Subnational variation and foreign affiliate performance: The influence of productivity, agglomeration and institutional conditions across cities in China.

Abstract:

Previous research has suggested that variations across locations in emerging markets effect foreign affiliate performance. However, research has not yet identified what the relevant constituents of subnational locations are, or their relative effects on foreign affiliate performance heterogeneity. In this paper we utilise city-level data to model productivity, agglomerative and institutional conditions across 120 subnational locations in China and we test their influence on the performance of 1397 foreign affiliates. We find that variations across all three sets of location factors have a significant influence on the performance of foreign affiliates located in Chinese cities. More specifically we find that over 25 per cent of foreign affiliate performance heterogeneity can be explained by variations across subnational locations.

Keywords: Institutions; Subnational variation; Performance; MNEs

Introduction

Recent studies have demonstrated that subnational variations in large, heterogeneous emerging economies affect performance in foreign affiliates of multinational enterprises (MNEs) (Chan et al. 2010; Ma et al. 2013). These studies have advanced the notion that locational variation exists and effects firms, not only between countries, but also within country's (Meyer et al. 2011). In other words, they have demonstrated that the *subnational* location not only matters, but that, variations across subnational territories can significantly affect the performance of foreign firms located within the same host country. They argue that subnational variations can significantly affect foreign firms' operating conditions, including 'costs, opportunities and ultimately performance heterogeneity' (Ma et al. 2013: 67). Subnational locations have effectively emerged as a new and important unit of analysis in the strategic management literature (Meyer and Nguyen, 2005; Chan et al. 2010; Belderbos et al. 2011; Tan and Meyer, 2011; Shi et al. 2012; Ma et al. 2013).

Subnational variations may exist for a number of reasons, including historical legacies and regional specialisations, divergent industrial ecologies, politically motivated allocations of policy incentives and economic development initiatives as well as physical geography, differences in regional endowments and cultural nuances (Crafts and Mulatu, 2005; Porter, 1998; Meyer and Nguyen, 2005). The issue of strategic importance is not the extent to which regions vary but the degree to which it matters for firms (Chan et al. 2010; Ma et al. 2013). Location theory suggests three sets of factors that are most relevant within a firm's local context (Meyer and Nguyen, 2005; Tan and Meyer, 2011). These location specific attributes are factors of production (Dunning, 1988), agglomeration economies (Krugman, 1991; Belderbos et al. 2011) and institutional conditions (North, 1990; Scott, 1995; Meyer and Nguyen, 2005). While previous studies have demonstrated that variations across subnational locations contribute to explanations of foreign affiliate performance, research has not yet identified what aspects of subnational locations matter most, particularly in reference to subnational institutions. Chan et al. (2010) demonstrated that subnational regions have performance implications in emerging economies, however, they noted that, 'one interesting extension of this study would be to identify the key constituents of subnational institutions and explore which of these institutions is more (or less) likely to contribute to a large variation in foreign

affiliate performance in emerging economies' (P.1236). We make a contribution to this literature by deconstructing the productive-, agglomerative- and institutional-conditions of locations into several constituent elements and test their relative effects on the performance of foreign affiliates at the highly disaggregated level of cities. The city level of analysis is a much closer approximation of firms' local context (Meyer et al. 2011) and their 'relevant economic area' (Porter, 1998). Arguably, therefore, cities offer a much closer empirical specification of subnational locations than previous studies that have analysed within country differences at provincial and state levels (Meyer et al. 2005; Chan et al. 2010; Ma et al. 2013). In this study we identify and test the effects of subnational variation on foreign affiliate performance in China.

We examine the relative contribution of subnational variations to firm performance on a sample of 1397 foreign affiliates across 120 cities in China. We address two specific research questions: the extent to which subnational heterogeneity at the city level affects foreign affiliate performance and the extent to which productive, agglomerative and institutional conditions contribute to firm performance heterogeneity.

Literature review and hypothesis development

Subnational variations

The proposition that the prevailing conditions of a country at a national level are not reflected homogeneously across all regions within a country is not new (Christaler, 1937; Freidmann, 1972; Porter, 1988). In other words, the composition of a total economy is the sum of a more fragmented and heterogeneous system of subnational regions (Mariotti and Piscitello, 1995; He, 2002; Henderson et al. 2005; Head and Ries, 2006). However, some countries exhibit more subnational heterogeneity than others. The small but growing literature on the strategic implications of subnational locations suggests than within country variations are most pronounced in emerging and developing economies (Meyer and Nguyen, 2005; Chan et al. 2010; Shi et al. 2011; Ma et al. 2013). Previous studies in this area have examined firm performance heterogeneity at the level of provinces. In this study, however, we examine foreign affiliate performance at the level of cities. Therefore, we re-examine the

hypothesis that subnational variations (across cities) contribute to firm performance heterogeneity. Thus;

Hypothesis 1: *Subnational variations across cities explain a substantial portion of foreign affiliate performance heterogeneity.*

Chan et al. (2010) have provided key evidence in support of this proposition. They examine a ten-year panel dataset of foreign affiliate performance among Japanese investors in China and the U.S.A. The findings indicate that subnational region effects have a much stronger effect on foreign affiliate performance in China than they do in the U.S.A. They conclude that the subnational location is an important unit of analysis in studies of firm performance, but that its explanatory power is much greater in emerging economy contexts. Chan et al. (2010) suggest that this is because variations across political, economic and social institutions are much greater in emerging economies than in advanced economy countries. However, Chan et al. (2010) have no direct evidence to suggest that this is the case. Ma et al. (2013) build on this study through incorporating indexes for factors of production and institutions in their analysis of subnational variations on foreign affiliate performance in China. They find that foreign affiliate performance is weaker in provinces of China in which factors of production and institutions are less developed. However, while they attempt to model the direct effects of subnational variations, they do not decompose either factors of production or institutions into relevant components. Indeed, they state; "Although our analyses represent an improvement over prior studies…the nature of variance decomposition analyses does not allow one to isolate the specific sources of variation in performance within each effect." (p.84)

This masks the key influences in firms' local context that may affect their performance. Furthermore, Ma et al. (2013) do not consider another potential source of performance heterogeneity – that is, agglomeration effects - which are widely recognised in location theory to be a critical component of a firm's local context (Krugman, 1991). In this paper, we attempt to deconstruct foreign firms' relevant economic area into multiple aspects of local context to test the relative contribution of multiple location specific attributes to foreign affiliate performance heterogeneity.

Factors of production

Factors of production relate to the configuration of land and utilities, labour and materials and technology and information that are required to perform both manufacturing and service based business activities, in other words, they are, "the inputs necessary to produce goods or services" (Ma et al. 2013: 69). The configuration of inputs required for a particular business operation will depend on both activity and firm-specific idiosyncrasies. However, the general factors of production in a city or region will have a bearing on how conducive the location is to facilitating the efficient performance of business activities (Oliver, 1997; Meyer and Nguyen, 2005). Two features of factor inputs - abundance and quality - are particularly salient in the context of subnational variations (Ma et al. 2013), each of which may create location-advantage differentials across subnational regions.

Factors of production may be endowed, created or human (Wan and Hoskisson, 2013). Endowed input factors refer to natural resources and for many firms they will constitute fundamental requirements of the production process (Dunning, 1988). However, in this study we are interested in the created and human factors of production. Endowed factors, while important, will only be particularly salient for natural resource-seeking investors - i.e. primary sector industries (Dunning, 1988).

Created or 'advanced' factors primarily refer to a location's utilities infrastructure and other critical factors necessary for the local economy to function (Ma et al. 2013; Wan and Hoskisson, 2003). Infrastructural considerations, and particularly the efficient provision of critical utilities (e.g. telecommunications, power and water), are often an essential consideration for foreign firms' when selecting subnational locations (Driffield and Love, 2007; Ansar, 2010;). However, previous research has found that varying quality of critical utilities is a key source of regional disparity across developing and emerging economies (Démurger, 2001). If provision of critical utilities is variable or inefficient, foreign firms may experience disruptions to their operations. We, therefore, propose that the quality of the local utilities infrastructure will influence foreign firm performance. Thus;

Hypothesis 2: *Foreign affiliate performance is positively affected by the quality of the utilities infrastructure across subnational locations.*

Human factors refer to the experience, education, skills and capabilities of people, or this in context, of the local workforce - this often referred to as 'human capital' (Coleman, 1988; Head and Mayer, 2004). Organisational theory recognises that the single most salient growth restraint on firms is a lack of suitably qualified and skilled labour, capable of absorbing the necessary training required to perform complex tasks effectively (Penrose, 1956). In emerging economies, educational systems are often under-developed meaning human capital can significantly vary across locations and is often concentrated in only the most economically developed subnational locations (Khanna and Palepu, 2007). We would therefore expect that subnational variations across levels of human capital to have a significant impact on foreign firm performance. Thus;

Hypothesis 3: *Foreign affiliate performance is positively affected by levels of human capital across subnational locations.*

Agglomeration economies

Agglomeration economies refer to the advantages that arise and diffuse in concentrated clusters of economic activity (Krugman, 1991; Belderbos et al. 2011). Agglomerations can create multiple sources of advantages for firms. Firstly, the self-reinforcing effects of agglomerations improve the local economic environment through spillover effects (Audretsch and Feldmann, 1996) which improve local technology conditions. Secondly, agglomerations offer resource advantages as they are endowed with increased pools of labour and suppliers (Nachum, 2000). Finally, agglomerations offer opportunities for sharing local information and knowledge about the business environment which can help firms adapt to, and anticipate future changes in, the market (Mariotti and Piscitello, 1995; Tan and Meyer, 2011).

We distinguish between foreign firm agglomerations and domestic firm agglomerations. As demonstrated by Mariotti et al. (2010), foreign firms' subnational location choices are positively influenced by foreign firm agglomerations, but negatively influenced by domestic firm agglomerations. They suggest that foreign firms may perceive a heightened risk of knowledge

leakages to domestic firms and thus avoid co-locating with them. In an emerging economy context the risk of knowledge leakages is likely to be intensified due to the weaker intellectual property (IP) protection regimes in these countries (Du et al. 2008; kreupp et al. 2009). Major incidents of foreign firms' IP theft by domestic Chinese firms have been reported in the popular media (Economist, 2012). In addition, domestic firms are less likely than foreign firms to share local knowledge and information, thus inhibiting foreign affiliates' awareness of opportunities, threats and changes in the market (Tan and Meyer, 2011). We propose, therefore, that in subnational locations with strong domestic agglomerations, foreign affiliate performance will be negatively affected.

Hypothesis 4: *Foreign affiliate performance is negatively affected by domestic firm agglomerations across subnational locations.*

At the same time, following the logic of Tan and Meyer (2011) and Belderbos et al. (2011) we argue that foreign firm agglomerations act as conduits of knowledge and information and are not as threatening to foreign firms' IP. In other words, foreign firms are more likely to act as 'friends' in uncertain, unfamiliar and difficult locations (Tan and Meyer, 2011). Furthermore, foreign firms in emerging markets are generally more technologically intensive than domestic firms (Aitken and Harrison, 1999; Blalock and Gertler, 2008), meaning the spillover accruals from foreign firms is arguably more conducive to supporting superior performance than domestic firms. Thus;

Hypothesis 5: *Foreign affiliate performance is positively affected by foreign firm agglomerations across subnational locations.*

Subnational institutions

Institutional theory makes the conceptual distinction between the firms' 'technical' environment, where it engages in the management of supply and demand, and the institutional environment, where firms strive to receive support and legitimacy from non-market actors, such as

government and regulatory agencies (Scott, 1995; Suchman, 1995; Oliver, 1997). Broadly defined, institutions are the formal and informal 'rules of the game' (North, 1991) and are composed of regulatory, normative and cognitive mechanisms that define the acceptability and legitimacy of both individuals' and economic actors' behaviour (Scott, 1995). Institutional regimes in many emerging economies are often under-developed, meaning 'rules' and other mechanisms which govern market and non-market environments are ineffective, inefficient or both (Peng et al. 2008; Chan et al. 2010). The consequence is that institutions take on greater salience in reference to explaining foreign firm behaviour and performance (Hoskisson et al. 2003; Wan et al. 2003; Khanna and Palepu, 2005; Bevan et al. 2005).

Institutional environments are composed of a 'tangled web of mutually reinforcing elements' (Orr and Scott, 2008), however, for analytical purposes it is helpful to identify particular spheres of institutional influence. The institutional environment of a subnational location may be stratified into three interrelated sup-spheres, namely; economic, political and social (Chan et al. 2010).

Economic institutions facilitate efficient exchanges and interactions between economic actors. For this reason local economic institutions can directly affect the transaction and information costs associated with doing business in a region through determining the effectiveness and transparency of exchange processes (Shi et al. 2012). For example, an institutional environment in which contracts are respected, where administrative bureaucracy is minimised and were social relations and other opaque exchange mechanisms are minimised, is more likely to support efficient and 'fair' economic activities (Heinsz, 2003; Fan et al. 2009). In addition, subnational economic intermediaries such as regional development agencies have authority for granting licences, work permits and other necessary documentation required for setting up a business. These administrative agencies have the ability to enable or constrain the efficiency with which businesses can become incorporated (Tan and Meyer, 2010). For example, institutionalised regulations may require businesses to meet certain criteria to obtain such licenses - (which are usually in line with development targets – such as reducing CO2 emissions or attracting 'high-value' assets) – in order to achieve the legitimisation required to set up the business (Chan and Makino, 2007; Orr and Scott, 2008).

We test the effects of three formal subnational economic and administrative institutions (*ease of loan access* and the *stringency of labour regulations* and *administrative efficiency*) and one informal institution (*corruption*). Accessing loans can often be critical to resource constrained foreign affiliates in emerging economies, where cash-flows can often be unpredictable (e.g. due to difficulties and delays getting paid for goods and services rendered) (Hoskisson et al. 2003;Acquaah, 2007) . In addition, stringent labour regulations can create strategic rigidities and inflexibilities in firms that can make them more vulnerable to endogenous and exogenous changes (Oliver, 1996). Finally, inefficient administrative institutions can disrupt operational efficiency through creating unnecessary bureaucratic interactions for foreign affiliates (Meyer and Nguyen, 2004; Tan and Meyer, 2011). Therefore, we suggest that when firms can access loans easier, when labour regulations are less stringent and when administrative agencies are efficient, they will perform better.

Hypothesis 6a;b;c: *Foreign affiliate performance is positively affected by (a) ease of loan access; (b) labour market flexibilities and (c) administrative efficiency across subnational locations.*

However, corruption is a widely reported economic reality in many emerging and developing economies (Hoskisson et al. 2003; Du et al. 2008). Though illegal for many foreign firms to engage in corrupt activities in foreign markets, if there is a high level of localised corruption it is likely to impact upon firms' operational efficiency. This is because high levels of corruption may create market access barriers or disrupt production activities if firms choose not to engage in corrupt practices. Thus;

Hypothesis 7: *Foreign affiliate performance is negatively affected by corruption across subnational locations.*

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In China, and in other emerging economies, there is significant cross-over between political and economic institutions, with political institutions exerting significant influence over the local economic landscape and the investment regime for foreign businesses. For example, Meyer and Nguyen (2004) describe circumstances of either '*red-carpets'* or '*red-tape'*, where the former reflects an open and welcoming attitude to foreign firms from the local government, while the latter reflects a

restrictive and unhelpful approach to dealing with foreign investors. Given the increased role of government in economic matters in emerging economy contexts (Hoskisson et al. 2003; Peng et al. 2008), we suggest that locations with effective local governments will be more conducive to foreign affiliate performance. Thus;

Hypothesis 8: *Foreign affiliate performance is positively affected by government effectiveness across subnational locations.*

Local political institutions are also responsible for overseeing the effectiveness of the legal system. China's plethora of laws which deal with the regulation of foreign investment and the management of foreign businesses are dense and as stated by Corne (1997), the 'legal system [in China] is characterised by the gap between law and reality' (p.2). Although many laws will be writ by central government and standardised across regions, in many cases, the implementation and enforcement of law is done at the local level. This creates significant intra-country variation between the institutions of the legal system, in terms of, applications of specific laws as well their judicial effectiveness in maintaining the regulative 'rules of the game', such as IP protection and enforcement of contracts (Du et al. 2008). The importance of intellectual property to innovation and securing competitive advantage has been well established in the strategic management literature (Leiponen, 2008; Reitzig and Puranam, 2009. We would therefore expect that locations with better legal protections for foreign firms' IP and contracts to be more conducive to superior performance in foreign affiliates. Thus;

Hypothesis 9: *Foreign affiliate performance is positively affected by the effectiveness of local legal systems across subnational locations.*

Social institutions are embedded in the socio-cultural environment of a locality (Scott, 1995), including, shared norms and patterns of thought. These institutions are often deeply rooted in the

unique cultural heritage of the populace and define how people perceive and make sense of the world, including, their values and beliefs and the normative expectations and conventions they expect themselves and others to adhere to (Scott, 1995). The cultural make-up of China is fragmented and diverse. There are over fifty recognised ethnic groups and, despite that fact that the Han Chinese ethnicity represents the vast majority of the country's population, historical geo-political divisions as well as unique development paths and more fundamentally, the sheer geographic scale of the country, ensure that intra-county cultural heterogeneity persists (Liu, 2004). However, within-country cultural variation remains a significantly under researched area. Tung (2008) argues that theorising in some of the biggest debates in the cultural research field has masked the true complexity of cross-cultural issues through making simplifying assumptions about cultural homogeneity within countries – an assumption proved incorrect by Tung et al. (2008), who find that attitudes towards work significantly vary between different regions in China - particularly between coastal and inland regions. However, cultural indicators are difficult to come by at the subnational level.

In this study we attempt to capture subnational cultural variation in China through distinguishing between coastal cities and interior cities. There are two reasons for this. Chabowski et al. (2010) call for studies to explore intra-country variation between border regions and interior regions. They argue that border regions are typically more culturally diverse because individuals and firms in these regions are more likely to 'interact with distant influences and international developments' (Chabowski et al. 2010). Border regions are traditionally seen as being more 'open' and accepting of foreign influence as they are naturally well suited for trading in imports and exports (Morris and Pavett, 1992). However, in China, this distinction is magnified by the substantial developmental disparities between coastal regions (the country border) and interior regions. China's coastal regions were early benefactors of the governments 'open-door' policy and these provinces have received the vast bulk of China's inward foreign direct investment. Indeed, it wasn't until 1997 - almost 18 years after the open-doors policy was implemented - that the Chinese Communist party took concerted measures to address the widening economic inequality between coastal and inland regions (Cheng, 2008). Political, economic and regulatory institutions on the East coast of China have had much greater exposure to foreign investors and foreign influence. These institutions have accumulated more experience working with foreign investors and have, to some extent, co-evolved

alongside MNEs to accommodate their needs and interests (He et al. 2008; Tung et al. 2008). The coastal-interior division in China, therefore, presents a unique empirical context in which to explore subnational variation and the contingencies created by the idiosyncrasies unique to different local contexts within a single country.

Therefore, there is a case for arguing that local culture in coastal cities in more open and accepting of foreign investors than in inland regions of China. Furthermore, as noted demonstrated by Tung (2008), attitudes towards work differ between coastal and inland China, with workers in coastal cities typically exhibited a stronger work ethic. Therefore, although the coastal-inland division is unspecific to particular facets of local culture, it may allow for unobserved cultural nuances to be represented in the models. We suggest, therefore, that coastal cities in China will be more conducive to firm performance than interior regions. Thus;

Hypothesis 10a: *Foreign affiliate performance is positively affected by being located in coastal cities in China.*

Hypothesis 10b: *Foreign affiliate performance is negatively affected by being located in inland cities in China.*

Summary

We propose relationships between factors of production, agglomeration economies and institutions and suggest that variations across all three sets of factors will influence the performance of foreign affiliates based in Chinese cities. Our hypotheses are based on the notion that variations across subnational locations have a bearing on performance outcomes - an empirical observation that has been demonstrated in prior research (Chan et al. 2010; Ma et al. 2013). The contribution of this study is that we deconstruct subnational locations into specific attributes and test the relative influence of these location specific conditions to performance differentials across foreign affiliates at the city-level.

Methodology

Data

In 2006 the World Bank (WB) released a report titled '*Governance, Investment Climate, and Harmonious Society: Competitiveness Enhancements for 120 Cities in China*'. The report was based on a survey of 12,000 foreign and domestic firms in China and examined an extensive range of location specific conditions. The city-level data presented in this report is generated from aggregated firm-level responses to a questionnaire. Thus, the locational data for each city is an aggregated value based on responses to the questionnaire. Data for each city is aggregated from at least 100 firm responses. The primary nature of the data in the WB (2006) report is a valuable dataset as, although many of China's laws regulations and policies are standardised across regions, enforcement and administrative efficiency can significantly differ at the local level (Li and Park, 2006). Furthermore, with 120 cities surveyed the report provides significant coverage of spatial variation in China.

The published WB report provides values at the city level. However, we also gained access to firm-level data from the published reports' raw dataset. From the raw data we identified 1397 foreign invested manufacturing enterprises (excluding investors from Hong Kong, Macau and Taiwan). We subsequently integrated the firm level and city level data in one dataset. In this dataset, firm-level data is matched with location data from the city that the foreign affiliate is located in.

Operationalization of variables

Dependent variable

Foreign affiliate performance is measured using a three year average (2003-2005) of firms' productivity in China. This is a self-reported productivity value and is, therefore, subjective. However, previous studies that have examined firm performance have found that subjective measures of foreign affiliate performance are often highly correlated with more objective measures (Peterson et al. 2008; Child et al. 2003; Gaur et al. 2011). Furthermore, given that the measure is a three-year average, it accommodates productivity anomalies caused by yearly locations, thus providing a stronger indication of actual performance. Furthermore, the problems associated with measuring firm performance in

emerging economy environments are well documented (Hoskisson et al. 2003; Wright et al. 2008). Liu (2005) states that, financial measures of firm performance in emerging economies are often fraught due to loose financial reporting procedures and variable quality of local auditors. Therefore, a non-financial measure such as productivity is arguably more appropriate as a measure of foreign firm performance in an emerging economy such as China. For a summary of all variables see table 1.

--- Insert table 1 about here ---

Independent variables

To assess factors of production we examine the quality of the utilities infrastructure (H2) by examining aggregated scores to questions in the WB survey that examined '*output losses created by inadequate utilities infrastructure'*. Levels of human capital (H3) are examined from a construct we created using two items from the report'; the percentage of the city's population with university degrees and the percentage of the population with IT training (α = .83).

Agglomeration is examined using standardised measures for total numbers of domestic (H4) and foreign firms (H5) in a city (Li and Park, 2006; Mariotti et al. 2010).

To capture the institutional context of cities we examine seven variables. Formal economic institutions of a location are measured using three variables. Ease of loan access (H6a) is measured using the percentage of small to medium sized enterprises (SMEs) in the city with bank loans. SMEs are often seen as higher risk than larger firms. Therefore, if a city as a high percentage of SMEs with bank loans it indicates that banking institutions in the city are more willing to provide loans for businesses. Labour market flexibilities (H6b) are assessed through firms' aggregated responses to a question in the WB survey that asked firms to indicate the severity of penalties for making redundancies. Administrative efficiency (H6c) is measured using two items from the report which assessed the extent of 'bureaucratic interaction' and 'time (number of days annually) spent with

government regulators'[1] (α= 0.91). Levels of corruption (H7) in cities were assessed from firms' responses to a question that asked the expectation that informal payments would be required when applying for bank loans. Essentially, if firms are required to make 'informal payments' to secure loan access they are being exploited by institutions that hold significant power over them. If firms provide informal payments they are engaging in bribery, which is a corrupt practice. Therefore, cities in which expectations for informal payments are higher can be said to have a higher level of institutionalised corruption.

Government effectiveness (H8 is a composite variable created by the WB. The variable for government effectiveness provides a score for each city's local government in reference to taxes and fees as a percentage of sales, 'entertainment costs' for government officials and average number of days to clear imports and exports. Each cities legal system (H9) is evaluated from firms' responses to a question which asked the likelihood that both their contracts and intellectual property would be respected and enforced by local courts. Dummy variables were created to capture whether the foreign affiliate was located in a coastal city (H10a) or a city in the Chinese interior (H10b).

Control variables

We control for both location and firm-specific factors. In terms of location, we control for variations across levels of economic development by including a measure of cities gross domestic product (GDP) per capita. In addition we control for two firm-specific factors; industry and length of time in the location. Chan et al. (2010) finds that industry effects contribute to firm performance heterogeneity across subnational regions. Therefore, in order to isolate the location-specific attributes which are examined in this study we control for the industry of each firm in the study. Furthermore, we also control for the length of time that the foreign affiliate has been located in China. Internationalisation theory suggests that as firms accumulate knowledge and experience in markets, they develop better routines, networks and practices for dealing with market idiosyncrasies and institutional voids (Johansan and Vahlne, 2009). Therefore, we control for the effect of experience in

[1] Four questions for four different regulators; tax administration, public security, environmental protection and labour and social security.

the location and proxy it using the number of years that the foreign affiliate has been established in the subnational location.

Analytical procedures

We use two statistical procedures to examine the impact of subnational variation on foreign affiliate performance. In order to gauge the magnitude of impact that is attributable to subnational variations, and test hypothesis 1, we run a univariate analysis of variance. In order to isolate the effects of the location-specific attributes, and test hypothesis 2-10, we use multiple linear regressions.

Results

Correlation coefficients for all variables can be found in the appendix. Table 2 provides the results of a univariate analysis of variance for all location specific attributes and control variables. The R^2 for this model is .26 indicating that over 25% of foreign affiliate performance heterogeneity can be explained by our model. This is quite a substantial portion of performance heterogeneity and indicates that subnational variation across Chinese cities has a significant impact (F = 34.9***) on foreign affiliate performance. Therefore, we can accept hypothesis 1, which stated that variations across Chinese cities would have an impact on foreign affiliate performance. The largest statistically significant contributors to foreign affiliate performance heterogeneity in descending order are; human capital (F = 45.8***), government effectiveness (F = 13.768***), legal effectiveness (F = 8.527***), utilities infrastructure (7.264***), industry (F = 5.988**), location in coastal cities (5.146***), ease of loan access (F = 4.561***), number of years that the foreign affiliate has been established in the location (4.313**) and corruption (F = 4.294**). Interestingly, neither domestic nor foreign firm agglomeration economies were statistically significant. Furthermore, three of the institutional variables (labour flexibility, administrative efficiency and inland cities) were all statistically insignificant.

---- Insert table 2 about here ----

In order to isolate the relative effects of factors of production, agglomeration economies and institutions we ran four linear regression models (table 3). Model 1 is the base model and includes control variables only. All three control variables have a statistically significant effect on foreign affiliate performance. GDP per capita at the city level (5.837***) has a positive impact on foreign affiliate performance as does industry (6.882). The foreign affiliates' year of establishment also has a positive effect on performance (1.779*) indicating that foreign affiliates that have been established in China for longer generally perform better than newer entrants. However, the model has an R^2 of 0.072, which is quite weak as it only explains only a small portion of performance heterogeneity.

Model 2 introduces factors of production (utilities infrastructure and human capital) into the regression. The quality of the utilities infrastructure across subnational locations has a positive effect on firm performance (1.125), however, the result is not statistically significant. Levels of human capital have a strong and statistically significant effect on foreign affiliate performance (6.826***). Interestingly, the measure for number of years established is stronger (3.153***) in model 2, indicating that this is an important element of foreign affiliate performance across subnational locations. Furthermore, the R2 for this model is also higher, though it is still quite low (R^2 = .102).

--- Insert table 3 about here ---

Model 3 includes agglomeration economies into the regression. Both domestic and foreign firm agglomeration economies have a strong, positive and significant effect on foreign affiliate performance (6.976*** and 10.729*** respectively). Furthermore, in this model, the effect of the utilities infrastructure on foreign affiliate performance becomes stronger and statistically significant (3.915**). This model also explains significantly more variance in foreign affiliate performance heterogeneity (R^2 = 0.198).

In model 4 we integrate all subnational location-specific attributes. This model presents quite a mixed picture of the results. Firstly, both utilities infrastructure and human capital continue to have positive effects on foreign affiliate performance. However, with the introduction of the institutional

variables, both domestic and foreign agglomeration economies become statistically insignificant. This is quite surprising considering the strength of their effects in model 3.

The institutional constituents of subnational locations have clear effects on foreign affiliate performance. In particular, our results indicate that the subnational institutions that matter most to foreign affiliate performance are; government effectiveness (3.71***), legal effectiveness (2.92**), location in coastal cities (culture) (2.268), ease of loan access (2.136**) and corruption (-2.072). Labour flexibility, administrative efficiency and the dummy variable for interior cities have no significant effects on foreign affiliate performance. The highly reduced effect for both agglomeration variables following the introduction of the institutional variables into the regression suggests that there may be interaction effects between agglomerative and institutional conditions. In order to assess whether this is the case we created an interaction variable for foreign agglomeration and government effectiveness. These variables were selected because they have the highest effects on foreign affiliate performance within their categories. We subsequently ran a post-hoc regression to examine the effect of this interaction.

---- Insert table 4 about here ---

The post-hoc regression suggests that there is strong interaction effect between government effectiveness and foreign firm agglomeration. This unobserved interaction effect likely created the distorted results for the agglomeration variables in the previous model. We, therefore, take the post-hoc model as the final model. Based on these findings we can accept seven out of our original 13 hypotheses – see table 4. In descending order the following subnational location specific attributes have the largest effects on foreign affiliate performance; human capital (6.072***), flexibility of labour regulations (5.096***), ease of loan access (5.096***), location in coastal cities (3.413**), utilities infrastructure (2.822**), the interaction between foreign agglomeration and government effectiveness (2.622**), domestic firm agglomeration (-2.521), industry (2.417**), number of years established (2.110**) and legal effectiveness (2.095**).

Discussion

The key motivation for this study was to deconstruct subnational variations into relevant constituents of local context and to examine the impact of these variations on the performance of foreign affiliates located in Chinese cities. The results presented in this paper clearly provide evidence that attests to the explanatory power of subnational variation on foreign affiliate performance. In addition, we demonstrate that within country heterogeneity is highly disaggregated across subnational cities. Previous studies in this vein of research have examined the relationship between subnational variations and performance at the provincial level, however, this study demonstrates that subnational variation is much more acute and localised.

Our study builds on the pioneering work of Chan et al. (2010). Their study departed from traditional thinking in international business theory that tended to emphasise resource and industry based- explanations of performance heterogeneity, but downplayed the role of location. Furthermore, they moved beyond the synonymous association between locations and countries and demonstrated that the *subnational* location matters.

This study demonstrates that a significant portion (close to 25 per cent) of performance heterogeneity across foreign affiliates can be explained by location specific attributes across subnational locations. The key contribution of this study, however, is that we are able to isolate the relative contribution from different subnational sources of variance. We achieve this by taking a holistic approach to conceptualising the key attributes embedded in a foreign affiliate's local context that may affect their performance. Our results demonstrate that multiple variables across factors of production, agglomeration economies and institutions impact upon foreign affiliate performance. Our results complement those of Chan et al. (2010) by demonstrating that, although institutional variations across subnational locations are highly important aspects of foreign affiliate performance, variations across factors of production and agglomerative conditions are equally as important. Variations across levels of human capital are particularly important in this context. The strength of this effect is hardly surprising given the importance of human factors to firm growth combined with scarcities of highly educated and skilled labour in emerging economies. Furthermore, we also show that the quality of the utilities infrastructure is an important contributor to firm performance differentials.

As hypothesised our results indicate that in locations that are densely populated with domestic Chinese firms, foreign affiliate performance is negatively affected. We suggested that this may be because domestic firms are less likely to share knowledge, skills and information with foreign affiliates, thus, hampering their capabilities and awareness within the local context. Furthermore, cities in which there is a heavy presence of domestic firms may lead to foreign affiliates becoming isolated and marginalised within local business systems.

The institutional conditions that have the strongest effect on foreign affiliate performance are flexibility of labour regulations, ease of loan access, location in coastal cities and legal effectiveness. The strategic flexibility that firms have over their human resource management is a highly important aspect of operational efficiency and management. The empirical evidence presented in this paper suggests that, in locations in which firms have more strategic flexibility over critical aspects of their human resource management, firms perform better. There are two explanations for this. Being able to make redundancies without facing significant repercussions allows firms to maximise their operational efficiency by releasing unproductive workers. Secondly, it affords firms much more flexibility to cope with fluctuations in demand and other market conditions. Ease of loan access is the second strongest institutional influence on foreign affiliate performance as suggested by our findings. Gaining access to loans can enable foreign affiliates to manage cash-flow problems and to launch strategic improvement initiatives such as process improvements or expansions. Therefore, cities in which firms can more easily access loans are more conducive to foreign affiliate performance.

We attempted to gauge variation across cultural institutions through distinguishing between foreign affiliates that are located in coastal regions and foreign affiliates located in inland regions of China. This builds on the call from Chabowski et al. (2010) to explore subnational variations between border and inland regions of countries. While this is an imprecise measure of cultural variation and indeed, it is difficult for us to claim that the results reflect subnational cultural differences, the findings do indicate that the subnational geography of the firm does have an impact on foreign affiliate performance. As predicted, firms that are located in coastal cities experience performance gains over firms located in inland cities. However, there is no significant negative effect on foreign affiliate performance in inland cities. Tung et al. (2008) found that cultural attitudes towards work significantly differed between coastal and inland regions of China. It may be the case,

therefore, that labour is more productive in coastal regions due to their different attitudes to work as well as increased acceptability of MNEs in local communities and business networks.

Furthermore, the legal effectiveness of local courts has a positive impact of foreign affiliate performance. As previously mentioned foreign firms face intensified threats to their IP in emerging and developing markets. Furthermore, the less marketised nature of many of these economies means that there if often less respect for formal business contracts. This can lead to instances in which foreign firms fail to receive payment for goods or delivery of supplies because they cannot enforce their contract rights in local courts.

As discussed in the results section there appears to be a strong interaction effect between foreign firm agglomerations and government effectiveness. The strength of this interaction was creating distorted effects in our models, effects which are notable in model 4. To address this we computed a new variable to capture the interaction between foreign firm agglomeration and government effectiveness. The interaction appears to redress the distortion in model 4. Furthermore, we can see that the interaction effect between foreign firm agglomeration and local government effectiveness has a strong and positive effect on foreign affiliate performance. Government effectiveness seems to moderate the effect of foreign firm agglomeration on firm performance, in other words, when modelled simultaneously the effects on foreign affiliate performance are not additive. However, when both of these factors interact the effect on foreign affiliate performance is positive and significant. This may indicate that effective local governments mitigate foreign affiliates' reliance on positive spillover effects from foreign firm agglomerations. Nevertheless the significant result for the interaction demonstrates that local contexts with strong local governments and a significant presence of foreign firms are conducive to foreign affiliate performance.

Finally, although not a primary point of interest, our control variables prove interesting for interpreting foreign affiliate performance. The industry of the foreign affiliate and the number of years that it has been established in the subnational location are consistently significant across all our models. This indicates that the industry of the foreign affiliate has a significant impact on performance; however the effect does not overpower the vast majority of independent variables. Furthermore, perhaps more interestingly, the foreign affiliate's number of years established in China

has a positive and significant effect on performance, thus indicating that the experience of foreign affiliates in the subnational locations increases their performance. This may be because firms develop routines and knowledge that enable them to circumvent institutional voids and other challenges that the subnational location may present.

Conclusion

The subnational location has emerged as an important unit of analysis in the strategic management literature. This study makes several important contributions to this emerging stream of theory. Firstly, we have demonstrated that subnational variations exercise a potent force on foreign affiliate performance - even at the highly disaggregated level of cities. This shows that subnational heterogeneity is much more localised than previous studies have recognised. Furthermore, this strengthens our argument that the city is a better subnational unit of analysis, and provides a much closer approximation of firms' relevant economic area than provinces or states. Secondly, we stratify subnational location environments into three sets of factors and demonstrate that relevant location factors from each set significantly affect the performance of MNEs' foreign affiliates in emerging economies. Finally, we identify and test the relevant institutional constituents of subnational locations and show that variation across institutional conditions have significant effects on foreign affiliate performance.

The findings presented in this paper contribute to the increasing recognition of the relationship between subnational locations and foreign firm performance. Performance literature has typically focused on how factors endogenous to firms, such as their resource and capability base, affect the performance of firms. However, this growing body of literature has clearly demonstrated that the subnational location in which firms are embedded has important performance implications. We demonstrate that there are a range of constituent factors in firms' subnational locations some of which matter to foreign firm performance much more than others.

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Table 1: description of variables and data

Hypothesis no.	***Variable***	***Description***
H2	Utilities infrastructure	Output losses caused by inadequate power or transport infrastructure
H3	Human capital	Share of workers with formal IT training and the share of employees regularly using computers City's % of population with university level education
H4	Domestic agglomeration	City's % of domestic ownership
H5	Foreign agglomeration	City's % of foreign ownership
H6a	Ease of loan access	% of private SMEs with bank loans
H6b	Flexibility of labour regulations	Severity of penalties for making redundancies
H6c	Administrative efficiency	Time spent with four different government regulators (tax administration, public security, environmental protection and labor and social security) Average annual number of days of bureaucratic interactions
H7	Corruption	Firms' expectations that unofficial payments will be required to secure loans
H8	Government effectiveness	Composite of taxes and fees as a percentage of sales, 'entertainment costs' for government officials and average number of days to clear imports and exports.
H9	Legal effectiveness	Likelihood that firms' intellectual property and contracts would be respected by local courts
H10a	Social institutions (coastal cities)	Dummy variable for coastal cities
H10b	Social institutions (interior cities)	Dummy variable for interior cities
Dependent variable	Foreign affiliate performance	Three year average (2003-2005) productivity measure
Control	Economic development	GDP per capita
Control	Industry	Foreign affiliates industry code
Control	No. of years established	Number of years the foreign has been established (2005-year established)

Table 2: Analysis of sources of performance heterogeneity

Variables	**Mean Square**	**F**	**Sig.**
Factors of production			
Utilities infrastructure	0.881	7.264	0.007***
Human capital	5.565	45.898	0.000***
Agglomeration			
Dom agglomeration	0.012	0.098	0.754
Foreign agglomeration	0.287	2.369	0.124
Institutions			
Ease of loan access	0.553	4.561	0.033**
Labour flexibility	0.168	1.39	0.239
Admin efficiency	0.062	0.511	0.475
Corruption	0.521	4.294	0.038**
Government effectiveness	1.669	13.768	0.000***
legal effectiveness	1.034	8.527	0.004**
Coastal	0.624	5.146	0.023**
Inland	0.125	1.028	0.311
Control variables			
GDP	0.018	0.144	0.704
Year established	0.523	4.313	0.038**
Industry	0.726	5.988	0.015**
Model			
Corrected Model	4.233	34.911	0.000***
Intercept	0.505	4.163	0.042**
R Squared	0.267		

Dependent variable: Productivity 2003-2005 *** P = < 0.001, ** p = < 0.05, * p = < 0.10

Table 3: Linear regression models

Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
Factors of production				
Utilities infrastructure		1.125	3.915***	2.695**
Human capital		6.826***	7.494***	6.775***
Agglomeration				
Dom agglomeration			6.976***	0.313
Foreign agglomeration			10.729***	1.539
Institutions				
Ease of loan access				2.136**
Labour flexibility				1.179
Admin efficiency				-0.715
Corruption				-2.072**
Government effectiveness				3.71***
legal effectiveness				2.92**
Coastal				2.268**
Inland				-1.014
Control variables				
GDP	5.837***	1.498	1.927*	-0.38
Number of years est.	1.779*	3.153***	3.104***	2.077**
Industry	6.882***	5.085***	2.14**	2.447**
Model				
Constant	3.719***	3.125**	3.072**	2.04**
F	36.951***	27.538***	44.161***	34.911***
R Squared	0.072	0.102	0.198	0.267
N	1397	1397	1397	1397

Dependent variable: Productivity 2003-2005 *** P = < 0.001, ** p = < 0.05, * p = < 0.10

Table 4: post-hoc model

Variables	***Post-hoc model***	***Hypothesis***	***Hypothesis outcome***
Factors of production			
Utilities infrastructure	2.822**	H2	Accepted
Human capital	6.072***	H3	Accepted
Agglomeration			
Domestic agglomeration	-2.521**	H4	Accepted
Institutions			
Ease of loan access	5.096***	H6a	Accepted
Labour flexibility	6.545***	H6b	Accepted
Admin efficiency	-.380	H6c	Rejected
Corruption	-1.266	H7	Rejected
legal effectiveness	2.095**	H9	Accepted
Coastal	3.413**	H10a	Accepted
Inland	-.549	H10b	Rejected
Foreign agglomeration*Government effectiveness	2.622**	H5*H8	Accepted
Control variables			
GDP	-.060		
Number of years est.	2.110**		
Industry	2.417**		
Model			
Constant	-3.245**		
F	36.087***		
R Squared	.268		
N	1397		

Dependent variable: Productivity 2003-2005 *** P = < 0.001, ** p = < 0.05, * p = < 0.10

Appendix: Correlation coefficients between variables

No.	***Variable***	***Mean***	***Std. Dev.***	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1	Performance	.1170	.40669															
2	Utilities	.1308	.83669	.088														
3	Human capital	.3581	.92328	.283	.191													
4	Domestic agg.	-.7696	1.25331	-.274	.096	-.331												
5	Foreign agg.	.8201	1.31318	.314	-.177	.169	-.917											
6	Loan access	-.0390	1.01181	.136	.050	-.055	.446	-.371										
7	Labour flex.	.2686	.93207	.281	-.150	-.082	-.230	.522	.117									
8	Admin Eff.	-.1430	.99965	-.029	.004	-.241	.169	.063	-.046	.454								
9	Corruption	.3389	.73187	.205	.031	.176	-.303	.387	.017	.440	.096							
10	Government	.2629	.96518	.316	.004	-.161	-.099	.343	.540	.744	.273	.419						
11	Legal eff.	.0964	.98124	.075	.134	-.287	.003	.140	.395	.348	.336	.228	.614					
12	Coastal	.72	.447	.352	.123	.163	-.432	.510	.053	.277	-.012	.297	.318	.138				
13	Inland	.19	.396	-.268	.083	-.170	.348	-.397	-.039	-.176	.029	-.357	-.197	-.085	-.796			
14	GDP cap.	.2768	1.15235	.180	.217	.514	-.040	-.025	.163	-.100	-.239	.063	-.039	-.219	.179	-.157		
15	Year est.	.1560	.39586	.110	.104	.095	-.084	.051	.028	-.003	-.088	.049	.030	.011	.106	-.079	.048	
16	Industry	31.0386	8.95986	.201	.002	.276	-.314	.265	-.040	.081	-.186	.124	.054	-.038	.146	-.121	.133	.031