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Author(s)	O'Connor, NG; Vera-Muñoz, SC; Chan, F
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The Effects of Market Competition and International Orientation on Management Control Systems' Use by Emerging Market Public Listed Companies

Neale G. O'Connor
School of Business
The University of Hong Kong
Hong Kong
oconnor@business.hku.hk

Sandra C. Vera-Muñoz
248 Mendoza College of Business
University of Notre Dame
Notre Dame, IN 46556-5646
sveramun@nd.edu

Francis Chan
Dept of Accounting
Hong Kong Shue Yan University
swchan@hksyc.edu

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ABSTRACT

We examine the effects of market competition and international orientation on management control systems' use by emerging market Public Listed Companies (PLCs). Our inquiry focuses specifically on China because this country is the world's largest annual source of exports from among emerging market countries. We examine management control systems whose widespread use by Chinese PLCs has been documented by prior accounting research: formal procedures, strategic planning, approval procedures, budget targets, participative budgeting and performance evaluation. We provide empirical evidence that the association between two specific types of market competition (foreign entrants' competition and customers' buying power) and management control systems' use depends on whether the PLCs compete predominantly in the domestic or international market. We discuss implications of our findings and provide some directions for future research.

Keywords: *management control systems; foreign entrants' competition; customers' buying power; international orientation*

Data Availability: The data are available from the first author upon request.

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Introduction

Economic growth and liberalization create enormous new opportunities for emerging economy firms.[1] In the accounting literature, researchers examined how emerging economy State-owned enterprises have modernized (including the use of management control systems) in part due to increasing market competition that is associated with the opening of the domestic market to global players. For example, China (Chow, Duh & Xiao, 2007; Firth 1996; Lin & Yu, 2002; O'Connor, Chow & Wu, 2004; O'Connor, Deng & Luo, 2006), India (Anderson & Lanen, 1999; Joshi, 2001), South Africa (Luther & Longden, 2001), Poland (Szychta, 2002), and Estonia (Haldma & Laats, 2002).

Findings of this research on the association between market competition and management control system use by emerging economy firms, however, are mixed. For example, O'Connor, Chow and Wu (2004) find no association between market competition, while some studies find a significant association (O'Connor, Deng, & Luo, 2006; Firth, 1996). These and other studies do not test whether the choice of MCS differ in firms which compete in the domestic market versus those that compete in both the domestic and foreign markets. Indeed, Anderson and Lanen (1999) propose that the association depends in part on the international orientation of the firm. The distinction of domestic versus international orientation is striking given the trend of the new millennium towards increasing internationalization of emerging economy firms. For example, market competition associated with (i.e., export)

[1] An emerging market is defined as "a country that satisfies two criteria: a rapid pace of economic development, and government policies favoring economic liberalization and the use of a free-market system (Hoskisson, Eden, Lau, & Wright, 2000, p. 249). Examples of countries meeting this definition are China, India, Mexico, Poland, and South Africa.

internationalization, which, in the case of China as being the largest emerging economy, is reported to be over $100 billion in 2008 (UNCTAD, 2008:8).

A typical way in which a firm's strategy can be defined is in terms of the scale and scope of its international operations. International-oriented firms have a propensity to engage in export activities and to commit substantial resources to international operations (Welch & Luostarinen, 1988, p. 36). Scholars suggest that firms who seek an internationalization (e.g., through exports) strategy stand to benefit from the opportunity to learn new product designs and marketing strategies associated with the needs of international markets (Francis & Collins-Dodd, 2000; Zahra, Ireland, & Hitt, 2000; Ireland, Hitt, Camp, & Sexton, 2001), to develop alliances with foreign businesses, as well as to achieve economies of scale (Kogut, 1985).

We extend the empirical literature on the relationship between market competition—which in this study includes both competition from foreign entrants as well as the customers' buying power—and management control system hereafter MCSs) use by emerging market Public Listed Companies (hereafter PLCs) and explore the potentially moderating effects of the firms' international orientation on this relation. We examine the impact of emerging market Chinese PLCs because they are a central vehicle to the Chinese governments' most recent stage of economic reforms. China provides an ideal setting to examine how the international expansion of emerging market PLCs affect their MCSs' use, especially given the Chinese PLCs' latecomer disadvantage in the global stage, which is typically populated by dominant customer and distribution channels (Luo & Tung, 2007; Taylor, 2003). [2]

[2] We focus specifically on China's emerging market for several important reasons. First, in the mid-1990s, China was already the largest outward investor among emerging market countries and the eighth largest foreign direct investment (FDI) outflow country in the world (World Bank, 1997). In 2006, China's FDI outflows amounted to $16.1 billion, or a 32 percent growth over 2005. Second, in 2005 China became the third largest trading nation in the world (Liu & Roos, 2006), and is the largest emerging economy, with exports reported to be over $100 billion in 2008 (UNCTAD, 2008:8). Third, China's entry into the World Trade Organization (WTO) in late 2001 opened the country to foreign investors, including those from major trading nations (*China Business Review*, 2000), and provided impetus towards the global expansion of PLCs. The recent merger of China's TCL

Against the above backdrop, we address the question: How do the Chinese PLCs' international orientation and market competition affect their MCSs' use? We argue that the effect of competition from foreign entrants on MCSs' use by Chinese PLCs will be stronger for domestic-oriented PLCs than for their international-oriented counterparts, as the former do not have alternative market opportunities abroad, which limits their ability to produce at lower cost (as a result of economies of scale) and/or to sell products in developed economies at higher margins. In contrast, international-oriented PLCs face a different type of market competition abroad in the form of customers' buying power (i.e., the ability of customers to demand and/or set prices that are often below competitive levels for their suppliers), which allows for the exercise of significant market power by retailers and wholesalers (Noll, 2005; Porter, 1998).

We argue that the effect of customers' buying power on MCSs' use is stronger for the international-oriented Chinese PLCs for at least two reasons. First, most of these firms rely on the advantages of low-cost domestic labor and focus primarily on sales growth through major retail chains and the supply of intermediate goods to original equipment manufacturers. Second, customers' buying power creates additional pricing and cost pressures for the firms who are trying to maintain and grow their market share in the global market (Kelly & Gosman, 2000).

We use the firm as the unit of analysis and focus on MCSs whose widespread use by Chinese PLCs has been documented by prior accounting research: formal procedures, strategic planning, approval procedures, budget targets, participative budgeting and performance evaluation—as assessed by senior-level managers (i.e., profit-center managers in various divisions, branches, or unit and cost-center managers) (O'Connor et al., 2004; Merchant & Otley, 2006). We provide evidence that the effects of competition from foreign entrants' and customers'

International Holdings (one of China's leading manufacturer of multi-media consumer electronics) with France's Thomson SA, owner of the RCA brand, as well as the acquisition of IBM's personal computer division by Lenovo, highlight these trends.

buying power on the firms' MCSs choice depend on their international orientation (domestic vs. international). We find that while competition from foreign entrants has a significantly positive impact on the firms' MCSs' use, this influence is greater for domestic-oriented firms relative to their international-oriented counterparts (specifically formal procedures, approval procedures, and participative budgeting and performance evaluation). Further, the level of customers' buying power has a stronger effect on the firms' MCSs' use for international-oriented firms relative to their domestic-oriented counterparts.

In what follows, we explain the management control system constructs and describe the context of the Chinese PLCs, including the international orientation construct and the main sources of competition faced both domestically and internationally. We then present a model of MCS antecedents. Next, we explain the methods used to test the model and describe our results. We conclude with a discussion of the implications of our findings for research and practice, the study's limitations, and provide some directions for future research.

Theory and Hypotheses

Management Control Systems

Management control systems are a subset of organizational routines and are typically characterized as being recurrent, formalized, and information-based (Zollo & Winter, 2002). The primary goals of MCS are to provide and communicate information that is useful for decision-making and strategic planning (Merchant & Otley, 2006), and to design and deploy appropriate performance evaluation and reward systems to attract, retain, and motivate qualified employees (Anthony & Govindarajan, 2001a, p. 59; Merchant, 1985).

Recent management accounting research has relied on economic and institutional theories to examine the antecedents and consequences of MCSs' use by China's PLCs. In particular, O'Connor et al. (2004) find that joint venture experience and stock market listing are significantly

associated with the use of Western MCSs, including formal procedures, approval procedures (budget tightness), and quality control procedures, as well as budget and performance targets. O'Connor et al. (2006) find that the level of political influence in labor decisions mediates the effects of joint venture, market competition, and stock market listing on organization structure and performance measurement. Chow et al. (2007) find that the MCSs that have been most widely adopted by Chinese PLCs are strategic planning and budgeting systems.

Consistent with this literature we focus on five dimensions of strategic planning and budget controls: formal procedures, strategic planning, approval procedures, budget targets, participative budgeting and performance evaluation. Together, these MCSs help to enhance firm performance in several ways. First, formalization of procedures and strategic planning help to formalize the decision making process and to reduce manager decision error (O'Connor et al., 2004). Second, budget controls such as approval procedures and targets promote goal-congruent behavior and help managers to assign responsibilities and motivate personnel (Dyson & Foster, 1982). Third, participation in budget setting and performance evaluation facilitates delegation and learning through information exchange, which, in turn, can boost organizational adaptation, market responsiveness, and managerial motivation (Malina & Selto, 2001; Kren, 1992).[3]

The following discussion lays out the constructs that we examine in this study, namely, international orientation, competition from foreign entrants and customers' buying power, and their expected association with MCSs' use by Chinese PLCs. We use Figure 1 to guide our discussion hereafter.

Insert Figure 1 about here

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[3] The above discussion suggests that the benefits of MCSs should be higher when they are combined as a package (Chow, Kato, and Shields, 1994).Predictions about whether MCS are complements or substitutes for one another (e.g., see Widener, 2007; Anderson & Dekker, 2005) are beyond the scope of this study.

Competition from Foreign Entrants

Foreign entrants in emerging economies enjoy several strategic competitive advantages, including, but not limited to: substantial financial resources, advanced information technologies in selling and marketing, superior products, brand leadership, seasoned marketing and management skills, and scientific management, among others (Taylor, 2003; Dawar & Frost, 1999). Furthermore, most foreign entrants have majority control of joint ventures, which allows them to make independent strategic choices, to retain profits from joint venture operations, and to better integrate their global strategies (Taylor, 2003, p. 438).

Competition from foreign entrants has resulted in two environmental challenges to Chinese PLCs: environmental uncertainty and environmental hostility. According to the information uncertainty perspective, problem non-routineness, complexity, and change affect the level of environmental uncertainty and hence the demand for information (Gordon & Narayanan, 1984). Competition from foreign entrants brings about uncertainty by introducing product market dynamics (eg. product positioning, new products, product branding and promotion strategies), which generates a number of pressures on Chinese PLCs who are generally accustomed to having dominant positions in their emerging markets (Hu & Jefferson, 2002). These pressures include the increasing need to control costs, to supply higher-quality goods and services, and to meet uncertain levels of demand (Li 1997, p. 1101), among others. These pressures also negatively affect the survival rates of local firms (Chang & Xu, 2008).[4]

Competition from foreign entrants is also a source of environmental hostility. According to resource dependence theory, environments affect organizations through the process of making available or withholding resources such as when firms face resource-advantaged competitors (Aldrich, 1979; Dess & Beard, 1984). Foreign entrants have advantages in technology,

[4] See Gorg & Greenway (2004) for a review.

management expertise, and marketing know-how. Further, strategic global capabilities allow foreign entrants to compete more aggressively, especially in the case of firms that pursue market expansion strategies and need to attract and retain experienced personnel (Zhou, Li, and Tse, 2002).

The information demands associated with competition increase the value of gathering more timely cost, quality, and other non-financial information (Banker & Mashruwala, 2007; Davila & Foster, 2005; Krishnan, 2005; Li, 1997) through the use of MCS such as budget targets, participation in budget setting and performance evaluation. Increasing formalization of procedures and budget targets provides senior managers with a set of accessible and objective standards against which to compare subordinates' performance. Similarly, resource demands associated with hostility pressures from foreign entrants increase the value of using formal procedures, strategic planning, approval procedures and budget targets to control resources in decentralized team settings and to improve the quality of managers' decision.

To illustrate, O'Connor, et al.(2004, p.358) report the following quote from a senior manager of an SOE, *"Pressure to increase sales and to decrease costs has forced management to formalize the use of management teams to make decisions in the areas of production quality, cost evaluation, sales and financial management."* Further, O'Connor, et al. (2006) find an association between foreign entrant competition and the use of objective performance measures in the incentive system. Based on the above discussion, we propose the following hypothesis:

H1a. The association between the level of foreign entrants' competition and the level of MCSs' use by Chinese PLCs is positive. The MCSs include formal procedures, strategic planning, approval procedures, budget targets, participative budgeting and performance evaluation.

While the strength of foreign entrants' competition is an important consideration, managers of emerging market PLCs also need to evaluate the degree to which the PLCs' assets are transferable internationally (Dawar & Frost, 1999, p. 121). For domestic-oriented PLCs, whose assets are not transferable internationally, the firm needs to concentrate on defending its turf against foreign entrants. For instance, when a new foreign product brand first appears in China, sales are initially high owing to the consumers' curiosity to try the new brand. Yet Chinese competitors often respond by launching products with similar features. Although the foreign brands are characterized by higher quality/higher price, the manufacturers seldom have a technological monopoly. Thus, domestic-oriented PLCs are more likely to respond to the foreign entrants' competition by acquiring or replicating the technology to make similar products at a lower cost, a strategy that often works because consumers are willing to trade off quality for price (Liu & Roos, 2006, p. 440). As the competitive pressures from foreign entrants increase, the PLCs' ability to compete will hinge on whether they can restructure around the strongest links of their value chain to maximize their return on assets and return on investments in quality (Hu & Jefferson, 2002).

For international-oriented Chinese PLCs whose assets are more transferable to foreign markets, the opportunity to compete globally with the multinational firms is real (Liu & Roos, 2006; Dawar & Frost, 1999, p. 121); as such, the direct influence of foreign entrants' competition is likely to be lower.[5] Typically, most Chinese PLCs still rely on the advantages of low-cost domestic labor and concentrate primarily on growing sales through major retail chains (e.g., Wal-Mart, J.C. Penney), and by supplying intermediate goods to original equipment manufacturers (e.g., Acer, Dell, Hewlett Packard) (Li, 2009). Contrary to popular opinion, only a limited number of the large-scale Chinese PLCs have the human and capital resources and

[5] Dawar & Frost (1999, p. 122) develop a matrix consisting of four positioning strategies for emerging-market firms. A firm's position in the matrix (i.e., defenders, extenders, dodgers, or contenders) depends on both the transferability of its competitive assets and the pressures to globalize in the industry.

knowhow to compete successfully with multinational firms. For instance, TCL International Holdings' financial strength has enabled the company to buy foreign software and core technologies, to invest their profits into research and development, and to match the advertising expenditure of foreign competitors (Liu & Roos, 2006, p. 441). In a study of Indian SOEs, Anderson and Lanen (1999) find that the association between market competition and management control system use depends in part on the international orientation of the firm.

The above discussion suggests that, as the level of foreign entrants' competition increases, domestic-oriented Chinese PLCs need to engage in more complex forward-looking activities to maintain or enhance their competitive position through both cost and cycle time reductions and quality improvement efforts, relative to their internationally-oriented counterparts (Raith, 2003, 2005; Hu & Jefferson, 2002; Kole & Lehn, 1999; Lawless & Finch 1989, p. 354; Dess & Beard 1984, p. 56). Thus, the value of using MCSs such as strategic planning, tighter budgets, participative budget setting, and strategic performance measurement systems will be higher for domestic-oriented Chinese PLCs than for internationally-oriented PLCs. Based on the above discussion, we propose the following hypothesis:

H1b. The effect of foreign entrants' competition on the level of MCSs' use by Chinese PLCs is stronger for domestic-oriented PLCs than for international-oriented PLCs. The MCSs include formal procedures, strategic planning, approval procedures, budget targets, participative budgeting and performance evaluation.

Customers' Buying Power

Customers' buying power is a major force that shapes the international expansion of emerging market firms. Customers' buying power is driven primarily by their size and by their

location in the value chain.[6] Customer buying power includes both their negotiation power, which is associated with both their control over market distribution resources, as well as with their financial resources (Noll, 2005). In many industries in which intermediaries play an important role in the value chain, customers' buying power is often higher at the distribution level than at the manufacturing level of the value chain (Raff & Schmitt, 2008). Not surprisingly, large customers are major participants in the global value chains. For instance, Wal-Mart alone imports more than half of its non-food products from China (Smith, 2004) and accounts for more than 15 percent of total U.S. imports from that country (Basker & Van, 2008). Large customers also have an information advantage over their smaller counterparts. This advantage enables them to source a larger range of alternative suppliers, especially directly at the factory level rather than through an export agent stationed in major cities. As such, they can do away with the middle man and place greater price pressure on the Chinese manufacturers.

Chinese PLCs face pressures from their international customers, who typically use their buying power to demand prices that are profitable to them but often below competitive levels for their suppliers (Noll, 2005, Porter, 1998). In turn, this creates pricing and cost pressures for Chinese PLCs who are struggling to maintain their market share (Kelly & Gosman, 2000). As the level of customers' buying power increases, so does the need for international-oriented Chinese PLCs to choose their markets carefully and to maintain their low-cost advantage through continuous improvement and quality control efforts (Hart, 1995). Indeed, international-oriented PLCs typically have a few dominant customers that, at a minimum, squeeze their Chinese suppliers on price and, at the extreme, mandate new processes and technologies (Grant, 2002). Squeezing their emerging market partners on price is prevalent with international customers

[6] The value chain for any firm is the linked set of value-creating activities of which it is a part, from acquiring the basic raw materials for component suppliers to making the ultimate end-use product and delivering it to the final consumers (Anthony & Govindarajan, 2001d, p. 310).

owing to emerging market partners' expansion strategies that are based predominantly on using a low-cost advantage (Baack & Boggs, 2008; Chittoor & Ray, 2007). In turn, these cost pressures increase the value of gathering more timely cost information for strategic planning and budget setting.

Also, as the level of customers' buying power increases, so does the pressure on international-oriented Chinese PLCs to conform to their customers' product design and quality demands. Thus, the need to manage capacity, the timing of orders, and the scheduling of deliveries to key customers (Li, 1997; Abernethy & Lillis, 1995) increases the information-processing requirements for these firms. For example, having a comprehensive data gathering and processing system is important to ensure that raw materials and sub-assemblies are supplied as needed (Memedovic, Ojala, Rodriguez, & Naula, 2008). These information demands, in turn, require the use of more formal procedures, strategic planning, approval procedures to control the decision making processes, and information exchange mechanisms such as participation in budget setting (Davila & Foster, 2005, p. 1044; Chenhall, 2005). As a key customer's buying power increases, so does the risk of losing the customer to a competitor. In turn, this risk creates further pressures for the Chinese PLCs to maintain a certain level of trust and commitment with key customers through effective communication, planning, and mutual performance reviews (Puan, 1997).

In contrast, for domestic-oriented PLCs, customers' buying power is typically characterized by informal relationships between Chinese wholesalers and retailers. Buyer-supplier relationships rely less on formal contracts that stipulate various quantity and quality requirements (Chen, 1995). As the domestic-oriented PLCs' customers are also likely to be Chinese (e.g., Chinese firms still dominate downstream manufacturing and retail spaces), there is lower pressure to squeeze the Chinese PLCs on price due to reputation concerns. Indeed, domestic buyer-supplier relationships are characterized by guanxi-type cooperation which includes a resistance against seeking short-term

alternatives (eg. price gouging) to long term relationships (Lovett, Simmons & Kali, 1999). A customer may have fewer alternative suppliers to switch to once its reputation for price gouging is known as reputation concerns play a larger role in contractual dealings. In addition, the demand for high-quality raw materials or sub-assemblies is lower relative to the demands placed by large international customers. Therefore, the information demands, cost and relationship risk pressures, which otherwise drive the need for more MCSs, are lessened for domestic-oriented Chinese PLCs. Based on this discussion, we propose the following hypothesis:

H2. The effect of customers' buying power on the level of MCSs' use by Chinese PLCs is stronger for international-oriented PLCs than for domestic-oriented PLCs. These MCSs include formal procedures, strategic planning, approval procedures, budget targets, participative budgeting and performance evaluation.

Research Method

We collected data from both archival and survey-based sources. We collected the former from the annual reports of the Chinese PLCs in our sample and from the financial and market data compiled by the CSMAR database. To collect the latter, we carried out a comprehensive survey of the senior- and middle-level managers of Chinese PLCs (explained in more detail below).

Design of Survey Instruments

We designed two surveys, one for senior-level managers and one for middle- level managers. We draw our measures for the variables examined in our model (reproduced in Table 2) from the senior managers' responses because this is consistent with the level of analysis in our study. We use the responses from the middle-level managers for validation purposes (discussed below). We considered several issues in the survey design. First, to construct our measures we relied on both the management (e.g., Labroukos, Lioukas & Chambers, 1995; Govindarajan,

1988; Pascale, 1985) and management accounting literatures (e.g., Moores & Yuen, 2001; Chow, Shields, & Wu, 1999; Chow et al., 1996; Merchant, 1989, 1985). Second, consistent with Dillman's (1978, 1999) total design method, we composed preliminary drafts of the instruments in English and then revised them several times. We then hired a professional translator to translate the instruments from English into Chinese. Next, one of the co-authors and another Chinese accounting professor, both of whom are bilingual, performed back-translation from Chinese to English to ensure that the original meaning had been preserved.

We then pilot-tested the Chinese-version instruments with several objectives in mind: (1) to ensure that they were clear and could be easily understood by the respondents; (2) to identify and rectify any problems with the questions; and (3) to ensure that they conveyed the same meaning as did the English version. We adopted a two-step process for these pilot tests. First, we contacted two companies and interviewees through the China Accounting and Finance Research (CAFR) Center, which is headquartered in mainland China. We conducted personal interviews with four respondents from each company, two senior-level and two middle-level managers. As a result of these interviews, we fine-tuned the instruments. For the second step, we sent the revised instruments to two doctoral students, who at the time worked at the CAFR Center, for their comments and suggestions, and we then fine-tuned the instruments once again.

Survey administration

We use a randomly selected sample of firms listed on the Shanghai and Shenzhen Stock Exchanges. Consistent with Dillman (1978, 1999), we first contacted the chief executive officers (CEOs) of these companies by phone and invited them to participate in the study. We informed them that to increase the internal validity of our findings the study required four respondents from each company—two senior-level managers and two middle-level managers—because a single individual often cannot reasonably reflect the beliefs of an entire organization (Young,

1996).[7] We mailed a set of four survey booklets to each of the 680 companies in our target population, and three weeks later we mailed a second wave of surveys to non-respondents and made follow-up phone calls to all second-wave recipients.[8]

Respondents – Senior-level managers

We received surveys from 183 companies, for a response rate of 26.9 percent. We discarded 14 firms that either returned incomplete survey sets or failed to follow our instructions. To reduce potential noise in our data, we excluded a further 15 firms that were either government-protected or operated in closely controlled industries.[9] Thus, our sample used to test our hypotheses consists of 154 firms, with surveys returned by 308 senior-level managers. Panel A of Table 1 summarizes our sample, and Panel B shows the results of the tests of non-response bias.

We tested for potential non-response bias in two ways. First, our survey sample (n = 154) of respondent firms are not significantly different, in terms of industry, from our target population of firms listed on the Shanghai and Shenzhen Stock Exchanges (Chi-square = 26.19; $p = 0.26$). The industries are also similarly represented between domestic- and international-oriented firms (discussed later). The note to Table 1 shows the sample distribution by SIC two-digit code and industry name. Second, we conducted tests of differences in means (medians) for the variables related to sales, net income, number of employees, and age, and find no evidence of differences between respondents and non-respondents (see Table 1, Panel B). Finally, we find no evidence of differences in sales, net income, age and size between early and late respondents.

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[7] The CEO, who was also a participant, selected three other managers for the study. Arguably, this practice may introduce sampling bias due to the possibility that the contact person may channel the surveys only to employees with favorable views. However, our empirical tests show no evidence of systematic biases associated with the variables in our models.

[8] By the end of 2003, there were 759 public companies listed on the Shanghai Stock Exchange and 500 public companies listed on the Shenzhen Stock Exchange, for a total of 1,259 firms. We excluded 376 non-manufacturing companies and 203 companies that were listed after 2001, leaving us with a sample of 680 firms.

[9] These included firms in the steel making, telecommunications, and mining industries. Twenty-four different industry codes are represented in our sample.

The respondents represent a wide range of managerial functions, with more than half of them reporting involvement in accounting/finance and administration. The senior-level managers had an average age of 45 years and an average length of employment with the company of 11.61 years (*s.d.* = 8.11). More importantly, taken together, these means also suggest that our respondents had sufficiently adequate knowledge about their companies to answer the survey questions. The majority of respondents reported having a college degree or some college education, and of these, 35 percent of senior managers and 17 percent of middle managers reported having a post-graduate degree.[10]

Insert Table 1 about here

Operational Constructs

Management Control Systems

We constructed our MCSs variables based on managers' responses to the survey instruments by summing the respective items comprising each variable.[11] These measures reflect the MCSs in use at the sample firms as of the start of 2004. Table 2 summarizes the operational MCSs constructs along with the results of the confirmatory factor analysis.

Formal procedures *(MCS_FORM)*. Formalization of planning is an aggregate measure used by Labroukos et al. (1995) that combines the responses from senior-level managers to four

[10] We compared the participants' responses across all of the items in the survey and across all of the firms in our sample. The mean responses between each pair of senior managers are not significantly different ($p > 0.10$). Further, our hypotheses test results are qualitatively similar regardless of whether we use the average of the two responses or the disaggregated responses. Therefore, our results are based on the average responses of each pair of senior-level managers.

[11] Our results are qualitatively similar when we use factor based scores for each of the MCS variables instead.

questions about the extensiveness of use of rules, policies, and procedures to govern various strategic and operational decisions in the firm (see Table 2).

Strategic planning *(MCS_PLAN)*. We constructed the strategic planning measures shown in Table 2 from the senior-managers' responses to six questions on strategic and operational planning in terms of extensiveness and detail (Bruns & Waterhouse, 1975). The Cronbach's alpha (Cronbach 1951) for strategic planning is 0.82.

Approval procedures (*MCS_TIGHT*) and Budget targets *(MCS_TARGET)*. We constructed the two budget control measures shown in Table 2 from senior managers' responses to 11 questions on budget targets and tightness (Chow, Kato, & Merchant, 1996; Merchant, 1985). The Cronbach's alpha for budget targets and tightness is 0.87 and 0.78, respectively.

Participative budgeting and performance evaluation *(MCS_PART)*. This variable includes seven questions elicited from middle-level managers related to the use of participation in budget setting (4 items) and performance evaluation (3 items) from Chow et al. (1999). The overall Cronbach alpha is 0.87 (see Table 2).

Competition from Foreign Entrants, Customers' Buying Power, and International Orientation

Competition from foreign entrants. We construct our proxy (denoted by *FGN_COMP*) from the industry data provided by the China Statistical Bureau. We sourced the data from the China Statistical Yearbook, available at www.chinadataonline.com. We used the percentage of foreign firm sales in each industry in 2003.[12] Studies on the effects of foreign entrants' competition on domestic firms from FDI have used the same proxy (Hu & Jefferson, 2002).

Customer buying power. We constructed our customer buying power variable (denoted by *CUSTOMER*) as the percentage of sales, out of total firm sales, that a firm made to its five

[12] Researchers have used other proxies, such as indicator variables for special economic zones or the market development index (Fan & Wang, 2004), but such proxies are one step removed from the foreign entrants' competition construct we employ herein.

largest customers in 2003. Higher levels of this index indicate higher levels of customer buying power. We construct our proxy from the annual report disclosures that are required by generally accepted accounting principles in China. These standards mandate the disclosure of the percentage of a firm's sales, out of its total sales, that are made to its five largest customers.[13]

International orientation. Consistent with the international economics literature, a firm's domestic versus international orientation (denoted *EXPORT_DUM*) is based on the magnitude of its export sales (Sullivan, 1994). We use an indicator variable to denote either a domestic-oriented firm (coded as 0 for zero export sales) or an international-oriented firm (coded as 1 if export sales are equal to, or exceed 25 percent of total sales) based on the average percentage of export sales for the years 2002-2004 (Koster & Karlsson, 2009). The international business literature uses 25 percent of export sales as a benchmark for determining whether a firm has an international orientation (Koster & Karlsson, 2009).

Firm- and Industry-Specific Characteristics (Control Variables)

We control for six firm-level variables and one industry-level variable to statistically remove their potential effects on the firms' MCSs' use. At the firm level, we control for export intensity, export experience, joint venture experience, manufacturer or retail customer, government ownership and size. We control for export intensity and export experience because these factors have been documented in theories of internationalization that examine the determinants of export performance (see Singh, 2009 for a review). Thus, we expect more export-intensive and export-experienced firms to have higher use of MCSs. We measure the firms' export intensity (denoted *EXPORT*) in terms of the average percentage of export sales out of total sales for the years 2002-2004. We measure the firms' export experience (denoted

[13] This is similar to the customer concentration data mandated by SFAS No. 14 and used by Balakrishnan, Linsmeier, & Venkatachalam (1996). The only difference is that SFAS No. 14 requires such disclosure of customers only when they account for more than ten percent of a firm's annual sales.

EXPORT_YRS) using the number of years they have been in the export business (Singh, 2009). We control for joint venture experience because both Firth (1996) and O'Connor et al. (2004) find that Chinese SOEs that enter into joint ventures with foreign partners make greater use of the more detailed and newer 'Western' management accounting mechanisms, relative to SOEs without such joint venture partners. We use a dummy variable (denoted *JV*) coded as 1 if the firm currently has joint venture experience with a foreign partner, and 0 otherwise. We control for the firm's position in the value chain (i.e., whether the firm's customer is a manufacturer or retailer) because this factor has been documented by the globalization literature as being associated with the amount of bargaining power a firm may have over the terms of a transaction (Gereffi and Kaplinsky, 2001). Based on information taken from annual reports, we use an indicator variable (denoted *BTB)* coded 1 if the firm mainly sells to other manufacturers and 0 if the firm mainly sells direct to retailers.

Government ownership research suggests that the effective modernization of public firms is largely dependent on the extent to which employment control rights are transferred from government to management in the process of corporatization (Shleifer & Vishny, 1994, p. 1015). Recent research provides empirical evidence of government interference in PLCs' domestic and international operations (Wang, 2003) in the form of senior management appointments, preferential commercial treatment of inter-organizational relationships, as well as providing special benefits such as financial bailouts and low-interest rate loans for international-oriented firms (Tian & Estrin, 2007). We construct an indicator variable (denoted *STATE*) coded as 1 if the firm's dominant shareholder is a private institutional investor, and coded as 0 if the firm's dominant shareholder is the State.[14]

[14] With regard to the shareholding structure of the listed firms, other types of shareholders, including legal-person shares, A-shares, and B-shares, have the ability to influence firm structure and operations. Our results are

We control for size (denoted *SIZE*) because larger firms are more likely to benefit from the more extensive use of MCSs than are smaller firms (Christie et al., 2003). At the same time, larger firms carry greater political costs through employment responsibility, which may limit any said benefits (e.g., cost reduction through downsizing) (Lin, Cai, & Li, 1998). We proxy for firm size by using the average of the natural logarithm of total assets at the end of years 2002 and 2003. Finally, at the industry level, we control for industry growth (denoted *GROWTH*) using the average annual growth in industry sales for the five years (1999-2003) (Dess & Beard, 1984).[15]

Insert Table 2 about here

Sample Validity and Reliability

Table 2 reports our confirmatory factor analyses for the MCSs survey completed by our sample of senior- and middle-level managers. Further, we conducted the following validity test of multiple raters and multiple sources (Podsakoff, McKenzie, Moorman, & Fetter, 1990). We tested the validity of the participative budgeting and performance evaluation measure by eliciting responses from the middle-level managers to the same questions that we elicited from the senior-level managers. The correlation in the responses between the two managerial ranks is positive and highly significant (0.350; $p < 0.01$).

A domestic/international orientation is also associated with a domestic/international customer orientation to the extent that export sales comprise at least 25% of total sales and that the firm's major customers are foreign manufacturers and retailers. As such we adopt this multiple criterion (export sales and major customer being a foreign customer) to describe an internationally oriented firm in our study. To the extent that export sales are made to foreign

qualitatively similar when we include these shareholder types. Our analyses do not include employee shares, H-shares, N-shares, and L-shares due to their minor quantitative importance.

[15] We sourced the data from the China Statistical Yearbook, available at www.chinadataonline.com

manufacturers and retailers, a firm's domestic vs. international orientation may also be associated with having their largest customers with a predominantly domestic vs. international orientation. While there is agreement in the international business literature that 25 percent export sales is a reasonable cut-off point for determining whether a firm has an international vs. domestic orientation, one may argue that more dimensions of international orientation may be warranted. Thus, we examine whether the firms' dominant customers are systematically different between those that fall above the 25 percent export sales cut-off and those that fall below this cut-off. Thus, we validate whether export sales is associated with the type of customer.

We also gathered data on whether the firms' largest five customers are domestic or foreign. To do so we called each of the 74 firms that had export sales (see Table 1) and received responses from 53 firms (34 firms out of the 41 firms who exported between 0 and 25 percent of sales and 19 firms out of 33 firms who exported more than 25 percent of sales.[16] All of the respondents from the firms with less than 25 percent export sales indicated their largest five customers were domestic firms. For the firms with more than 25 percent export sales, in 14 out of 19 cases (73.7%), at least three of their largest five customers were foreign firms. While this approach is admittedly ad hoc, taken together, these findings provide some reassurance about the validity of our assumptions about the international orientation construct, as discussed above.

Table 3 reports the descriptive statistics for all of the variables examined in our study, and Table 4 presents pair-wise Pearson correlations for our MCSs, independent, and control variables. Table 3 shows that the level of use of MCSs is not significantly different between the

[16] The phone interviews were directed initially toward the sales office or the investor relations officer (in many cases this was the first accessible phone number provided by the companies). On contacting the firm, we asked to speak to the sales manager or representative. The interviews followed a prescribed protocol with the questions – During the past five years, were any of your five largest customer's foreign firms? If so, How many? And were these firms part of your export sales? The phone calls were undertaken in 2009 over a two month period.

two groups of firms ($p < 0.05$).[17] International-oriented firms have mean overseas sales of 43.08%. The table also shows that, on average, the ratio of each firm's sales to its five largest customers relative to total sales (*CUSTOMER*) in 2003 is 28.27% (29.16%) for the international-(domestic-) oriented firms, and foreign firm sales (*FGN_COMP*) in the same year accounted for about 19% of total sales across the industries in our sample. On average, State shareholders held 39 percent of the shares in our sample firms.

Insert Table 3 and Table 4 about here

Regression Model

To test Hypotheses 1 and 2, we construct the following regression model, which we run separately for each of our five MCSs:

$$MCS_{1....5} = \beta_0 + \beta_1 FGN\_COMP_{it} + \beta_2 CUSTOMER_{it} + \beta_3 INT\_ORIENT_{it} + \beta_4 EXPORT\%_{it} + \beta_5 EXPORT\_YRS_{it} + \beta_6 JV_{it} + \beta_7 BTB_{it} + \beta_8 STATE_{it} + \beta_9 SIZE_{it} + \beta_{10} GROWTH_{it} + \beta_{11} (INT\_ORIENT_{it} * FGN\_COMP_{it}) + \beta_{12} (INT\_ORIENT_{it} * CUSTOMER_{it}) + e_{it}. \quad (1)$$

where for firm *i* in period *t*:

i	Represents the individual firms in our sample, 1 - 154.
$MCS_{1....5}$	The five MCSs: formal procedures, strategic planning, approval procedures, budget targets, participative budgeting and performance evaluation.
FGN_COMP	Foreign entrants' competition: the percentage of foreign firm's sales revenue, out of total industry revenue, in each of China's domestic industries using the two-digit CSMAR code (2003).
CUSTOMER	Customers' buying power: the percentage of sales, out of total firm sales, made to the five largest customers of each firm in 2003. The higher the index, the higher is the level of customers' buying power (source: CSMAR database).
INT_ORIENT	Domestic vs. international orientation: we use an indicator variable to denote that the firm is either domestic-oriented, that is, has no export sales

[17] Since we are comparing two groups of firms (domestic- vs. international-oriented), we tested for the differences in the industry representation between these two groups. We report the results of a Chi-square test that indicates that the representation of industries across the two groups is not significantly different (Chi-square = 15.71, $p = 0.87$).

	(coded as 0), or international-oriented, with export sales exceeding 25% of total sales (coded as 1), based on the average percentage of the firm's export sales for the year 2002-2003. We use this variable for modeling the interaction terms in equation 1 (source: CSMAR database).
EXPORT%	Export intensity: the average percentage of overseas sales, out of the firm's total sales, for the year 2003 (source: CSMAR database).
EXPORT_YRS	Number of years since the firm began exporting (source: CSMAR database).
JV	Joint venture experience - coded as 1 if the firm currently has joint venture experience with a foreign partner and 0 otherwise.
BTB	Firm *i*'s main customers– coded 1 if the firm sells mainly to manufacturers and 0 if the firm sells mainly to retailers.
STATE	Government ownership: we use an indicator variable to denote whether the firm's major shareholder is either a private institutional investor (coded as 1), or the government (coded as 0) at the end of 2003 (source: CSMAR database).
SIZE	Based on the average natural log of total assets at the end of 2002 and 2003.
GROWTH	Industry growth: based on the average annual industry sales growth between 1999 and 2003 (source: China Statistical Yearbook).

Results

Hypotheses Tests

Recall that Hypothesis 1a predicts that the higher the foreign entrants' competition, the higher the level of MCSs' use by Chinese PLCs. H1b predicts that the effect of foreign entrants' competition on the level of MCSs' use by Chinese PLCs is stronger for domestic-oriented PLCs than for international-oriented PLCs. H2 predicts that the effect of customers' buying power on the level of MCSs' use by Chinese PLCs is stronger for international-oriented PLCs than for domestic-oriented PLCs. The regression model in Table 5 includes the independent and control variables as well as the interaction terms. Each of the adjusted R^2 (range from .17, p<.01 to .27, p<.01) are significantly (p<.10) higher than each adjusted R^2 (range from .07, p<.01 to 0.17, p<.01) of the main-effects model that includes the independent and control variables but not the interaction terms.[18].Multicollinearity is not a problem as evidenced by the largest VIF of 7.47 and the largest

[18] Given the different industries represented by the sample, we employ Huber-White robust standard errors with the cluster command to control for the sample dependence around the industry in which each firm is located (Rogers,

condition index value of 35.88, which are within the accepted limits (Belsley, 1991). The residuals of the model are normally distributed.

Insert Table 5 and Table 6 about here

Consistent with H1a, the coefficients for *FGN_COMP* are positive and significant for *MCS_FORM* ($p < 0.01$), *MCS_PLAN* ($p < 0.015$), *MCS_TARGET* ($p < 0.05$), *MCS_TIGHT* ($p < 0.05$), , *MCS_TARGET* ($p < 0.05$), and *MCS_PART* ($p < 0.1005$).. These results provide support for H1a. Consistent with H1b, the coefficients for the *INT_ORIENT * FGN_COMP* interaction are negative and significant for *MCS_FORM* ($p < 0.015$), *MCS_TARGET* ($p < 0.01$), *MCS_TIGHT* ($p < 0.05$), and *MCS_PART* ($p < 0.015$). The coefficients for *MCS_PLAN* and *MCS_TARGET* are not significant ($p<0.1005$). These results provide partial support for H1b.

To probe deeper into the form of the interactions, we split our sample into two subsamples: domestic-oriented PLCs and international-oriented PLCs. Our results are reported in Table 6. Consistent with H1b, for domestic-oriented firms, the coefficients for *FGN_COMP* are positive and significant for *MCS_FORM* ($p < 0.01$), *MCS_PLAN* ($p < 0.01$), *MCS_TARGET* ($p < 0 .10$), *MCS_TIGHT* ($p < 0.01$), and *MCS_PART* ($p < 0.05$). For international-oriented firms, the coefficient for *FGN_COMP* is positive and significant only for *MCS_PLAN* ($p < 0.05$), and negative and significant for *MCS_PART* ($p < 0.10$). The difference in the *FGN_COMP* coefficients between the domestic- and international-oriented firms is significant ($p < 0.05$).

Consistent with H2, Table 5 shows that the coefficient for the *INT_ORIENT * CUSTOMER* interaction is positive and significant for *MCS_FORM* ($p < 0.01$), *MCS_PLAN* ($p < 0.05$), *MCS_TARGET* ($p < 0.10$), *MCS_TIGHT* ($p < 0.05$) and *MCS_PART* ($p < 0.01$). These results

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1993). This estimation procedure assumes and estimates a common component of the variance and co-variance matrix for all observations from the same industry (StataCorp, 1999, p. 257).

provide support for H2. To probe deeper into the form of the interactions for H2, we also analyze and compare the results between the domestic-oriented and international-oriented PLCs (see Table 6). Consistent with H2, for international-oriented firms, the coefficient for *CUSTOMER* is positive and significant for *MCS_TIGHT* ($p < 0.05$) and *MCS_PART* ($p < 0.10$). In contrast, and consistent with H2, for domestic-oriented firms, the coefficient for *CUSTOMER* is negative and significant for, *MCS_PLAN* ($p < 0.10$) and not significant ($p < 0.10$) for the other MCSs. The difference in the *CUSTOMER* coefficients between the domestic- and international-oriented firms is significant ($p < 0.05$).

Discussion and conclusion

Management accounting research in transitional economies have focused on the foreign direct investment driven market competition determinants of use of "Western" management accounting and control systems. We extend this research by investigating the outward internationalization market driven determinants of use of "Western" management accounting and control systems. In particular, we investigate how the choice of management accounting and control systems is influenced by the type of market competition (foreign entrants' competition and customer buying power) and the international orientation of the firm.

With respect to the interactions between the type of market competition and market orientation, we find that the level of foreign entrants' competition is positively associated with five out of five management control mechanisms. We also find that the association between foreign entrants' competition and use of management control systems is significantly weaker for internationally oriented firms with respect to the use of formal procedures, approval procedures and participation in budget setting and performance evaluation. We explain this result is due to differences in the lack of alternatives available to domestically oriented firms places greater pressure on the firm to manage resources. We also find that the influence of the level of customer buying

power on the use of management control mechanisms is significantly stronger for internationally oriented firms for all five management control mechanisms. We explain this result is due to the greater resource (quality and price) demands that foreign customers place upon internationally oriented firms.

Our study contributes to the management accounting and control literature in two ways. First, our study contributes to the growing body of research on the use of MCS in transitional economy firms (Anderson & Lanen, 1999; Chow et al., 2007; Firth, 1996; O'Connor et al., 2004, 2006; Joshi, 2001; Luther & Longden, 2001; Lin & Yu, 2002; Szychta, 2002; Haldma & Laats, 2002). Prior studies have examined the forces for change such as joint ventures, market competition, stock market listing, and government interference (eg. Anderson & Lanen, 1999; Firth, 1996; O'Connor et al.,2004, 2006; Chow et al., 2007). Our study confirms some of these findings, but in a more detailed way. That is, we show that the competitive pressures facing transitional economy firms depend on their domestic versus international orientation. According to Anderson and Lanen (1999), increasing competition is associated with increased customer prominence in planning and control processes and in organizational performance measurement. Our study partly confirms this finding, but we also provide evidence that the influence of customer buying power on the use of MCS depends on the firm's domestic versus international orientation.

Second, it contributes to the contingency literature that examines the association between market competition and the choice of management control systems (e.g., Khandwalla, 1972), the demand for accounting information (Libby and Waterhouse, 1996; Krishnan, 2005) and the experimental choice of level of product costing accuracy (Krishnan, 2002). Much of this research has examined the influence of competition on large developed nation firms. We show that the

influence of different types of market competition on the use of MCSs depends on the firm's domestic versus international orientation.

While, this study has provided new insights, it has only scratched the surface of this complex phenomenon. Our findings with respect to the focal variable (MCS) are based on managers' perceptions and on what they chose to reveal through their responses. Aware of this, however, we attempted to cross validate such responses by having two senior managers respond to the same survey questions. We also were able to validate the responses of one variable (participation in budget setting and performance evaluation) with responses obtained from middle-level managers of the same firm. For the archival measures, we attempted to measure a type of market competition that is specific to emerging economy firms (foreign entrant competition), however, we were only able to measure this at the industry (and not firm) level. Similarly, for our proxy of international orientation, the use of an export % cut-off score, while consistent with the international business literature, may not actually reflect the full extent of international orientation of the firm. We attempted to mitigate this narrow measure by gather more data: we contacted firms that were on either side of this cut off score and were able to validate the difference in terms of the whether a firms' dominant customers are international or domestic.

Finally, this study focuses only on publicly-listed Chinese firms, which presumably have advanced further along the reform process than their non-listed counterparts. Future research could extend this model to examine non-listed firms which may take a different path towards internationalization. For example, some firms begin their life with a high degree of born-globalness which might impact on the choice and timing of use of different MCS. The model could also be extended to examine include the firms' further examine the joint and interactive influences of market competition and international orientation, paying attention to government

support and influence. As governments of many emerging economies tend to support the outward internationalization of their flagship firms, it would be interesting to see how the use of MCS evolves in these firms compared with their more privatized counterparts.

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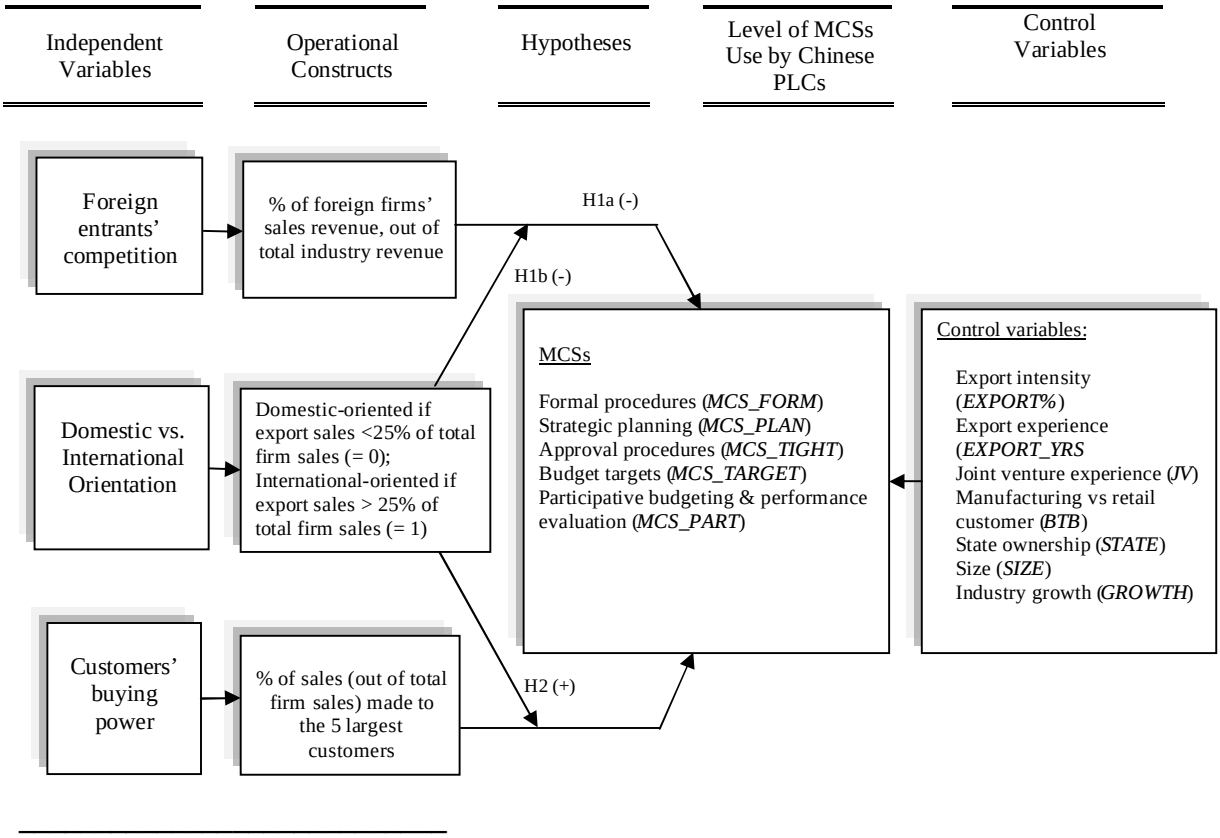
Figure 1—Independent, Dependent, and Control Variables and Hypotheses



Hypothesis 1a. The effect foreign entrants' competition on the level of MCSs' use by Chinese PLCs is positive. The MCSs include formalization of planning, strategic planning, budget controls, and participation in budget setting.

Hypothesis 1b. The effect foreign entrants' competition on the level of MCSs' use by Chinese PLCs is stronger for domestic-oriented PLCs than for international-oriented PLCs. The MCSs include formalization of planning, strategic planning, budget controls, and participation in budget setting.

Hypothesis 2. The effect of customers' buying power on the level of MCSs' use by Chinese PLCs is stronger for international-oriented PLCs than for domestic-oriented PLCs. These MCSs include formalization of planning, strategic planning, budget controls, and participation in budget setting.

Table 1. Sample Selection, and Tests of Respondent vs. Non-Respondent Firms

Panel A: Sample selection

Firms publicly listed on the Shanghai Stock Exchange by end of 2003	759
Firms publicly listed on the Shenzhen Stock Exchange by end of 2003	500
Total number of publicly listed firms	1,259
Less:	
Firms listed in 2003	(134)
Firms listed in 2002	(69)
Non-manufacturing firms	(376)
Firms surveyed	680
Less: Non-response firms	(497)
Survey Response firms	183
Less:	
Firms that returned incomplete questionnaires	(14)
Government protected firms, conglomerates	(15)
Final Sample Size [a]	154
Domestic oriented Firms (<25% export sales)	121
(Firms with between 1% and <25% export sales = 41)	
International oriented Firms (25% or >25% export sales)	33

Panel B: Differences between Respondent and Non-Respondent Firms

	Means				
Variable	**Respondent Firms**	**Non-respondent firms**	**Difference in Means**	**t-test (Pr > t)**	**Wilcoxon Test (Pr > z)**
SALES (million)	180.76	176.61	0.42	0.34	0.64
Net income (million)	176.74	181.35	(0.46)	0.33	0.44
SIZE (# of Employees)	4122	4765	(643)	0.63	0.70
AGE (in # years)	9.57	9.69	0.12	0.40	0.05

[a] 17 Industries were represented in the sample. The SIC code and number of representations (#) are: 26-Raw Chemical (incl Petroleum Processing) (27), 34-Metal Products (16), 41-Electrical Machines, Electronic and Telecom Equipment (14), 37-Transport Equipment (13), 36-Special Equipment (13), 27-Medical and Pharmaceutical Products (9), 31-Nonmetal Products (7), (30)-Plastic (7), 17-Textile (7), 16-Tobacco Processing (16), 22-Papermaking & Printing (6), 13-Food Processing (6), 28-Chemical fiber (5), 14-Food Manufacturing (5), 42-Instruments, Cultural and Clerical (4), 35-Ordinary machinery (4), 15-Beverage (4).

Table 2. Confirmatory factor analysis of management accounting/controls (n=154)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Formal Procedures (4 items), (MCS_FORM, Alpha = 0.89) Senior-level managers					
To what extent does your company have rules, policies, and procedures that govern how the following types of activities are to be performed?					
Making strategic decisions regarding acquisitions, diversification, major new product introductions, long-term goals, etc?[a]	0.86				
Making decisions relating to the day-to-day operations of the business, including equipment replacement, production planning, adjusting prices of goods, inventory purchases, hiring of lower level personnel, etc?[a]	0.85				
Carrying out strategic decisions regarding acquisitions, diversification, major new product introductions, long-term goals, etc. [a]	0.66				
Carrying out decision relations to the day-to-day operations of the business, including equipment replacement, production planning, adjusting prices of goods, inventory purchases, hiring of lower level personnel, etc.[a]	0.62				
Strategy Planning (6 items), (MCS_PLAN, Alpha = 0.78) Senior-level managers					
How extensive are your company's strategic plans relating to acquisitions, diversification, major new product introductions, long-term goals, etc.?[b]		0.75			
How extensive are your company's plans relating to day-to-day business operations, including equipment replacement, production planning, adjusting prices of goods, inventory purchases, hiring of lower level personnel, etc.?[b]		0.79			
How detailed are your company's strategic plans relating to acquisitions, diversification, major new product introductions, long-term goals, etc.?[b]		0.34			
How detailed are your company's plans relating to day-to-day business operations, including equipment replacement, production planning, adjusting prices of goods, inventory purchases, hiring of lower level personnel, etc.?[b]		0.54			
How far out in time does your company prepare strategic plans relating to acquisitions, diversification, major new product introductions, long-term goals, etc.?[d]		0.56			
How far out in time does your company prepare plans relating to day-to-day operations of the business, including equipment replacement, production planning, adjusting prices of goods, inventory purchases, hiring of lower level personnel, etc?[d]		0.34			
Budget Targets (6 items), (MCS_TARGET, Alpha = 0.87) Senior-level managers					
Please rate the extent to which your company uses each of these control devices:					
Net income targets:[a]					
a)Annual			0.62		
b)Quarterly			0.86		
c)Monthly			0.79		
Discretionary program targets:[a]					
a)Total program expenditures			0.61		
b)Individual program expenditures			0.65		
Approvals are required for:[a]					
a)Formal reviews of responsibility center performance			0.41		

Table 2. Confirmatory factor analysis (n=154) (continued)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
Tightness of Controls (5 items) (MCS_TIGHT, Alpha = 0.78) Middle-level managers					
Please rate the extent to which your company uses each of these control devices:					
Strict headcount targets[a]				0.39	
Please rate the extent to which approvals are required for each of the following:[a]					
a)Hiring new employees				0.76	
b)Spending discretionary program money already in the budget				0.64	
c)Spending discretionary program money in excess of budgeted levels				0.82	
d)Making capital expenditures				0.81	
Participation in budget setting (4 items), (MCS_PART, Alpha = 0.89) Middle-level managers					
How much importance do superior typically place on subordinates' explanations for their actual performance relative to the budget? (PPE)[c]					0.73
How much overall influence do subordinates typically have in the determination of their budgets? (PB)[c]					0.78
To what extent do superiors typically seek subordinates' input in the budget preparation process? (PB) c					0.82
How much importance do superiors typically place on not finalizing subordinates' budgets until the latter fully agree with them? (PB)[c]					0.82
How much importance do superior typically place on subordinates' level of agreement with the evaluation of their actual performance relative to the budget before concluding the evaluation process?(PPE)[c]					0.85
How much importance do superiors typically place on subordinates' suggestions concerning how to revise the latter's budget? (PB)[c]					0.80
To what extent do superiors typically seek subordinates' opinion when evaluating the latter's actual performance relative to the budget?(PPE)[c]					0.82
Eigenvalues	1.44	1.36	2.39	2.56	10.62

[a]1 = Not used at all; 4 = Used moderately; 7 = Used very extensively
[b]1= Not at all Extensive; 7= Extremely Extensive
[c]1 = Extremely low; 4 = Moderate; 7 = Extremely high
[d]1= One month or Less; 2= One Quarter; 3= Half a Year; 4= A Year; 5= 3-5 Years; 6= >5 Years

Table 3. Descriptive Statistics (n=154) [a]

	Mean	Std. Dev.	Theoretical Range	Min.	Max.
MCSs:					
MCS_FORM	19.56(20.32)	3.94(3.79)	6-42	4.00(7.00)	25.00(28.00)
MCS_PLAN	28.56(28.33)	4.35(4.04)	5-35	16.00(10.50)	38.00(38.00)
MCS_TARGET	33.68(33.45)	6.42(5.22)	6-42	16.00(16.00)	42.00(42.00)
MCS_TIGHT	26.54(26.34)	4.97(3.96)	5-35	10.00(18.00)	34.50(35.00)
MCS_PART	33.31(32.46)	6.74(6.15)	7-49	7.00(15.50)	43.50(46.00)
Independent Variables:					
CUSTOMER	28.27% (29.16%)	16.13(20.10)	0-100	6.00(4.00)	61.00(94.00)
FGN_COMP	18.99% (19.01%)	17.71(18.51)	0-100	1.45(0.00)	53.54(67.27)
INT_ORIENT	0.21	0.42	0-1	0.00	1.00
Control Variables:					
EXPORT%	43.08% (3.08%)‡	19.16(5.73)	0-100	21.81(0.00)	90.77(19.82)
EXPORT_YRS	4.78(1.65) ‡	1.21(2.03)		1.00(0.00)	7.00(7.00)
JV	0.18(0.10)	0.39(0.30)	0-1	0.00(0.00)	1.00(1.00)
BTB	0.54(0.47)	0.51(0.50)	0-1	0.00(0.00)	1.00(1.00)
STATE	39.18(38.44)	25.85(25.88)	0-100	0.00(0.00)	75.00(84.99)
SIZE	21.41(21.31)	0.85(0.93)		19.72(19.49)	23.15(24.88)
GROWTH	113.79(114.21)	107.79(82.13)		-77.00(-77.00)	275.16(275.16)

[a] All within-organization measures related to the divisional cost/profit center manager level; n=154

[b] Significance levels: ‡$p < 0.01$, † $p < 0.05$, * $p < 0.10$ (two-tailed).

Table 3. Descriptive Statistics (continued)

Variable definitions:

MCSs:

MCS_FORM	Formulization of planning is an aggregate measure that combines the responses from senior-level managers to four questions about the extensiveness of use of rules, policies, and procedures to govern various strategic and operational decisions in the firm (see Table 2).
MCS_PLAN	Strategic planning is an aggregate measure that combines the responses from the senior-level managers to five questions related to strategic planning procedures (see Table 2).
MCS_TARGET	Budget control is an aggregate measure that combines the responses from the senior-level managers to six questions related to budget setting and targets (see Table 2).
MCS_TIGHT	Tightness of control is an aggregate measure that combines the responses from the senior-level managers to five questions related to budget setting and targets (see Table 2).
MCS_PART	Participation in budget setting is an aggregate measure that combines the responses to seven questions elicited from the senior-level managers (see Table 2).

Independent Variables:

CUSTOMER	Customers' buying power: the percentage of sales, out of total firm sales, made to the five largest customers of each firm in 2003. The higher the index, the higher is the level of customers' buying power (source: CSMAR database).
FGN_COMP	Foreign entrants' competition: the percentage of foreign firm's sales revenue, out of total industry revenue, in each of China's domestic industries using the two-digit CSMAR code (2003).
INT_ORIENT	Domestic vs. international orientation: we use an indicator variable to denote that the firm is either domestic-oriented, that is, has no export sales (coded as 0), or international-oriented, with export sales exceeding 25% of total sales (coded as 1), based on the average percentage of the firm's export sales for the year 2002-2003. We use this variable for modeling the interaction terms in equation 1 (source: CSMAR database).

Control Variables:

EXPORT%	Export intensity: the average percentage of overseas sales, out of the firm's total sales, for the year 2003 (source: CSMAR database).
EXPORT_YRS	Number of years since the firm began exporting (source: CSMAR database).
JV	Joint venture experience - coded as 1 if the firm currently has joint venture experience with a foreign partner and 0 otherwise.
BTB	Firm main customers as being manufacturers or retailers – coded as 1 if the firm sells to manufacturers and 0 if the firm sells to retailers.
STATE	Government ownership: we use an indicator variable to denote whether the firm's major shareholder is either a private institutional investor (coded as 1), or the government (coded as 0) at the end of 2003 (source: CSMAR database).
SIZE	Size: based on the average natural log of total assets at the end of 2002 and 2003.
GROWTH	Industry growth: based on the average annual industry sales growth between 1999 and 2003 (source: China Statistical Yearbook).

Table 4. Pearson Correlation Statistics of the MCS and Independent Variables (n = 154)

	Independent Variables													
Correlations	*MCS_ FORM*	*MCS_ PLAN*	*MCS_ TARGET*	*MCS_ TIGHT*	*MCS_ PART*	*CUSTOMER*	*FGN_ COMP*	*INT_ORIENT*	*EXPORT*	*YREXPORT*	*JV*	*BTB*	*STATE*	*SIZE*
MCS_PLAN	0.5924‡													
MCS_TARGET	0.5245‡	0.4743‡												
MCS_TIGHT	0.3175‡	0.3183‡	0.5602‡											
MCSPART	0.444‡	0.4773‡	0.491‡	0.388‡										
CUSTOMER	-0.0245	-0.1289	-0.0239	0.054	-0.028									
FGN_COMP	0.1566	0.1664†	0.0388	0.1014	0.0642	0.0469								
INT_ORIENT	-0.0831	0.0231	0.0167	0.0195	0.0563	-0.0191	-0.0005							
EXPORT%	-0.0441	-0.0193	-0.0115	-0.0091	0.089	0.047	0.029	0.6517‡						
EXPORT_YRS	-0.0087	0.0321	0.0483	0.1012	0.1931†	-0.1213	-0.0248	0.5652‡	0.6847‡					
JV	0.0061	0.0157	0.055	0.0023	0.1642†	-0.0257	0.0153	0.1022	0.1322	0.0568				
BTB	0.0249	0.0563	-0.0752	-0.0492	-0.043	0.2917‡	-0.0091	0.0548	0.0146	0.0135	-0.1211			
STATE	0.1026	0.1201	0.0427	0.0586	0.0435	0.1829†	0.0318	0.012	-0.0327	-0.0133	-0.2518‡	0.0542		
SIZE	0.1881†	0.2212‡	0.1359*	0.0992	0.2305‡	-0.0669	-0.0975	0.0427	0.0128	0.1342*	0.0202	0.0666	0.1516*	
GROWTH	0.1005	0.1216	0.0171	0.0224	0.0871	-0.0010	.0059	-0.0019	-0.0303	-0.0172	0.0354	-0.0708	0.1989	0.3372‡

[1] Significance levels: ‡$p < 0.01$, † $p < 0.05$, * $p < 0.10$ (two-tailed). The t-statistics are shown in parentheses.

[2] See Table 2 for variable definitions; additional definitions below.

Table 5. Ordinary Least Squares (OLS) Regressions to Test H1 and H2 (n = 154)[1] [2]

$$MCS_{1\ldots5} = \beta_0 + \beta_1 FGN\_COMP_{it} + \beta_2 CUSTOMER_{it} + \beta_3 INT\_ORIENT_{it} + \beta_4 EXPORT\%_{it} + \beta_5 EXPORT\_YRS_{it} + \beta_6 JV_{it} + \beta_7 BTB_{it} + \beta_8 STATE_{it} + \beta_9 SIZE_{it} + \beta_{10} GROWTH_{it} + \beta_{11} (INT\_ORIENT_{it} * FGN\_COMP_{it}) + \beta_{12} (INT\_ORIENT_{it} * CUSTOMER_{it}) + e_{it}. \quad (1)$$

	Hypotheses	***MCS_FORM***	***MCS_PLAN***	***MCS_TARGET***	***MCS_TIGHT***	***MCS_PART***	***MCS_FORM***	***MCS_PLAN***	***MCS_TARGET***	***MCS_TIGHT***	***MCS_PART***
FGN_COMP	H1a(+)	.05‡	.07‡	.05†	.05†	.06*	.06‡	.04*	.06*	.08‡	.1‡
		(3.01)	(4.46)	(2.34)	(2.64)	(1.94)	(4.18)	(1.97)	(1.92)	(4.09)	(2.99)
CUSTOMER		-.004	-.03	.02	.03	-.001	-.02†	-.04	-.02	.01	-.01
		(-.29)	(-1.71)	(.75)	(1.63)	(-.05)	(-2.24)	(-1.48)	(-.88)	(.57)	(-.65)
INT_ORIENT		-.44	2.07	3.01	2.92†	1	-1.96†	-1.07	2.85	2.42†	1.2
		(-.33)	(1.34)	(.9)	(2.52)	(.37)	(-2.93)	(-.92)	(1.65)	(2.14)	(.5)
*INT_ORIENT * FGN_COMP*	H1b(-)						-.09‡	.02	-.1‡	-.1†	-.2‡
							(-3.67)	(.42)	(-3.11)	(-2.31)	(-3.14)
INT_ORIENT CUSTOMER*	H2(+)						.07‡	.06†	.09*	.11†	.17‡
							(3.09)	(2.23)	(1.96)	(2.78)	(3.54)
EXPORT%		.001	-.04	-.07	-.09†	-.03	.02	-.02	-.1†	-.12‡	-.1†
		(.02)	(-1.29)	(-1.1)	(-2.23)	(-.72)	(.75)	(-.8)	(-2.38)	(-3.71)	(-2.62)
EXPORT_YRS		-.01	.02	.22	.44*	.6‡	.02	-.005	.36*	.48†	.76‡
		(-.1)	(.11)	(.9)	(2.12)	(3.37)	(.22)	(-.03)	(1.86)	(2.89)	(3.52)
JV		.2	.56	.92	-.05	3.38†	-.15	.38	1.26	-.5	2.59*
		(.24)	(.77)	(.85)	(-.04)	(2.58)	(-.22)	(.45)	(1.4)	(-.65)	(2.06)
BTB		.09	.49	-1.32	-.93	-.46	-.31	1.1*	-1.28	-.85	-.99
		(.18)	(1.08)	(-1.51)	(-1.37)	(-.66)	(-.62)	(2.05)	(-1.66)	(-1.6)	(-1.18)
STATE		.01	.02	.01	.001	.02	.01	.01	.01	.004	.02
		(.73)	(.96)	(.33)	(.09)	(.83)	(.95)	(.51)	(.31)	(.35)	(1.12)
SIZE		.76*	.94	.88†	.39	1.48†	.65‡	1.09†	.9*	.47*	1.51‡
		(2.04)	(1.67)	(2.33)	(1.27)	(2.77)	(2.99)	(2.76)	(1.95)	(1.97)	(3)
GROWTH		.0002	.001	-.004	-.002	-.002	.002	.004	.004	.004	.002
		(.08)	(.44)	(-1.08)	(-.66)	(-.58)	(.81)	(1.71)	(1.23)	(1.56)	(.56)
CONSTANT		2.73	6.55	13.08	16.46†	-5	5.65	3.82	12.25	14.34‡	-5.52
		(.33)	(.55)	(1.63)	(2.42)	(-.41)	(1.14)	(.46)	(1.28)	(3.17)	(-.48)
Model F		8.02‡	11.17‡	8.81‡	4.55‡	2.91†	42.59‡	14.31‡	12.63‡	27.53‡	13.07‡
Adjusted R^2		0.11	0.17	0.07	0.12	0.16	0.27	0.18	0.17	0.24	0.25
Maximum VIF		5.16	5.20	5.22	3.92	5.17	6.67	6.75	7.26	7.47	6.57
Condition Index		24.68	30.16	25.60	26.87	22.72	26.09	35.88	27.73	35.29	25.57

[1] Significance levels: ‡$p < 0.01$, †$p < 0.05$, *$p < 0.10$ (two-tailed). The t-statistics are shown in parentheses.

[2] See Table 2 for variable definitions; additional definitions below.

Table 6. Ordinary Least Squares (OLS) Regressions
- Split between domestic- (DOM, n = 121) and internationally-oriented (INT, n = 33) firms[1, 2]

$$MCS_{1\ldots5} = \beta_0 + \beta_1 FGN\_COMP_{it} + \beta_2 CUSTOMER_{it} + \beta_3 INT\_ORIENT_{it} + \beta_4 EXPORT\%_{it} + \beta_5 EXPORT\_YRS_{it} + \beta_6 JV_{it} + \beta_7 BTB_{it} + \beta_8 STATE_{it} + \beta_9 SIZE_{it} + \beta_{10} GROWTH_{it} + e_{it}. \quad (2)$$

	Hypotheses	***MCS_FORM***		***MCS_PLAN***		***MCS_TARGET***		***MCS_TIGHT***		***MCS_PART***	
		DOM	INT	DOM	INT	DOM	INT	DOM	INT	DOM	INT
FGN_COMP	+ (DOM)	.07‡	.05	.07‡	.12†	.05*	.05	.07‡	-.06	.1†	-.15*
		(3.09)	(.78)	(4.16)	(2.97)	(2.1)	(.64)	(3.93)	(-.62)	(2.76)	(-1.99)
CUSTOMER	+ (INT)	-.001	-.02	-.03*	-.02	.004	.06	.02	.13†	-.002	.06*
		(-.06)	(-.78)	(-1.59)	(-.38)	(.18)	(1.23)	(.79)	(3.01)	(-.1)	(2.12)
EXPORT		-.08	.003	-.04	-.09*	-.14	-.08*	-.11*	-.08*	-.17	-.04
		(-1.02)	(.06)	(-.46)	(-1.95)	(-1.38)	(-1.84)	(-1.81)	(-1.82)	(-1.71)	(-.93)
EXPORT_YRS		.14	.05	.02	-.01	.53*	-.17	.54†	-.3	.89†	.5
		(.83)	(.09)	(.11)	(-.02)	(1.92)	(-.13)	(2.67)	(-.46)	(2.83)	(.34)
JV		-.25	.74	.15	1.78	.73	.58	.45	.06	2.73	2.8
		(-.19)	(.91)	(.15)	(1.48)	(.86)	(.36)	(.36)	(.02)	(1.7)	(1.32)
BTB		-.65	2.02	.5	1.02	-2.06*	.35	-1.23*	-2.45	-1.68	-.98
		(-1.02)	(1.36)	(.76)	(.54)	(-1.91)	(.11)	(-1.77)	(-.85)	(-1.69)	(-.44)
STATE		.01	.01	.01	-.01	-.01	.02	-.01	.02	-.01	.07*
		(.15)	(.5)	(.76)	(-.23)	(-.54)	(.61)	(-.35)	(.39)	(-.17)	(1.82)
SIZE		1.05†	.21	1.28*	-.62	1.03*	1.72	.54	.64	1.82†	1.34
		(2.51)	(.28)	(1.86)	(-.65)	(1.87)	(1.66)	(1.52)	(.77)	(2.7)	(1.56)
GROWTH		.003	-.005	.001	-.001	.002	-.02	.003	-.005	.01	-.01
		(.76)	(-.85)	(0)	(-.02)	(.36)	(-1.75)	(.56)	(-.44)	(1.42)	(-1.32)
CONSTANT		-2.8	13.3	-.03	42.62*	10.58	-1.1	12.72*	16.16	-12.16	1.08
		(-.32)	(.84)	(-0.00)	(2.12)	(.93)	(-.04)	(1.82)	(.74)	(-.84)	(.05)
Model F		2.30*	3.98†	5.57†	13.67†	3.85‡	4.29†	5.62‡	13.01‡	8.01‡	110.74‡
Adjusted R^2		0.15	0.18	0.19	0.34	0.10	0.18	0.14	0.18	0.25	0.31
Maximum VIF		2.28	2.99	2.18	2.88	2.20	4.37	2.28	2.37	2.30	3.51
Condition Index		25.39	34.26	31.36	40.32	28.03	38.79	28.23	30.93	23.84	35.23

[1] Significance levels: ‡$p < 0.01$, †$p < 0.05$, *$p < 0.10$ (two-tailed). The t-statistics are shown in parentheses.

[2] See Table 2 for variable definitions; additional definitions below.