each accepted product. The principal and agent could then either agree on a piece-rate payment of 4 g for each accepted product or a fixed-rate payment, which was negotiable, of between 20 and 40 g for each period. The fixed-rate contract could be combined with a bonus of 0 to 30 g, depending on the agent's performance. If there was no contract agreement, the principal had to pay the agent a return of 25 g for the period. The compensation was introduced to make it possible for the agent to refuse contracts and still not come too far behind in the competition with others. Thus, the rejection of a contract had a larger impact on the principal than on the agent. At the end of the game the results were summarized and announced to the group, and the principal and agent with the highest earned income were given rewards.

The total production by the agents in the Swedish group was 242 products, 215 of which were accepted by the principals. Of these products 168 were accepted by the customer and sold. The total production by the Chinese agents was 274 products, of which 211 were accepted by the principals and 201 were accepted and sold to the customer. Each group performed work in 30 periods (6 principals/agents in each group coordinated 5 periods; in total each group coordinated 30 periods of production). The result of the experiment is summarised in Table 4.

The Swedish group showed a strong preference for the hierarchical mechanism of fixed-rate payments (80%), whereas the Chinese group used fixed-rate payments in less than half of the periods (40%). The Chinese group, on the other hand, showed a small preference for the market mechanism of piece-rate payments

(60%), a mechanism for which the Swedish preference was low (20%). The difference between the Chinese and Swedish group is 40 percentage units, which is statistically significant (p = .0016). The result supports the proposition that there are cultural differences in the choice of coordination mechanisms and that Swedish culture shows a relative preference for using hierarchical mechanisms whereas Chinese culture shows a relative preference for using market mechanisms.

The experiment also showed some other interesting features. The choices made among the groups changed over time. In period 1 both the Swedish and Chinese groups used piece-rate contracts and fixed-rate payments. After period 2 all the Swedish groups turned to the fixed-rate contract, whereas the Chinese groups had a stronger persistence in using piece-rate payments and shifted between the two alternatives. The individual contracts chosen can be seen in Tables 5 and 6.

Table 4. Choice of coordination mechanisms in the experiment

Group	*Piece rate Quantity of contracts*	*Piece rate percentage*	*Fixed sum Quantity of contracts*	*Fixed sum Percentage*
Sweden	6	20%	24	80%
China	18	60%	12	40%

Table 5. Contracts chosen in the Chinese group during the experiment.

		Principal	*Agent*		
Period	*A*	*B*	*C*	*D*	*E*
1	Piece rate	Fixed	Piece rate	Piece rate	Fixed
2	Piece rate	Piece rate	Piece rate	Piece rate	Piece rate
3	Piece rate	Piece rate	Piece rate	Fixed	Piece rate
4	Fixed	Piece rate	Piece rate	Piece rate	Piece rate
5	Fixed	Fixed	Piece rate	Fixed	Fixed
6	Fixed	Fixed	Piece rate	Fixed	Piece rate

Table 6. Contracts chosen in the Swedish group during the experiment

		Principal	*Agent*		
Period	*A*	*B*	*C*	*D*	*E*
1	Piece rate	Piece rate	Fixed	Piece rate	Piece rate
2	Piece rate	Piece rate	Fixed	Fixed	Fixed
3	Fixed	Fixed	Fixed	Fixed	Fixed
4	Fixed	Fixed	Fixed	Fixed	Fixed
5	Fixed	Fixed	Fixed	Fixed	Fixed
6	Fixed	Fixed	Fixed	Fixed	Fixed

The two groups showed some other variations. The total number of rejections was somewhat higher in the Swedish group, 31%, compared to 27% in the Chinese group. The difference is not statistically significant. But the number of products rejected by the principals was larger in the Chinese group (23%) compared to the Swedish group (11%), a difference that is statistically significant (p < .001). The productivity was somewhat higher in the Chinese group and somewhat higher when using a fixed-rate payment. In the Chinese group the mean output was rather high, independent of choice of contract, whereas the Swedish group showed a lower output when using piece-rate payments. In the Chinese groups the mean output was 8.33 when using piece-rate contracts and 10.33 when using fixed-sum contracts. In the Swedish groups the piece-rate contracts had a mean output of only 3.33, whereas the mean output was 9.25 when using fixed-rate contracts. This discrepancy can be explained by a higher rate of discarded products in the Swedish groups when piece-rate contracts were used. In the Chinese group the number of discarded products was about the same independent of choice of contract, 27% for piece rate and 26% for fixed sum. In the Swedish group the proportion of discarded products when using fixed-rate contracts was about the same as in the Chinese groups (28%). But when the Swedish groups used piece-rate payments, 55% of the products were discarded. The difference is large but difficult to statistically analyze since the Swedish groups used that type of contract in only 20% of the cases and only in the first periods when they were new at their tasks.

Finally, some additional non-quantitative observations were made when supervising the experiments. During the experiment the Swedish group was quieter and calmer than the Chinese group. The Chi-

nese participants were much more animated. The Chinese principals acted differently from the Swedish principals and expressed their opinions on the agents' work more frequently and loudly, both in positive and negative ways. The principals were clearly in control. In the Swedish group the principals did not communicate with the agents as actively. The agents of the Swedish group seemed to have much more influence and their behavior was more demanding. The total earnings for the Swedish principals were also lower than for the Chinese principals. The Swedish agents simply refused to work if the principals did not follow their terms in the contracts.

Discussion and conclusion

Coordination theory studies how coordination problems can be solved, the different mechanisms to be used, and the various characteristics of contingencies and transactions that influence the choice of mechanisms. National cultures are shared within regional boundaries and have a systematic influence on individual preferences within these boundaries. Therefore, national cultures might have a systematic influence on individual preferences and influence the choice of coordination mechanisms. But few studies identify the influence of national cultures on the choice of coordination mechanisms.

This article has provided a framework for analyzing how cultural dimensions may influence the choice of coordination mechanisms. It applied the framework to the cultures of Sweden and China. It was suggested that output-oriented market mechanisms are preferred in cultures with high levels of performance orientation, assertiveness, and in-group collectivism, and low levels of institutional collectivism, power distance, and uncertainty avoidance. Societies with the opposite profile could be expected to favor more input-oriented hierarchical coordination mechanisms. China was identified as belonging more to the first type of culture than Sweden, and Sweden as belonging more to the second type of culture. The result from an experiment supported the view that there are cultural differences and that there is a preference for market mechanisms in China and for hierarchical mechanisms in Sweden.

However, this does not imply that culture is the most important explanation behind the choice of coordination mechanisms. We do not expect China to always use market mechanisms or Sweden to always use hierarchical mechanisms. Incentives for efficiency will make certain mechanisms favorable in certain situations, regardless of nations and cultures. For example, market mechanisms can be expected if output is highly measurable and if many alternative suppliers are available, as suggested in transaction cost analysis. But there will be "degrees of freedom" in the choices made, allowing for individual preferences and, hence, cultural influences. If there are strong cultural biases in favor of certain coordination mechanisms, the causality might even be reversed so that the preference for a certain mechanism determines the characteristics of transactions, rather than the other way around. Firms that operate in nations with cultures that favor market coordination might, to a larger extent than others, strive to design their workflow to be more output oriented and measurable. Firms that operate in cultures that favor hierarchical coordination might organize their tasks in more cooperative directions, so that measures of input become more adequate.

This opens interesting new areas for further empirical research. In what situations are cultural aspects the prime factor behind the choice of mechanisms? Can we find examples of similar activities which are coordinated differently and effectively in different national contexts? From a practical point of view, the identification of cultural biases might prove valuable for the management of international businesses in different cultural clusters. An international firm that uses fixed-rate payments in its Swedish factories might consider piece-rate payments when operating similar factories in China.

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