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## How Do Sub-national institutional constraints Impact Foreign Firm Performance?

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### ABSTRACT

This paper examines the impact of sub-national institutions on the performance of foreign firms in China. Building on institutional theory, we envisage that the negative effect of sub-national institutional constraints is moderated by firm size and age, entry mode, and market orientation. Our hypotheses are tested on a large-firm-level dataset of about 29,000 foreign firms in 120 cities in China within the period of 1999-2005. We find that firm size and age both have a diminishing positive impact on foreign firm performance; moreover, there is a U-shaped relationship between firm age and foreign firm performance in cities with higher level institutional constraints. We also find that joint ventures help mitigate the negative impact of sub-national institutional constraints on foreign firm performance when the level of institutional constraints is higher.

**Key words:** sub-national institutions, institutional theory, foreign firm, firm performance, China.

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## INTRODUCTION

Great attention has been devoted to the influence of institutional characteristics of host countries on the behaviours of multinational enterprises (MNE) and their subsidiaries. Within this stream of research, many studies focus on how the host countries' institutional environment affects the strategic choices of multinational subsidiaries regarding aspects such as location choice, entry mode choice, organization structure, choice of technology, capital and labor staffing, and sequence of investment (e.g., Brouthers and Brouthers, 2008; Chan, Isobe and Makino, 2008; Gaur and Lu, 2007; Henisz, 2000; Henisz and Delios, 2001; Luo, 2001; Meyer, 2001; Meyer, Estrin, Bhaumik and Peng, 2009; Rodriguez, Uhlenbruck and Eden, 2005). However, less scholarship has linked institutional characteristics to subsidiary-level performance (Henisz and Swaminathan, 2008). Some existing studies examine the roles of entry strategies in the survival of new foreign firms (Brouthers, Brouthers and Werner, 2003; Gaur and Lu, 2007; Miller and Eden, 2006). Others studies focus on the relationship between the institutional environment of host countries and the performance of established foreign subsidiaries (Chan et al., 2008; Garu and Lu, 2007; Henisz, 2000; Kostova and Zaheer, 1999). However, very few of them investigate the types, behaviours, strategies, or characteristics of foreign firms that best facilitate performance with the institutional variations.

Moreover, little attention has been paid to the institutional variations within a host country; instead, most of the existing studies adopt a cross-country approach, with a focus on subsidiaries of MNEs from a specific home country, mostly the U.S. or Japan, operating in foreign countries. By identifying cross-country difference and assuming homogeneity within a country, this line of research can inform the practice of MNEs from specific home countries. The element that is largely neglected, however, is the impact of institutions on the

performance of foreign firms operating in a specific host country. Just as institutions are not homogeneous across countries, homogeneity cannot be assumed within a country employing the same political and economic system; instead, there is significant subnational spatial heterogeneity (Beugelsdijk and Mudambi, 2013). In recognition of the importance of variations within a country, Meyer and Nguyen (2005) examine the impact of sub-national institutions on the entry mode choice of foreign firms in Vietnam. In a more recent study, Chan, Makino, and Isobe (2010) examine the extent to which sub-national regions can explain foreign affiliate performance in the U.S. and China, and they find that the sub-national region is significant in explaining foreign affiliate performance. Their results also suggest that sub-national differences are more critical to the explanation of firm performance in emerging economies than they are to that of developed economies. However, much remains to be known about how sub-national institutions impact the performance of foreign firms.

This paper intends to offer, to the best of our knowledge, the first study investigating the impact of the level of sub-national institutional development on the performance of foreign firms in the largest emerging economy, namely, China. We define the level of sub-national institutional development as the extent to which the political and economic institutions in a sub-national region are developed and are favourable to foreign firms. This study pays a particular attention to the interaction effects of sub-national institutions and firm size, firm age, ownership type, and market focus on foreign firm performance. We choose China as the empirical setting of this study for several reasons. First, China's economy has been growing rapidly over the last two decades; China is now the largest recipient of foreign investment in the world (UNCTAD, 2010). Second, China features a one-party political monopoly; democracy and transparency are not integral to the Chinese political and economic

system. Over the last three decades, China has gone through a major economic transition process; however, weaknesses in formal and informal institutions remain major obstacles to successful business. Third, the lack of sound institutions, together with imbalance of economic policy and development between different regions, enforces the diversified institutional environment across regions in China, which permits the exploration of implications of institutional variation within a country. These institutional constraints found in different locations suggest important performance implications for foreign firms. Theoretically, we adopt an integrative perspective of institutional theory and resource-based view, following Meyer et al. (2008), Meyer and Peng (2005), Peng (2003), Wright, Filatotchev, Hoskisson and Peng, (2005), and Yamakawa, Peng, and Dees (2008).

Our hypotheses are tested on a large sample of foreign firms (numbering 29,065) located in 120 cities in China during the period of 1999-2005. In total, we have collected 128,461 firm-year observations. Our results indicate that there is a negative relationship between sub-national institutional constraints and foreign firm performance. We also find that, as hypothesized, joint ownership with local partner(s) dampens the negative relationship and that firm size and age have a U-shaped relationship with performance. Our hypothesis on the relationship between market-orientation and performance is not supported.

This study contributes to the literature in multiple ways. It enriches institutional theory by providing evidence of the relationship between institutional constraints and firm performance and the moderating effects of firm behaviours and characteristics on this relationship. It fills an important niche in the literature of international business studies by systematically examining the adaptation of foreign firms to diverse sub-national institutional environment in a large emerging economy. It provides evidence of the effectiveness of

previous studies regarding the impact of institutional environment on entry mode choice and location choice of foreign firms.

## THEORY AND HYPOTHESIS DEVELOPMENT

### Sub-national institutions and foreign firm performance

Institutions are widely defined by “the rules of game,” or more formally, “the humanly devised constraints that structure human interaction” (North, 1990). Specifically, institutions are multidimensional constructs encompassing many types of country-specific political, economic, and social characteristics. Such characteristics originate from the economic and political systems regarding the extent to which a country is governed by rule of law, the effectiveness and efficiency of the country’s court system, outright or de facto expropriation, enforcement of contracts between the focal firm and its local partners, violation of intellectual property rights, and so forth (Henisz, 2000; Uhlenbruck, Meyer and Hitt, 2003).

Recent theoretical work has integrated an institutional perspective with the analysis of business strategies (e.g., Dacin, Goldstein & Scott, 2002; Oliver, 1997; Peng, 2003) and international business (e.g., Mudambi and Navarra, 2002; Ramamurti, 2003; Dunning and Lundan, 2008) by incorporating theoretical advances in institutional economics and sociology into strategy and international business research. Empirically, existing studies have found that institutions significantly shape the strategy and performance of firms (Chan et al., 2008; Henisz, 2000; Henisz & Delios, 2001; Henisz & Swaminathan, 2008; Wright et al., 2005).

Formal institutions (such as the legal framework) and informal institutions (such as the practices of law enforcement) shape the transaction costs in pertinent markets and, consequently, investors' strategic choices and firms' performance (Meyer, 2001). Moreover, institutions influence the evolution of resources and capabilities (Meyer & Nguyen, 2005). For instance, networking competences are mostly developed in countries where transactions are usually based on relationships and networks (Kock and Guillen, 2001; Meyer & Nguyen, 2005; Peng and Heath, 1996). The institutional environment thus shapes the key parameters determining foreign firms' strategic choices and performance.

Coinciding with the rise of emerging economies in the global economy, scholars are increasingly turning their attention to these countries (Henisz et al., 2008; Peng and Pleggenkuhle-Miles, 2009). The salience of institutions is more evident for MNEs operating in emerging economies, where institutions differ significantly from those in developed economies and are experiencing rapid changes. In fact, there has been increasing acknowledgement that the institutional context of emerging economies influences foreign investors' strategic choices (Meyer, 2001; Meyer et al., 2008). However, most of the existing studies limit themselves to the variations between national institutions.

Institutions not only vary between countries, but also within countries (Chan, Makino & Isobe, 2010; Du et al., 2008; Luo, 2001; Meyer & Nguyen, 2005; Wright et al., 2005; Beugelsdijk and Mudambi, 2013). The variations of the sub-national institutional environment within a country can be very vast, especially in an emerging economy. A typical emerging economy has gone through major economic transition, while weaknesses in the institutions remain major obstacles to business (Meyer & Nguyen, 2005). More importantly, liberalization has been implemented unevenly in this type of environment (Meyer & Nguyen,

2005), which leads to huge differences in economic and institutional development within the country. For instance, tax rates attract the FDI inflow in special economic zones in Chinese cities (Head and Ries, 1996). Meanwhile, decentralization of power from the central government to local governments has seen a shift from national control to regional regulation (Luo, 2007). As a result, sub-national level governments have secured increasing power by manoeuvring economic policies in their regions (Luo, 2007). The uneven economic development and liberalization, increasing power at regional level and differences in implementing policies at sub-national level lead to huge variations in economic and political institutions at sub-national level in an emerging economy. These within country variations in economic and political institutions not only affects the volume and entry modes of FDI inflows (e.g., Du et al., 2008; Meyer & Nguyen, 2005), but also the costs of doing business in different regions (Chan et al., 2010; Meyer & Nguyen, 2005) and thus the profitability of engaging in business activities in these regions.

The development of sub-national economic institutions varies within a host country (Chan et al., 2010, Chung & Alcacer, 2002). As discussed above, in a typical emerging economy, economic liberalization has been implemented unevenly, which leads to huge variations in FDI policies within the country (Meyer & Nguyen, 2005). The governments in some countries may alter their FDI policies by allowing certain sub-national regions to open to foreign investors first, and/or by offering different forms of preferential treatment to foreign firms that locate in different regions (Ma & Delios, 2007; Meyer & Nguyen, 2005). Others may allow certain sub-national regions to set up certain laws and tax rates for foreign firms. For instance, in China, many FDI policies such as tax rates, tariff reductions, land usage and local financing vary significantly by region. Although these policies are set at



national level, their implementation often takes place at sub-national level (Meyer & Nguyen, 2005) and varies across sub-national regions. Regions with unfavourable policies for foreign firms may create challenges for foreign firms, whereas those with favourable policies may facilitate the development of foreign firms' competitive capabilities and thus promote their financial performance.

Sub-national regions in an emerging economy also vary in the development of the market economy. As discussed above, the implementation of economic liberalization in a typical emerging economy has been uneven. For instance, the coastal regions and special economic zones of China are more developed than other regions in economic freedom, human capital and technologies (He, 2003; Head and Ries, 1996). Foreign firms located in regions with well-established economic institutions are able to benefit from access to the human capital and technologies and skills that the regions can offer. In regions with more developed economic institutions, there is also less intervention in firm behaviour, for example, staff redundancies, from the government (World Bank, 2006). Thus foreign firms located in these regions can operate more efficiently and competitively (North, 1990).

At national level, political institutions include governments and the constraints that they impose on such key actors as politicians and political parties (Chan et al., 2008). At sub-national level, a key element of political institutions is local bureaucratic practices. The efficiency and transparency of local government is important to the development of sub-national political institutions. Sub-national regions not only differ in the way of interpreting and implementing policies but also in government efficiency (World Bank, 2006). For example, World Bank (2006) reports that the time that foreign firms spend dealing with government authorities significantly varies across the cities in China. Foreign firms not only

have to follow the local regulations, but also conform to the local bureaucratic practices. For foreign firms, such bureaucratic constraints at local level may increase transaction costs and coordination costs and thus affect their performance.

Political institutions also set and enforce the rule of law (Chan et al., 2008; Rodriguez et al., 2005). In an emerging economy, the transparency of laws and their enforcement vary across sub-national regions (Du et al., 2008). In sub-national regions with inadequate transparency and enforcement of law, contractual agreements are not effectively enforced or protected and thus the risks and costs of doing business increase. The lack of transparency of laws or their inadequate enforcement also leads to poor protection of intellectual property rights (Ostergard, 2000; Oxley, 1999). Weak protection of property rights discourages firms from pursuing innovation and thus from operating competitively (North, 1990). Property rights protection therefore has a positive impact on enterprise performance (Lu, Png & Tao, 2013).

In sum, economic and political institutions vary across regions within the host country. Such differences in sub-national institutions create opportunities and challenges for foreign firms and thus affect their performance. Foreign firms that operate in sub-national regions with a low level of institutional development are likely to engage in costly market transactions and less efficient transformation, whereas foreign firms that operate in sub-national regions with a higher level of institutional development can capitalize on the advantages generated by the presence of better-developed institutions. Just as institutions at the national level affect the performance of foreign firms (e.g., Chan et al., 2008), sub-national institutions can affect the performance of foreign firms at the regional level. A sub-national region with better-developed institutions provides more favourable institutional context for foreign firms, which

in turn has a positive impact on the competitiveness and profitability of foreign firms<sup>1</sup>.

Therefore, our first hypothesis is as follows:

*Hypothesis 1: The level of sub-national institutional development has a positive relationship with foreign firm performance.*

### **Sub-national institutions, size, age and foreign firm performance**

Firms' size and age have been extensively investigated in the literature of industrial organizations (IO) and business studies as the most important factors that relate to firm performance (e.g., Blau, 1970; Blau and Schoenherr, 1971; Dobrev and Carroll, 2003; Hall and Weiss, 1967; Shinkle and Kriauciunas, 2010). The general finding is that firm size is positively related to firm performance, as size is often related to the possession of market power, capability, market credibility and scale economies (Haveman, 1993; Pfeffer & Salancik, 1978). The most prevalent argument on size effect is that economic scale lowers costs and promotes performance (Dobrev & Carroll, 2003; Hall and Weiss, 1967; Haveman, 1993; Pfeffer & Salancik, 1978). Likewise, age has long been documented as being positively related to firm performance, as age is often seen as indicative of experiences-based capabilities, ability to adapt to changes and new environments, and market credibility (Baum, 1989; Baum & Shipilov, 2006; Henderson, 1999; Shinkle and Kriauciunas, 2010). However, existing studies mostly focus on firms in the context of developed economies, and very few of them focus on the firms in emerging economies. Furthermore, there has been little evidence

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<sup>1</sup> Note that in reality there is not a random matching of foreign firms to regions; instead, foreign firms may choose to invest in regions with stronger institutions although specific incentives may change this pattern. This needs to be addressed in the empirical method, which will be discussed in the methodology section. We thank an anonymous reviewer for this input.

showing how firm size and age influence firm performance in particular institutional environments.

In an emerging economy, size may still have a positive impact on foreign firm performance for the reasons discussed above as it does in a developed economy. Moreover, larger foreign firms are more likely to receive preferential treatment (Shinkle and Kriauciunas, 2010). In an emerging economy, a primary goal of the local governments is employment and revenue growth (Shinkle and Kriauciunas, 2010). Governments are therefore motivated to attract as much FDI as possible because the volume of FDI inflow is used as an indication of the performance of local governments. Therefore, larger-size foreign firms will gain support from local government, which in turn has positive impact on foreign firm performance.

The size effects, however, may not be monotonic. Existing studies have suggested that size has a diminishing rate of effect on firm performance (Evans, 1987; Haveman, 1993; Shinkle and Kriauciunas, 2010). Likewise, we predict that, in an emerging economy like China, the benefits bestowed on size will diminish with increasing size as there is a natural bound to the amount of the benefits that size can offer. Once firms reach a critical size, the level of benefits cannot be commensurate with the level of size. Therefore, we predict a curvilinear relationship between firm size and foreign firm performance; specifically, as size increases, foreign firm performance will increase at diminishing rate.

As discussed above, the sub-national institutions vary across regions in an emerging economy. The importance of size may have an impact on foreign firm performance in a different manner across regions due to different sub-national institutional environments. In particular, in less-developed sub-national institutional environments, size becomes more valuable for several reasons. First, larger foreign firms have greater influence and bargaining

power with the local governments because of their impact on local employment and economy (Park and Luo, 2001; Perkins, 1994; Shinkle and Kriauciunas, 2010). Second, larger foreign firms are more likely to receive preferential treatment (Shinkle and Kriauciunas, 2010). Local governments are motivated to attract as much FDI as possible, because the volume of FDI inflow is used as an indication of the performance of local governments. These characteristics may provide larger firms with greater ability to overcome institutional and other disadvantages, gain institutional support and advantages, and thus achieve better performance (Shinkle and Kriauciunas, 2010). By contrast, small firms are less likely to gain such institutional benefits, given their small employment impact (Park & Luo, 2001; Shinkle and Kriauciunas, 2010), and are less able to bargain with the local governments or to overcome the institutional disadvantages due to their small size. Thus, in regions with less-developed institutional environments, we expect to observe a sharper increase in foreign firm performance as firm size increases. Accordingly, we should see a more pronounced curvilinear relationship between firm size and foreign firm performance.

In summary, in an emerging economy, firm size has a positive impact on foreign firm performance, but the effect is diminishing. In the meantime, in less-developed sub-national institutional environments, size becomes more important and thus sub-national institutions modify the relationship between firm size and foreign firm performance. Therefore, we establish the following hypotheses:

*H2a: In an emerging economy, firm size has a curvilinear relationship with foreign firm performance, but the effect is diminishing. Specifically, as firm size increases, the firm's performance increases at a diminishing rate.*

*H2b: In less-developed sub-national institutional environments, the curvilinear relationship is more pronounced (relative to regions with more developed sub-national institutional environments).*

As discussed earlier, existing studies suggest that age has a positive relationship with firm performance (Baum & Shipilov, 2006; Henderson, 1999), as older firms typically possess better knowledge and experiences, which are developed over time. This is particularly critical for foreign subsidiaries operating in an emerging economy as newly establish foreign firms are subject to the liability of newness. It takes time for foreign firms to acquire local knowledge and to develop the capabilities to undertake business changes and adapt to local environments. Thus, the length of operations may enhance foreign firms' performance. In an emerging economy, institutional relationship with local governments is also critically important for foreign firms' performance as firms with stronger institutional relationships are more likely to receive institutional support. Age is also an indication of the level of institutional relationships (Shinkle and Kriauciunas, 2010). These institutional relationships are particularly important in the setting of China, given the importance of "guanxi" when conducting business in China (Park & Luo, 2001).

Similar to the effect of size, the existing literature has documented that age has a diminishing rate of positive effect on firm performance. For example, Shinkle and Kriauciunas (2010) reveal a positive diminishing relationship between firm age and export growth in Central and Eastern European firms. We anticipate that this movement applies to the relationship between age and foreign firm performance in an emerging economy setting, because once the foreign firms acquire the necessary local knowledge and establish

institutional relationships, further effects of age can be limited; that is, the positive effects of age cannot increase commensurately.

On the other hand, newly established foreign firms in the host country can receive preferential treatments from regional governments. In the setting of China, local governments compete with each other to attract FDI. As a result, they often offer various preferential policies for newly established foreign firms. Therefore, although new foreign firms typically lack local knowledge, experiences, and strong institutional relationships, they can benefit from preferential treatments offered by local governments.

In summary, the less-developed institutional environment provides advantages to older foreign firms, as they can acquire local knowledge, experience, and institutional relationships over time. In the meantime, newly established foreign firms can receive preferential treatments. As a result, we expect older and newer firms to perform better in the less-developed institutional environments. These arguments suggest a U-shaped relationship. The above discussion leads to the hypotheses as follows:

*H3: Firm age has a positive impact on foreign firm performance, but the effect is diminishing.*

*H3a: In environments with higher-level institutional constraints, there is a U-shaped relationship between firm age and foreign firm performance.*

### **Moderating effect of entry mode**

There has been an extensive literature on how institutional variables influence the choice of entry modes for foreign firms (e.g., Meyer, 2001; Meyer and Neugen, 2005; Meyer et al., 2009; Rodriguez et al., 2005). These institutions include formal institutions, such as the legal framework, and informal institutions, such as the practices of law enforcement and

corruption. Institutions have an essential role in the selection of an appropriate model of entry for several reasons. First, institutions shape the transaction costs and then influence the entry mode choice (Brouthers et al., 2003; Meyer, 2001; Meyer and Neugen, 2005). Second, institutions have impact on the evolution of firms' resources and capabilities, such as networking competences (Kock and Guillen, 2001; Peng and Heath, 1996). Third, institutions establish the range of entry modes permitted in a given institutional context and the equity stake allowed to be held by foreign firms (Meyer and Neugen, 2005; Meyer et al., 2009).

In particular, joint ventures are often seen as the favoured entry mode in a weaker institutional framework (Meyer et al., 2009), as joint ventures provide a means to access resources such as networking resources that may help to counteract the negative effects of a weaker institutional context (Delios and Beamish, 1999; Meyer et al., 2009). Moreover, the regulatory framework in an emerging economy often restricts foreign investment in some sectors and creates constraints on entry mode choice (Meyer and Neugen, 2005) and thus joint ventures are the only choice for foreign investors in particular sectors at the early stage of liberalization in a typical emerging economy.

However, there is less evidence related to how entry mode choice helps alleviate the negative impact of institutional constraints on foreign firm performance. On one hand, joint ventures are often instable due to the cultural differences and conflicts between domestic and foreign partners (Ren, Gray and Kim, 2010; Yan and Zheng, 1999). Moreover, foreign partners are often unwilling to transfer state-of-art technologies to joint ventures. Wholly foreign owned enterprises (WFOEs) can avoid these potential problems and achieve high performance. on the other hand, joint ventures are expected to perform better than WFOEs, as they can benefit from both the domestic and foreign partners and thus enjoy more advantages (Xu et al.,



2006); Specifically, the domestic partners can bring in local knowledge as well as important institutional relationships with local governments, while the foreign partners often bring in advanced technologies, managerial and marketing skills, and better corporate governance. The benefits of joint ventures are particularly evident in less-developed institutional environments. We expect that WFOEs generate better performance than joint ventures in general. However, we anticipate that, in regions with higher levels of institutional constraints, joint ventures perform better than WFOEs.

*H4: On average, joint ventures perform worse than wholly foreign-owned firms.*

*H4a: In the environment of higher-level institutional constraints, joint ventures mitigate the negative impact of sub-national institutional constraints on foreign firm performance.*

### **Moderating effect of market orientation**

As is well known, market orientation (local vs. export market) is of particular importance to the understanding of the competitive advantage of a firm (Day et al., 1992; Hunt and Lambe, 2000). The market orientation of foreign firms could be the result of strategic decision of the headquarters, which constitutes part of the global strategy of the MNEs, or the decision at the subsidiary level. Either way, market orientation is an important instrument for adjusting foreign firms' vulnerability to contextual hazards (Bartlett & Ghoshal, 1989). By definition, local market-oriented foreign firms are inevitably more involved with the local business community and hence expose themselves to local institutional environments (Luo, 2001). This implies that exporting-oriented foreign firms are less likely to be affected by local institutional constraints and will achieve high performance. Moreover, exporting firms are generally equipped with more advanced technologies and capabilities and

hence perform better than local-market-oriented firms. Therefore, we expect that, in general, exporting-oriented foreign firms perform better than local-market-oriented foreign firms.

On the other hand, sub-national institutional constraints may restrict the performance of exporting-oriented foreign firms. In less-developed institutional environments, governments may have a high level of involvement in export transactions through regulatory permissions, regulation relief and tax advantages (Makhija, 2003). Higher levels of institutional constraints may restrict firms' access to cross-border trading (Filatotchev, Dyomina, Wright and Buck, 2001). Bureaucracy may also increase the costs of exchange with foreign customers. Therefore, we predict that, although export-oriented foreign firms generally perform better than local-market-oriented firms, in the regions with higher levels of institutional constraints, exporting magnifies the negative relationship between sub-national institutional constraints and foreign firm performance:

*H5: On average, exporting-oriented foreign firms perform better than local-market-oriented foreign firms.*

*H5a: In regions with higher-level institutional constraints, the negative impact of sub-national institutional constraints is more severe on exporting-oriented foreign firms.*

## **DATA AND METHODOLOGY**

### **Data**

We tested our hypotheses using China as the research setting, which we see as a particularly interesting empirical context. Our data on foreign firms in China was drawn from two primary sources. The first source is the Annual Census of Industrial Enterprises (hereafter referred to as the Census data) 1999-2005. The Census data, compiled by the National Bureau

of Statistics (NBS) of China, covers all firms, including both domestic and foreign firms, with annual turnover of more than 5 million Chinese Yuan (about US \$60,000). The number of firms included in this database ranged from 162,033 to 280,188. It is estimated that the firms in the dataset account for 85-90 percent of total output of manufacturing industries in China. These numbers are consistent with those reported in the official *Yearbooks* published by the NBS. We collected the information on firm ownership structure, industry affiliation, geographic location, establishment year, employment, gross output, and other operational and financial variables from this dataset.

We then linked the Census data to the second primary data source of this study – the Survey of Foreign-invested industrial enterprises in China 2001-2002 (hereafter referred to as the Survey). The survey was conducted by China's former Ministry of Foreign Trade and Economic Cooperation. The survey currently serves the most comprehensive database about FDI in China and contains more than 150,000 foreign firms from more than 50 source countries. We identified the information about the country of origin of foreign firms from the Survey data.

The above two sources allowed us to compile a dataset consisting of more than 40,000 foreign firms in China over the period 1999-2005. This study aims to examine the impact of sub-national institutional constraints on foreign firm performance. Our data on sub-national characteristics was collected from World Bank (2006) survey on government effectiveness and investment environment in China.<sup>2</sup> The survey covered 120 cities only instead of all of the cities in China. For this reason, we restrict our sample to the firms in 120 cities. Our data suggests that foreign firms in these 120 cities account for more than 90 percent of FDI in China. We excluded firms that have changed ownership since its establishment and firms

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<sup>2</sup> More details of the survey can be found in World Bank (2006).

from countries and industries with limited observations in our sample. We also eliminated observations with illogical or extreme values. Finally, we included firms with at least two consecutive years in the sample and obtained an unbalanced panel of 29,065 foreign firms over the period 1999-2005 with 128,461 firm-year observations in total.

## **Measurement**

### ***Dependent variable***

The dependent variable is performance of foreign firms. Firm performance is primary research question within the field of IB and as a result, performance is a key dependent variable of interest to IB scholars. In the literature, three types of performance measure have been used, i.e., financial, operational, and overall effectiveness. In this study, we use financial measure return on sales (ROS) as primary measurement of performance and then use an operational measure, labour productivity, as an alternative measurement to check robustness. ROS, rather than return on assets (ROA), is used as ROS is regarded as a superior measure in the global environment (Chan et al., 2008). In fact, because foreign firms focus on ongoing businesses, sales can better reflect their performance across changes in the business climate than fixed assets (Chan et al., 2008).

### ***Hypothesized variables***

To measure the institutional constraints of a city, we constructed a sub-national index using measurement items of city characteristics drawn from the World Bank survey of 120 cities in China. The survey investigated the government effectiveness and investment climate in the cities. We employed six items that captured the government effectiveness, legal environment, and economic environment of a city, including days spent on bureaucratic

interactions, confidence in court, property right protection, tax and fees, proportion of private sector, and labour flexibility. We then conducted principal components analysis with a varimax rotation for all six items. This analysis yielded one distinct factor and the items loaded significantly on one factor with factor loadings 0.70-0.84 except that the factor loading of days spent on bureaucratic interaction is 0.60.<sup>3</sup>

Moreover, since the measures of the variables were collected using the same survey instrument, the possibility of common method bias (CMB) was tested using Harman's one factor test as advised by Podsakoff and Organ (1986). An unrotated principal components factor analysis yielded four factors with eigenvalues greater than 1.0. As several factors instead of one single factor were identified and all of them accounted for just 62% of the total variance, and as the first factor accounted for only 21% of the variance, a substantial amount of common method variance does not seem to be present (Podsakoff and Organ, 1986).

To test hypothesis 2-5, we include variables firm size, firm age, joint venture dummy, and exporting dummy. In line with the literature on impact of size and age on firm performance (e.g., Porter, 1985), we included both linear and quadratic terms of size and age to control for diminishing effects of these two variables.

### ***Control variables***

We expect that other factors will affect the performance of foreign firms. For this reason, we include the following variables as controls. First, we include a set of variables on firm characteristics, including dummies for Hongkong, Maucau and Taiwan firms, sales growth, leverage ratio and market concentration. Second, we include a set of variables to control for other factors of the cities, including infrastructure, material cost, and labour cost.

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<sup>3</sup> Normally we expect the factor loadings are above 0.65. However, we kept this item in order to capture the aspect of government efficiency despite that its factor loading is slightly low. Moreover, our analysis using an index constructed from the other five items yielded qualitatively the same results as we reported in this paper.

We use road mileage as an indicator of infrastructure adequacy to see the impact of infrastructure on firm performance, use electricity price as an indicator of input price, and use average wage in each city to control for the cross-city variation in labour cost. Third, we coded three sets of dummy variables capturing the effects of country of origins, industries, and years. The definition of the variables is presented in Table 1.

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Insert Tables 1- 3 about here  
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Table 2 reports the mean, standard deviation and correlations for all variables. Of interests is that firm performance and sub-national institutional index both have very large standard deviations, suggesting that there is huge difference in foreign firm performance and in institutional environments of the cities. Further, the correlations between the variables are reasonably low, suggesting that multicollinearity is not a problem. Also, variance inflation factor (VIF) is 7.91, which confirms that multicollinearity is not there.

### **Estimation method**

Fixed-effects method is not appropriate for this study because our city-level variables are all time invariant and the fixed-effects method would drop these variables of interests from the regression. The random-effects method is not appropriate for our study either because sub-national institutional constraints may be correlated with the unobserved individual effects. This could result from two facts. First, high-performing firms may choose to locate in cities with better institutional environments. Second, there may be a co-evolution of foreign firms and institutional environments (Meyer and Nguyen, 2005; Cantwell, Dunning and Lundan, 2010). This potential endogeneity problem violates the basic assumption of

random-effects method. A popular method to take into account of the endogeneity issue is system GMM, which is particularly useful when a panel has large N and small T, as in this study. However, since sub-national institutional constraints index is time-invariant and is highly likely to be correlated with the unobserved individual effects, system GMM is not appropriate for this study (Roodman, 2009).

Therefore, we adopt the frequently used approach in the literature, the Hausman-Taylor (1981), in this study. This method allows for the time-invariant regressors to be correlated with the unobserved individual effects. The Hausman-Taylor method makes use of time-varying explanatory variables to serve as instruments for endogenous time-invariant variables. This method represents a two-fold improvement over the fixed-effects and random-effects methods: it is more efficient and produces estimates for the coefficients of time-invariant variables (Hausman and Taylor, 1981). In this study, sub-national institutional constraints index is endogenized<sup>4</sup>. We also endogenize the time-invariant variable of joint venture dummy as it has been documented in the literature that ownership structure of foreign firms may be correlated with the latent individual effects.

## EMPIRICAL RESULTS AND DISCUSSION

### Empirical results

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<sup>4</sup> The estimation of Hausman-Taylor method is based on the method of instrumental variables. First, we estimate the equation on time-varying variables to obtain within estimates and within residual. Then, we regress the residual on sub-national institutional index to obtain the intermediate estimate, using time-varying variables as instruments. The within estimates and intermediate estimate are used to obtain within and overall residuals, which are used to estimate variance components. The variance components are then used to do GLS transformation on each of the variables. Last, we regress the GLS transformed ROS on GLS transformed independent variables, using estimated time-varying variables as instruments.

Table 3 presents the empirical results of our hypothesis testing. Model 1 contains the hypothesized and control variables. Within Model 2 to Model 5, we add the interaction terms of sub-national institutional constraints and hypothesized variables. We observe that the control variables of labour quality, sales growth, leverage ratio, electricity price, and average wage exhibit the expected signs and are significant, while the coefficients of HMT dummy, road mileage, and coastal dummy are not significant. The results are robust throughout the five models.

The first obvious finding in Model 1 is that sub-national institutional constraints have a negative impact on foreign firm performance, as expected from H1. We also notice that size, size-squared, age, age-squared, joint venture dummy, and exporting dummy all have expected signs and are significant. We next consider the interaction terms. In Model 2, we find that the coefficient of the interaction term between size-squared and institutional index is insignificant, which indicates that our hypothesis of a U-shaped relationship between firm size and foreign firm performance in less-developed sub-national institutional environment is not supported. In Model 3, we find that the interaction terms are significant and have expected signs. These results support our hypotheses that firm age not only has a diminishing positive relationship with foreign firm performance but also has a U-shaped relationship with foreign firm performance in regions with less-developed institutions. The results of Model 4 suggest that our hypothesis related to the moderating effect of joint ventures is supported too, while the results of Model 5 indicate that the hypothesis related to market orientation is not supported.

We tested the robustness of the results using various sub-samples. Examining three randomly selected subsamples (90%, 80%, and 70% of the total observations, respectively), firms established after 1990 and firms with more than 40 employees, and we found that the



results were consistent with those estimated by using the full sample. We use labour productivity, total factor productivity (TFP) and return on equity (ROE) as alternative measures of firm performance, and we obtained qualitatively similar results, as we report here.

## **Discussions and implications**

This study aims to examine how sub-national institutions have an impact on foreign firm performance. We pay a special attention to the moderating effects of firm size and age, entry mode, and market orientation on this relationship. In H2, we predicted a U-shaped relationship between firm size and foreign firm performance. We find that, although firm size has a positive diminishing impact on foreign firm performance, the U-shaped relationship does not exist. The results confirm our assertion that large foreign firms can receive favourable treatments from local institutions due to their contribution to local economy and employment. The favourable treatments, however, cannot increase infinitely and will reach a limit at a certain point. On one hand, this result suggests that small-sized foreign firms in China do not appear to exploit the institutional voids to the point of demonstrating positive effects on firm performance. On the other hand, existing studies suggest that, in a less developed environment, small firms may perform better than medium-sized firms. In particular, Shinkle and Kriauciunas (2010) find a U-shaped relationship between firm size and export growth in Central and Eastern European countries. They argue that, although small firms are not able to achieve the institutional advantages that large firms do, their smallness provides them with other advantages not available to larger firms; in particular, they argue that institutional voids in less-developed institutional environments allow small firms to use institutional entrepreneurship (Chiaburu, 2006; Khanna & Palepu, 2000) more readily than

medium-sized firms. The less-developed institutional frameworks of transition economies provided opportunities as well as institutional voids (Khanna & Palepu, 2000). These entrepreneurs may benefit from the opportunities and institutional voids created by the institutional environment (Shinkle and Kriauciunas, 2010). Moreover, small firms are less likely to gain attention from the government and hence avoid institutional constraints but may take advantage of institutional voids. This is particularly true for foreign firms in China, as small-size foreign firms are more likely to be joint ventures with local partners, thus enabling them to be more flexible in overcoming the liability of foreignness while taking advantage of institutional advantages.

We now discuss the hypotheses related to firm age. We find support for the hypothesized positive diminishing relationship between firm age and foreign firm performance as well as a U-shaped relationship between firm age and foreign firm performance in less-developed institutional environments. These results conform to our prediction that older foreign firms are able to gain necessary knowledge, experiences, and institutional relationships over time, which in turn creates a positive impact on firm performance. The positive effects, however, cannot increase boundlessly and will reach a limit at a certain point. In the meantime, newly-invested foreign firms can take advantage of preferential treatment offered by local governments.

The results support our hypothesis that, on average, WFOEs perform better than joint ventures, while in less-developed institutional sub-national environments, joint ventures have the advantage. This result suggests that, although WFOEs can enjoy advanced technologies and managerial know-how, their abilities are restricted in regions with a higher level of institutional constraints. As predicted, exporting-oriented foreign firms perform better than

local-market-orientation firms. On the other hand, our results do not support the hypothesis on the moderating effect of market orientation. This suggests that the effects of sub-national institutional constraints on the performance of exporting-oriented firms are limited. This finding, however, is consistent with the exporting-oriented FDI in China over the last decade. The growth of the Chinese economy over the last decade has to a great extent depended on the growth of exporting and, in particular, the exporting of foreign firms, as many foreign firms have invested in China in order to take various advantages that China has offered. The growth of exporting has led to the development of local institutional support for exporting and the reduction of restrictions related to exports. Therefore, the effects of local institutional environment on exporting-oriented firms are limited.

Our results have significant implications for foreign firms operating in or entering into emerging economies. Foreign investors must decide where and how to set up their operations and the scale of the investment. These strategic decisions have to accommodate institutional conditions that vary not only between countries, but also within the host economy (Wright et al. 2005). Investors adapt strategies for formal and informal institutions prevailing at the host location, especially when entering emerging markets. Our results indicate that newly-invested foreign firms can benefit from preferential treatments and hence perform better. For instance, local governments in China often offer preferential treatment for newly-invested foreign firms in order to attract FDI to special development zones/districts of their own cities. The institutional peculiarities among different locations within a country also affect the preferred entry mode. We find that, although WFOEs generally perform better in an emerging economy, joint ventures would be still attractive when entering into sub-national regions with less-

developed institutional environments. In contrast, exporting-oriented foreign firms may not have to be concerned with the constraints imposed by sub-national institutions.

## LIMITATIONS AND FUTURE RESEARCH

Despite the interesting results and rich implications, a number of limitations of this research need to be addressed. First, our measure of institutional constraints is time invariant due to the data limitation. Since emerging economies experience rapid institutional change, future research may improve by considering a time-variant measurement of sub-national institutions. Second, our research uses a constructed institutional index to measure the overall institutional constraints in Chinese cities. Future research might proceed to examine the impact of different aspects of institutional constraints on foreign firm performance. Third, we note that our analysis may be subject to survivor bias; that is, firms included in our analysis may be winners of survival tests over the years. In our study, we collect information about firms within the period of 1999-2005 only. We were not able to obtain information about firms that failed or exited business outside this time frame. Also, our data includes firms above a certain criteria only. Disappearances from our sample may result from changes of output rather than businesses that exited or failed. Therefore, we are not able to control the effects of survivor bias in this study. This is, however, a common limitation among works of research related to firm performance (Xu, Pan, Wu, and Yim, 2006). Fourth, our empirical setting is limited to one emerging economy – namely, China. The results might be country-specific. Future research using cross-regional data in other emerging economies would allow for generalization of the results.

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Table 1: Definition of the variables

	Measurement	Data source
ROS	Return on sales	The census data
Sub-national institutional index	Constructed based on survey data of the World Bank	Constructed from World Bank (2006)
Firm size	The number of employee/1000	The census data
Firm age	the number of year since established/10	The census data
Joint venture	1 if the firm is a joint venture, 0 otherwise	The census data
Exporting dummy	1 if exporting-oriented firms, 0 otherwise	The census data
HMT firms	1 if a firm is from Hongkong, Macau or Taiwan, 0 otherwise	The census data
Sales growth	Sales growth of the firm	The census data
Leverage ratio	The ratio of debt and equity	The census data
Market concentration	Standard Herfindahl index of market concentration	The census data
Coastal dummy	1 if a firms is located in a coastal city, 0 otherwise.	The census data
Average wage	Average annual wage of workers in the city/1000	World Bank (2006)
Road mileage	Total road mileage in the city	World Bank (2006)
Electricity price	Electricity price of a city	World Bank (2006)
home country dummy	Dummy variable to control for country of origin	The Survey data

Table 2 Means, standard deviations, and correlations

Variables	mean	s.d.	1	2	3	4	5	6	7	8	11	12	13	14
1. ROS	0.02	0.12	1.00											
2. City index	0.00	1.00	0.17	1.00										
3. Size/1000	0.31	0.54	0.03	0.08	1.00									
4. Age/10	0.76	0.35	0.01	0.01	0.11	1.00								
5. Joint venture	0.52	0.50	0.01	-0.21	-0.09	0.10	1.00							
6. Export dummy	0.67	0.47	0.02	0.22	0.17	0.05	-0.21	1.00						
7. Labor quality	2.56	0.68	0.11	-0.06	-0.03	0.12	0.00	-0.02	1.00					
8. HMT firms	0.56	0.50	-0.06	0.18	0.00	0.08	-0.08	-0.04	-0.18	1.00				
11. Coastal dummy	0.71	0.45	0.01	0.21	0.06	0.05	-0.15	0.19	0.19	0.00	1.00			
12. Average wage	21.00	6.05	-0.01	-0.07	0.07	0.10	-0.14	0.11	0.22	0.09	0.48	1.00		
13. Road mileage	2.17	0.46	0.01	-0.05	-0.06	-0.09	0.13	-0.12	-0.12	-0.05	-0.46	-0.59	1.00	
14. Electricity price	0.62	0.14	0.02	0.25	0.04	0.02	-0.04	0.09	-0.05	0.06	0.02	0.12	-0.05	1.00

Table 3: Sub-national institutional constraints and foreign firm performance

	Model 1	Model 2	Model 3	Model 4	Model 5
<b>Hypothesized variables</b>					
Sub-national institutional index	0.014*** (0.005)	0.013*** (0.004)	0.013*** (0.004)	0.011*** (0.004)	0.012*** (0.004)
Firm size	0.037*** (0.002)	0.040*** (0.004)	0.037*** (0.002)	0.037*** (0.002)	0.036*** (0.002)
Firm size square	-0.005*** (0.000)	-0.005*** (0.001)	-0.004*** (0.000)	-0.004*** (0.000)	-0.004*** (0.000)
Firm age	0.038*** (0.005)	0.039*** (0.006)	0.066*** (0.005)	0.037*** (0.006)	0.038*** (0.006)
Firm age square	-0.015*** (0.002)	-0.015*** (0.002)	-0.029*** (0.003)	-0.014*** (0.003)	-0.014*** (0.003)
Joint venture dummy	-0.048*** (0.008)	-0.048*** (0.008)	-0.047*** (0.008)	-0.039*** (0.013)	-0.049*** (0.009)
Export dummy	0.004*** (0.001)	0.005*** (0.001)	0.006*** (0.001)	0.005*** (0.001)	0.006*** (0.001)
<b>Interactions</b>					
Firm size *sub-national index		-0.006** (0.003)			
Firm size square * sub-national index		0.001 (0.001)			
Firm age * sub-national index			-0.037*** (0.004)		
Firm age square * sub-national index			0.021*** (0.002)		
Joint venture dummy * sub-national index				0.017** (0.008)	
Export dummy * sub-national index					-0.004** (0.001)
<b>Control variables</b>					
HMT firms	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)	0.002 (0.001)
Sales growth	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
Leverage ratio	-0.031*** (0.003)	-0.034*** (0.003)	-0.033*** (0.003)	-0.033*** (0.003)	-0.033*** (0.003)
Market concentration	-0.048 (0.031)	-0.051 (0.034)	-0.050 (0.029)	-0.047 (0.037)	-0.052 (0.036)
Electricity price	-0.041* (0.020)	-0.041* (0.020)	-0.039 (0.026)	-0.037 (0.027)	-0.037 (0.024)
Road mileage	0.017* (0.008)	0.017* (0.008)	0.016* (0.008)	0.015 (0.008)	0.017* (0.008)
Average wage	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
Coastal dummy	0.001 (0.008)	0.001 (0.008)	0.000 (0.008)	-0.001 (0.008)	0.001 (0.008)
Home country dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
Industry dummies	Yes	Yes	Yes	Yes	Yes
Wald chi-square	620.00	637.80	635.46	633.21	621.07

Note: \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.



## Appendix A: Sub-national institutional development index

City	Index	City	Index	City	Index	City	Index
Jiangmen	2.02583	Sanming	0.72219	Guangzhou	0.08141	Daqing	-0.85162
Hangzhou	1.97819	Weifang	0.71489	Leshan	0.07669	Anshan	-0.8786
Shantou	1.70342	Deyang	0.70791	Qinhuangdao	0.0433	Changde	-0.90149
Suzhou	1.68334	Ganzhou	0.66559	Yuxi	0.03039	Fushun	-0.90528
Huizhou	1.65109	Foshan	0.61514	Yichang	0.00616	Huanggang	-0.92729
Xiamen	1.52698	Jining	0.54629	Yichun	-0.0062	Baoji	-0.98958
Shangqiu	1.42018	Mianyang	0.54496	Hefei	-0.0075	Kunming	-1.00099
Shenzhen	1.41596	Lianyungang	0.53007	Chongqing	-0.0085	Xinxiang	-1.04409
Qingdao	1.39566	Wenzhou	0.52027	Wuzhong	-0.0203	Wuhan	-1.10195
Zhuhai	1.33373	Chuzhou	0.49909	Baoding	-0.08942	Xining	-1.10225
Zhangzhou	1.29981	Jingmen	0.49228	Wulumuqi	-0.113	Zhangjiakou	-1.15223
Fuzhou	1.29628	Yantai	0.48819	Yueyang	-0.15462	Changsha	-1.15605
Dongguan	1.27533	Dalian	0.48414	Jinan	-0.25749	Qujing	-1.2317
Weihai	1.17608	Xiaogan	0.46081	Guilin	-0.27832	Benxi	-1.24299
Langfang	1.1427	Taian	0.42878	Shijiazhuang	-0.28984	Nanyang	-1.25851
Ningbo	1.11514	Zhengzhou	0.37395	Yibin	-0.37403	Qiqihaer	-1.30101
Maoming	1.08933	Wuxi	0.35911	Changchun	-0.39423	Haikou	-1.31657
Shaoxing	1.06679	Yancheng	0.30927	Beijing	-0.4133	Handan	-1.31778
Quanzhou	1.05353	Anqing	0.2897	Yinchuan	-0.41388	Zhuzhou	-1.36083
Jiaxing	1.04504	Cangzhou	0.28606	Liuzhou	-0.53703	Ha'erbin	-1.453
Nantong	0.99859	Taizhou	0.28335	Shenyang	-0.56598	Taiyuan	-1.53582
Linyi	0.98413	Nanchang	0.26156	Luoyang	-0.57462	Nanning	-1.54896
Changzhou	0.9445	Jingzhou	0.23011	Huhehaote	-0.61125	Guiyang	-1.55069
Huzhou	0.85877	Chengdu	0.22458	Jilin	-0.65242	Hengyang	-1.67047
Yangzhou	0.83314	Shanghai	0.17443	Xiangfan	-0.6572	Datong	-1.67301
Jinhua	0.81607	Zibo	0.16969	Tianjin	-0.68376	Xi'an	-1.71395
Wuhu	0.78287	Chenzhou	0.15593	Nanjing	-0.69121	Baotou	-1.79662
Jinzhou	0.73465	Tangshan	0.12293	Xuzhou	-0.73379	Lanzhou	-1.9441
Xuchang	0.73345	Jiujiang	0.11669	Xianyang	-0.73826	Zunyi	-2.2601

Note: The sub-national institutional index is calculated using the principal component analysis.