

City-Hierarchies and FDI Location Choice Determinants:

Is the Periphery Different?

Abstract:

We examine the determinants of FDI location choice across ‘core conurbations’ and ‘peripheral cities’ in a decentralized, high-growth economy. We extend the insights of core-periphery theory to discern subnational FDI differentials between 120 cities in China between 2003-2006. More specifically, our aim is to discern the conditions under which FDI is attracted to peripheral urban-areas of high-growth economies. We find that the spatial determinants of FDI significantly differ between core and peripheral urban locations. However, surprisingly, we find that peripheral locations offer much stronger institutional advantages than core locations, which significantly increase the propensity of FDI to locate in peripheral cities.

Keywords: FDI; Location choice; Core-periphery; Cities

Introduction

The choice of a location within a selected host country is one of the most fundamental decisions taken by multinational enterprises (MNEs) (Dunning, 1998, Cantwell, 2009; Buckley et al. 2007). However, despite the existence of a large empirical literature devoted to the location of foreign direct investment (FDI), most studies fail to account for socio-institutional and economic disparities associated with the hierarchical position of alternative locations within countries – the few exceptions include (Mariotti et al. 1995; Sanatgelo, 2003; He, 2005). Subnational economic hierarchies may be formally defined through administrative fiat, or informally through stark socio-economic realities. In either case, an extensive literature recognises that the composition of a national economy is the sum of a fragmented and heterogeneous system of administratively, socially and economically diverse subnational territories (Henderson et al. 2005; Head and Ries, 2006; Qiu, 2005; Dawley, 2007).

In this paper we investigate how the hierarchical position of alternative locations within an economy impacts upon the *determinants* of FDI location choice. More specifically, we analyze the location of FDI at the highly disaggregated city-prefecture level where spatial and economic nuances and their associated effects are arguably more pronounced (Chadee et al. 2003; Sridhar and Wan, 2010). Within this context, we investigate locational disparities between the *core and periphery*. Krugman (1991a) outlined the specifications for a model of regional divergence which is characterized by the emergence of core locations (that effectively act as economic nuclei) and peripheral areas (which though economically relevant, are secondary within an economic system). The core-periphery (CP) model of regional divergence is highly relevant in the context of current trends in global economic development – particularly with the unprecedented rates of urbanization across many high-growth emerging economies (Mans, 2013; World Urbanization Prospects, 2011; McKinsey Global Insights, 2011).

Rapid rates of urbanisation in high-growth economies are expected to lead to the development of urban economic peripheries that will increasingly compete with core economic centres for FDI funds (McKinsey Global Insights, 2011; Economist Intelligence Unit, 2013). Indeed, as stated by Mans (2013), “current trends in demography and economic growth patterns are expected to lead to a

new group of medium-size cities in emerging markets”, with the ultimate conclusion being that, now more than ever, “*the periphery matters*” (p.7).

Despite these emergent trends, it is widely recognised that comparative location advantages are often significantly weaker in peripheral locations (Mariotti and Piscitello, 1995; Henderson et al. 2005). Theories of the multinational enterprise (Buckley and Casson, 1976; Dunning, 1988, 2008) suggest, however, that FDI will gravitate towards those geographic territories that possess the strongest location advantages – where MNEs can maximise the rent creation of their foreign affiliates - such as well-developed markets, resource munificence and efficient institutional and political structures (Ansar, 2010; Graf and Mudambi, 2005). Emergent FDI trends, therefore, raise a theoretical conflict within FDI location theory; if we assume that peripheral economic territories have weaker advantages, are there mitigating conditions that they must exhibit in order to attract FDI? If so, what location attributes increase the attractiveness of peripheral cities to foreign investors relative to core economic centres?

Existing location theory suggests three sets of factors that are most relevant within a firm’s subnational context (Meyer and Nguyen, 2005; Tan and Meyer, 2011). These location specific attributes are comparative location advantages (*demand conditions, labour cost and human capital*) (Dunning, 1988; Graf and Mudambi, 2005), agglomeration economies (*foreign and domestic*) (Krugman, 1991b; Mariotti et al. 2010; Belderbos et al. 2011) and institutional conditions (*legal systems, government effectiveness and administrative efficiencies*) (North, 1990; Scott, 1995; Meyer and Nguyen, 2005). Although, the effects of agglomeration economies and comparative location advantages have been extensively explored in the economic geography literature, there is much less known about how subnational institutional conditions effect the location of FDI (Beugelsdijk et al. 2010; Beugelsdijk and Mudambi, 2013) – especially in ‘emerging’ and developing country contexts (Meyer and Nguyen, 2005; Du et al. 2008; Tan and Meyer, 2011). Institutions broadly refer to the ‘rules of the game’, in other words, to the social and governmental mechanisms which confer meaning and stability within a given context (North, 1991; Scott, 1995). In this paper, we aim to provide a more holistic perspective on subnational determinants of FDI by including measures of each location’s institutional environment.

This paper models the determinants of FDI location choice across a set of 120 Chinese cities. China is an excellent example of a highly decentralised economy with a formalised hierarchical structure. In this paper, we focus on three levels of administrative hierarchy in China. Central government controlled municipalities¹ (*core*) are at the top of the subnational administrative hierarchy of China. These cities are under the direct control of the Chinese Central Government. These are followed by decentralised provincial capitals (*core*) and, lastly, non-capital prefecture-level cities (*periphery*). Our findings suggest that, interestingly, the effects of market development factors are equally strong in both core and peripheral locations. However, our findings also indicate special conditions that increase the propensity of FDI to locate in peripheral cities. More specifically, FDI favours those peripheral cities with a high presence of foreign investors, a low presence of domestic investors and strong government and administrative conditions. This is in contrast to core-conurbations where, in addition to demand conditions, human capital and geography play a much more salient role in their attractiveness to FDI.

Literature Review

Core-periphery theory

CP theory suggests that core areas of an economy accumulate location advantages overtime – especially in relation to “infrastructures, political and administrative institutions, business services [and] intangible assets relevant to technology and management” (Mariotti and Piscitello, 1995, p.818) – and that such subnational advantages become more diffuse as distance from core-locations increases (Henderson et al. 2005). The theoretical inference is that core economic centers have stronger comparative location advantages relative to peripheries and, are thus more conducive to facilitating economic efficiency and business growth – which in turn has a positive influence on inward FDI (Zhao et al. 2005; Scott, 2009). The existence of these disparities is widely recognized; as stated by Henderson et al. (2005), “there is a large and increasingly sophisticated empirical literature on the magnitude of the productivity advantage gained by being located in the [country’s] center of activity” (p.90).

¹ Beijing, Shanghai, Tianjin and Chongqing

Arguably, the key differentiating factor which distinguishes the core from the periphery is relative informational advantages. For example, Storper and Venables (2004) argue that the economic force of cities is rooted in their conduciveness to facilitating face-to-face contact between relevant economic and institutional actors. In other words, exchanges of information, knowledge and the development of social capital are a key element of the attractiveness of cities. There is evidence to suggest that core economic centers are more conducive to higher information flows and knowledge exchanges than peripheral cities. Firstly, as stated by Mariotti and Piscitello (1995), “locations within the country-core facilitate the processing and transmission of information because of the better international integration of the local communication systems and the services involved” (p.819). Indeed, Bel and Fageda (2008), find that the higher availability of intercontinental flights and other infrastructures in major cities increased opportunities for tacit information exchanges, which in turn was found to have a significant influence on the location of firms’ headquarters. Secondly, He (2002) suggests that in core economic centers both public and privately held information relating to suppliers, customers, opportunities, threats and the general business environment is more widely available and accessible. This is because there is less information asymmetry between foreign firms and institutional structures in these locations. Extant theory, therefore, suggests that stronger comparative advantages and, in particular, the superior quality of information channels in core economic centers makes them more attractive to foreign businesses when selecting locations within a host country (He, 2005; Zhao et al. 2005).

The factors relevant to the locational determinants of FDI have been extensively catalogued in prior research (Viladecans-Marshal, 2004; Kronenberg, 2012; Basile et al. 2009). However, the extent to which existing theoretical frameworks are appropriate for understanding the location of FDI in large, subnationally heterogeneous economies is not yet apparent (Meyer and Nguyen, 2005; Li and Park, 2006). We now consider why the determinants of location choice may differ across core-conurbations and core-cities, with reference to location and MNE theory.

Agglomeration economies

Agglomeration describes the process whereby firms co-locate in order to benefit from knowledge and resource externalities which arise in concentrated clusters of economic activity (Marshall, 1919; Krugman, 1991b). Agglomerations have self-reinforcing effects because, as more firms co-locate, the surrounding economic environment benefits and grows, thus improving the wider economic ecosystem and attracting more firms. The spillover effects which accrue from agglomerated industrial activity can, therefore, significantly augment existing, or even create new, location advantages (Audretsch and Feldmann 1996). Agglomerations attract prospective foreign investors in two ways; (1) They offer economic benefits as there is increased availability of suppliers, customers and labour, and, (2) They offer opportunities for business improvement and innovation as they create better opportunities for knowledge and resource exchanges. There is widespread support for the prevalence of the agglomeration effect (Nachum, 2000; Mariotti and Piscitello, 1995; Du et al. 2008; Chung and Alcacer, 2006) and recent theoretical advances have distinguished between different models of agglomeration decision-making (Belderbos et al. 2011) and different types, such as country-of-origin versus same industry agglomerations (Tan and Meyer, 2011) and domestic versus foreign agglomeration (Mariotti et al. 2010). For example, Mariotti et al. (2010) suggest that, while agglomeration economies attract new FDI in general, the effect is more complex than theory generally recognizes. They find that foreign investors are less likely to co-locate with a host country's domestic firms - an effect which they attribute to the potential for knowledge leakages. In an emerging economy context where intellectual property regimes are typically weaker than in advanced economies this effect is likely to be more pronounced (Du et al. 2008; Krepp et al. 2009).

We extend this line of reasoning by suggesting that foreign firms will be less sensitive to the presence of high-concentrations of domestic firms in core conurbations. The stronger information flows in core economic centers acts to mitigate foreign investor uncertainties when entering a new host market (Mariotti and Piscitello, 1995; He, 2002; Zhao et al. 2005). Furthermore, the increased levels of human capital (Scott, 2009) and social-networking opportunities (Storper and Venables, 2004) in country cores, as well as the knowledge that the general investment and production climate is

better (Henderson et al. 2005), arguably reduces foreign investor sensitivity to the presence of domestic firms, given the strength of higher-level location advantages.

However, in contrast, theory suggests that foreign firms will experience higher levels of pre-entry uncertainty and ‘information-costs’ in peripheral locations (Zhao et al. 2005; He, 2005). Therefore, it is likely that foreign firms will perceive large concentrations of domestic firms in peripheral locations to be a threat to their knowledge and intellectual property. Furthermore, high levels of domestic firms in a peripheral location may also signal in-group localism (Meyer and Nguyen, 2005) that may lead to ‘outsidership’ (Johanson and Vahlne, 2009), and market-access barriers, which combined deter FDI (Du et al. 2008). Thus:

Hypothesis 1a: High levels of domestic firm agglomeration will have no significant effect on the propensity for FDI to locate in core conurbations, but will have a negative effect on FDI location choice in peripheral cities.

At the same time, the uncertainty and informational ambiguity associated with locating in peripheral cities is likely to increase foreign managers’ proclivity to invest in those peripheral cities which already have a large presence of other foreign firms. For example, Belderbos et al. (2011) argue that under conditions of uncertainty new entrants will model the location strategies of previous investors, either through directly mimicking the location choices of similar firms or through following a more generic group of foreign businesses - or through a hybrid of both. Furthermore, Tan and Meyer (2011) demonstrate that when MNEs perceive locations to have institutional inefficiencies, they are more likely to locate with other foreign investors, who they value as conduits of local information and set-up assistance. Therefore, we argue that a high concentration of other foreign investors in peripheral locations serves as a symbolic representation for the viability of the location in lieu of the existence of traditional location advantages. While we also expect this effect to be positive for core cities, our theoretical rationale, suggests that it will be significantly stronger in peripheral locations.

This is because although foreign agglomerations confer advantages in both cores and peripheries, the increased uncertainty associated with peripheries serves to increase the power of foreign agglomerations on new FDI. Thus:

Hypothesis 1b: *Foreign firm agglomeration will have a positive effect on FDI location choice in both core conurbations and peripheral cities, however the effect will be stronger in peripheral cities. .*

Comparative location advantages

Demand conditions

Demand conditions of locations can be captured in levels of urbanisation and economic development, or rather, their population size and levels of disposable income (Nachum, 2000). Central place theory (CPT) (Christaller, 1933) suggests that population size expands much faster in urban centres than in economic ‘hinterlands’ (Partridge et al. 2008). We would therefore expect that one of the key attractions of core-conurbations is their endowed market potential and the economies of scale associated with their larger population sizes and more advanced local economies (Head and Mayer, 2011; Klein and Krafts, 2012). However, the rapid pace of urbanisation in many emerging economies is catalysing population growth and economic development in subnational ‘hinterlands’ (McKinsey 2011). Furthermore, in the Chinese context, where historically labour has migrated to urban centres *en masse*, (particularly to the major metropolises on the more developed Eastern coast), recent figures suggest that ‘migrant-workers’ are increasingly staying in their ‘home’ cities because of the improving employment opportunities (Economist, 2012) – thus, further contributing to the urbanisation of peripheral-cities. Therefore, despite the historical market advantages of core-cities, we argue that rapid rates of urbanisation across the urban periphery are increasingly creating attractive demand conditions in these locations. Thus;

Hypothesis 2a: *Higher population size has a positive effect on the propensity for FDI to locate in both core conurbations and peripheral cities.*

Hypothesis 2b: *Higher GDP per capita has a stronger positive effect on the propensity for FDI to locate in both core conurbations and peripheral cities.*

Labour cost

Despite recognition that a primary driver of inward FDI in high-growth emerging economies is the desire to exploit low labour costs, prior literature suggests that the relationship between labour cost and FDI is more complex than is generally assumed (Cheng and Kwan, 2000; Sun et al. 2002; Gao, 2005). Some studies have found that higher labour costs exert a strong negative effect on FDI location choice, thus suggesting that foreign investors favour low-cost locations in such economies (Cheng and Kwan, 2000; Sun et al. 2002). However, other studies have found that locations with higher labour costs are more attractive to foreign investors (Gao, 2005), suggesting that shortages of highly educated and skilled labour makes foreign firms more sensitive to labour quality than to labour cost. We argue that distinguishing between FDI in the core and periphery may help to shed light on the inconsistent findings of previous research. More specifically, when firms make the decision to invest in peripheral locations, we propose that one of the key motivations for doing so is to avoid the higher costs associated with core economic centres. In essence, therefore, the lower labour costs in peripheral cities may be considered one of their key location advantages. However, conversely, firms that invest in core-conurbations will likely accept that higher labour costs are the premium they have to pay for the higher-level location advantages that these locations are endowed with – particularly in reference to their levels of market potential and human capital. Thus:

Hypothesis 3: *Labour cost has a negative effect on the propensity for FDI to locate in peripheral cities, but has a positive effect on the propensity of FDI to locate in core conurbations.*

Human capital

Human capital broadly refers to the level of education, skills and capabilities available in the local workforce (Graf and Mudambi, 2005; Scott, 2009). Despite the expectation that businesses will be attracted to locations with high levels of human capital, Noorbakhsh and Paloni (2001) state that evidence on the relationship between human capital and the location of FDI is often only anecdotal and that there is little evidence to suggest a clear direction of effect. A similar conclusion was reached by Alcacer (2006), who found that levels of human capital across states in the USA failed to attract FDI in aggregate. The effect only became positive and significant when the FDI was disaggregated by industry and technology level.

However, labour markets in high-growth emerging economies are typically much less munificent in comparison with advanced industrialized nations, such as the USA (Hoskisson et al. 2000). Therefore, we argue that accessing scarce labor resources will be a critical decision factor for MNEs when making FDI location choices in an emerging market context. We argue that the effect will be much stronger in core-conurbations. Core economic centers are likely to have higher concentrations of human capital because the highly educated and skilled tend to gravitate towards core economic centers where employment opportunities (and pay levels) are better (Scott, 2009; Storper and Scott, 2009). Furthermore, as previously suggested, one of the key drivers of FDI to peripheral cities is their lower labor cost, rather than the quality of their labor markets. Thus;

H4: Human capital has a stronger positive effect on the propensity for FDI to locate in core conurbations than in peripheral cities.

Institutions

The literature on high-growth emerging economies tends to emphasise the salience of institutions on the behaviour, decision-making and performance of foreign firms (Meyer and Nguyen, 2005; Khanna and Palepu, 2005; Peng et al. 2008; Chan et al. 2010). Institutions directly and

indirectly govern and moderate behaviour at both individual and group levels, through regulatory, normative and cognitive mechanisms that determine the parameters of acceptable and unacceptable behaviour (Scott, 1995). In this paper, we focus on regulatory aspects of institutions as they are the most transparent to foreign firms and arguably carry the greatest repercussions for their operational efficiency and survival (Ma et al. 2013; Li and Park, 2006).

Previous research has demonstrated that subnational institutional contingencies significantly affect the location choices of MNEs (Meyer and Nguyen, 2005; Du et al. 2008). From a foreign firms' perspective relevant institutional aspects of location include; the functioning of local the legal system, local government effectiveness and the efficiency of local regulatory agencies (Du et al. 2008; Tan and Meyer, 2011). However, comparisons between institutional contexts at the subnational level are lacking – especially at the city-level. This is mainly due to a lack of reliable data on institutional at a local level (Ma and Delios, 2006). Furthermore, as stated by Li and Park (2006), in emerging economies there is often a stark contrast between policy and law as writ and policy and law as enforced. To accommodate these conditions we use survey data that reflects *de facto* institutional conditions 'on the ground', rather than *de jure* institutional conditions as promoted by the state.

We assess the institutional environment of cities across three dimensions; government effectiveness, regulatory effectiveness and administrative efficiency. As previously discussed, CP theory suggests that institutions are typically more developed in core locations. Furthermore, considering the importance of institutions in high-growth emerging economy contexts (Chan et al. 2010; Ma et al. 2013), we would expect that institutional aspects of prospective locations weigh heavily on firms' choice models. Therefore, we suggest that foreign investors will be attracted to the higher institutional quality of core-conurbations. In contrast, while institutions will be important for attracting FDI to peripheries, they are unlikely to be a primary motivation for FDI in these cities. Therefore, we do not expect that institutions will have any significant effect on FDI in peripheral locations.

H5a: Administrative efficiency has a positive effect on the propensity for FDI to locate in core conurbations. However, there will be no effect on FDI location choice in peripheral cities.

H5b: Government effectiveness has a positive effect on the propensity for to locate in core conurbations. However, there will be no effect on FDI location choice in peripheral cities.

H5c: Regulatory effectiveness has a positive effect on the propensity for FDI to locate in core conurbations. However, there will be no effect on FDI location choice in peripheral cities.

Research context

This study examines FDI location choice across prefecture-cities in China. China is an interesting ‘natural laboratory’ for location choice studies for several reasons (Head and Ries, 1996). Firstly, China is an excellent example of a large, geographically diverse country which exhibits substantial levels of subnational heterogeneity across a range of socio-economic and institutional dimensions (Tse et al. 2010; Shi et al. 2012). Secondly, China is the top priority host country for future foreign investments (UNCTAD, 2012). Finally, the spatial landscape for foreign investment in China is expected to fundamentally shift in the next decade, as cities on the economic periphery become more competitive *vis-a-vis* traditional FDI host cities along the Yangtze and Pearl River Deltas on the Eastern coast (McKinsey, 2011; Economist Intelligence Unit, 2013).

This economic change is being driven by the rapid rates of China’s urbanization. Urbanization has been a key aspect of central government initiatives in China since the historical economic reforms of 1978. China’s rate of urbanization will continue to outperform many developing and developed countries until 2025, when urbanization growth rates will saturate and will become comparable with the world’s most developed countries (World Urbanization Prospects, 2011). However, not only will the Chinese economy become increasingly urbanized, but many of these rapidly urbanizing cities are expected to become top performing cities globally. For example, the

composition of 'McKinsey's Global Cities' list will increasingly include cities from emerging and developing countries. However, by 2025 it is expected that an additional 100 Chinese cities will enter this list – in addition to the major Chinese cities which are already included - in other words, these new additions will largely come from the periphery (Iammarino and McCann, 2013). However, despite these emergent FDI trends there is little known about the location advantages and disadvantages of these peripheral Chinese cities or the antecedent drivers of FDI into them (Fetscherin et al. 2011).

Methodology

Data compilation

In 2006 the World Bank (WB) published a report on government effectiveness, social-development and the investment climate across China's cities. The report surveyed 12,400 foreign and domestic businesses across 120² cities and is thus one of the few sources of comprehensive data on locational differences in China. This report has been used to supplement previous studies (Weiss, 2008; Kinda, 2010). However, as of yet (to the best of our knowledge), a detailed empirical examination of the data contained within this report has not been undertaken. The primary nature of the data makes this 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). With 120 cities surveyed the report provides significant coverage of spatial variation in China. In addition to this, we collected actually utilized FDI data³ as well as other relevant location data for 2003-2006 from China's Cities Statistical Yearbooks. To allow comparability across the different variables, the data was standardised following procedures used in previous studies⁴ (Wan and Hoskisson, 2003; Ma et al. 2013). Furthermore, dummy variables were created to capture differences between the more developed coastal cities and non-coastal cities which

² For a city to be included in the report it had to receive more than 100 responses from surveyed in the location.

³ Contracted FDI data figures in China have been accused of being over inflated.

⁴ This returns standardised values for data which is scaled on different metrics.

have resulted from years of unbalanced economic development policies (Chadee et al. 2003).

Descriptions of all variables can be seen in Table 1.

Our study makes an empirical contribution in that we examine FDI location choice across cities. Many previous subnational FDI location choice studies have analysed location choices at the level of the province (in the Chinese context) or states in the context of the USA – for example (Shaver, 1998; Chung and Alcacer, 2002; Tan and Meyer, 2011). While many of these studies have advanced theory, their empirical specifications arguably suffer from the highly aggregated unit of analysis. The key problem is that in heterogeneous countries that cover huge geographical areas, subnational provinces or states can, in many instances, be larger than many nation states. Arguably, therefore, highly aggregated units of analysis do not reflect firms' 'relevant economic area' (Porter, 1998), whereas the highly disaggregated city-level analysis allows for locational nuances and their latent effects to be discerned more keenly in empirical estimations of FDI location choice. Therefore, this study makes an empirical contribution by creating a dataset which includes more locations, at a highly disaggregated level, than many previous studies have used.

Operationalization of variables

Levels of urbanisation and economic development were examined using data for population size and GDP per capita (2003-2007) respectively. Population size has been used in previous studies as a measure of urbanisation (Sridhar and Wan, 2010). However, population alone does not capture a location's degree of *economic* attractiveness. Therefore, we also measured GDP per capita for the 120 cities to provide an indication of both economic development and the purchasing power of the local population (Enright, 2009). Levels of foreign agglomeration and domestic agglomeration were assessed using a standardised measure of total numbers of foreign and domestic firms in a city in the year 2005 (Li and Park, 2006; Mariotti et al. 2010).

The three institutional variables were all based on primary data from the WB survey (all data collected 2005-2006). We calculated the '*administrative efficiency*' construct through taking composite measurements of 'bureaucratic interaction' and 'time spent with government regulators' ($\alpha = 0.91$). A proxy for '*legal effectiveness*' was created using the aggregated scores for firms' responses

to two question on the likelihood that both their contracts and intellectual property would be respected and enforced by local courts ($\alpha = .88$). The variable for government effectiveness provides a score for each city's local government across multiple dimensions; taxes and fees as a percentage of sales, quality of the utilities infrastructure and average number of days to clear imports and exports. Finally, human capital is a composite construct based on the percentage of the city's population with university degrees and the percentage of the population with IT training ($\alpha = .83$).

---Table 1 about here---

Analytical procedures

In order to compare the location conditions between the core and periphery we used a one-way ANOVA test. Mean differences between location-specific attributes were compared to evaluate the relative attractiveness of core-conurbations and peripheral-cities. The determinants of FDI location choice in peripheral cities were tested using linear regression models (Li and Park, 2006). In all models, FDI actually utilized at the city level was taken as the dependent variable while location conditions were entered as predictor variables. In total there were 480 observations (120 cities x four years FDI data). 120 of these FDI observations were for core conurbations, while 360 were for peripheral cities. The full list of cities can be found in Appendix I.

Results

During the period of observation 54.3% of FDI inflows were received by China's core cities in our sample. Considering that only 30 of the 120 cities surveyed were core cities, this indicates that FDI into China during this time was highly skewed towards core conurbations and that the economy exhibits CP divergence. Correlation coefficients for all variables can be found in Appendix II. Before testing our hypotheses and ascertaining the extent to which the determinants of location choice differ between core-conurbations and peripheral-cities we cross compared location attributes across major municipalities (core), provincial capitals (core) and all other prefecture-level cities (peripheral). We also included a measure for *total factor productivity* (TFP) in this comparison to give a broad

indication of relative ‘performance’ differences across the core and periphery. The results of this comparison can be seen in Table 2.

---Table 2 about here---

The results from the ANOVA test indicate that location conditions significantly vary between centrally controlled municipalities, core conurbations and peripheral cities. Indeed, all location variables we examined exhibit significant variation between the three groupings. The F statistics indicate that these variations are most pronounced across human capital ($F = 86.69$), total factor productivity ($F = 55.59$), domestic agglomeration ($F = 28.81$), administrative efficiency ($F = 22.87$) and average wages ($F = 22.26$).

It is interesting to note that in all cases, the level of within group variation is higher than variation between groups. This indicates that, whilst levels of locational variation are statistically significant between the core and periphery, there are also significant levels of variation within each category. This points to the existence of substantial amounts of heterogeneity between cities in China and further justifies examining locational influence at a highly disaggregated level. Next, we directly compared all location attributes between core and peripheral locations (see Table 3).

---Table 3 about here---

Interestingly, the results are quite mixed and present a more complex picture of CP differentials than the dichotomy generally suggests. The results show that eight out of the ten location-specific attributes exhibit statistically significant variation between core conurbations and peripheral cities, these are: *population*, *average wages*, *administrative efficiency*, *legal effectiveness*, *government effectiveness*, *human capital*, *domestic agglomeration* and *total factor productivity*. Perhaps the most interesting disparities concern the results for the institutional variables. CP theory suggests that key institutions such as the workings of the government and the quality of the legal system are typically stronger in core areas of a country because they have developed efficiencies

overtime (Mariotti et al. 1995). However, the CP comparisons indicate that all institutional variables are stronger in peripheral cities indicating, therefore, that institutions are more efficient in peripheral-cities relative to core-conurbations.

The highest level of variance was found in relation to levels of human capital, which is much higher in core cities (+1.01) relative to peripheral cities, an attribute which is arguably reflected in the higher average wages in core-conurbations (+0.34). Furthermore, TFP is significantly higher in core cities (+0.80), thus, confirming the general observation that centres of economic activity carry a productivity advantage (Henderson et al. 1995).

Determinants of FDI location choice

In order to test our hypotheses and to ascertain the relationships between the location of FDI and location-specific attributes in core conurbations and peripheral cities, we ran three separate linear regression models (Table 4). The first model examined FDI location choice across all cities. The results show that FDI across all cities is positively influenced by *population size* (+8.19), *GDP per capita* (+7.00), *average wages* (+5.63), *human capital* (+5.04), *foreign agglomeration* (+2.69) and *government effectiveness* (+1.66). It is interesting to note that in this model, higher average wages has a positive and strong effect on FDI location choice. Furthermore, population size and GDP per capita exercise strong positive effects on FDI which indicates that foreign investors generally prefer those cities that have strong demand conditions. Human capital also has a strong effect on FDI location choice. This confirms that, in general, foreign investors are attracted to those Chinese cities which are endowed with highly education and skilled labour resources. Interestingly, of the three institutional factors that we included in the model, only *government effectiveness* (+1.66) emerged as having a significant influence on FDI location choice. In general, therefore, these findings conform to theoretical expectations of MNEs location choices. However, the picture becomes significantly more nuanced when we investigate the determinants of FDI between core conurbations and peripheral cities.

---Table 4 about here---

When the locational determinants of FDI are directly compared across core cities and peripheral cities we find significant differences in terms of FDI's responsiveness' to location-specific attributes. The results suggest interesting relationships between FDI and agglomeration economies. As previously predicted, domestic agglomeration has no significant effect on FDI in core conurbations (-0.9). However, the effect is negative and statistically significant for peripheral-cities (-1.79), thus confirming hypothesis 1a. Furthermore, foreign agglomerations exercise a positive effect on FDI in both core-conurbations (1.88) and peripheral-cities (1.75). However, in contrast to our prediction; the effect is not significantly stronger for peripheral cities.

FDI in both core-conurbations and peripheral cities is positively associated with population size and GDP per capita. In other words, higher levels of level of urbanisation and economic development attract FDI. Furthermore, in line with our reasoning and confirming H2a and H2b, the effect size for both population and GDP per capita is very similar for FDI in core cities (+7.38, +2.57) and peripheral cities (+7.12, +2.41).

Higher average wage levels attracts FDI to core cities, however, while average wages exercises a negative effect on FDI in peripheral cities, the effect is not significant (-1.5). Thus we can only tentatively accept hypothesis 3. Human capital has a strong and positive effect on FDI in core locations (3.274) but appears to have no effect on FDI location choice in peripheral cities (1.428), thus we accept hypotheses 4.

In terms of institutional efficiencies, the results suggest that there is no relationship between institutional efficiencies and FDI in core-conurbations. As stated previously this seems to be counter-intuitive as CP theory is based on the logic that core locations have stronger advantages, particularly in respect of institutional development and the related efficiencies these confer (Maritotti et al. 1995). In contrast, both local government and legal effectiveness are found to act as key determinants of FDI location choice across peripheral cities. Due to the surprising and counter-intuitive nature of these results, hypothesis 5a, b, and c which predicted that institutional efficiencies would attract FDI to core-conurbations, are all rejected.

A further interesting finding and one that was not directly hypothesised concerns regional effects across the core and periphery. Results indicate that foreign investors prefer core conurbations

that are geographically located on China's more developed Eastern coast. However, there is no significant geographical preference for FDI in peripheral locations.

Discussion

In much of the recent literature on emerging economies, there has been an increased focus on the effects, influence and interplay of variations across location advantages, agglomerations and institutions on the strategy and behaviour of MNEs (Chan et al. 2010; Shi et al. 2012; Ma et al. 2013). While variations across these location attributes are important, they do not fully capture the geographic heterogeneity which exists within economic systems, especially when considering locational influence within decentralised and heterogeneous economies. These effects are further compounded when locational effects are examined at a highly disaggregated level.

Our data reveal multifaceted relationships between location attributes, FDI location choices and CP relationships. However, our data also reveals that the CP dichotomy is more complex than theory generally assumes. Despite the fact that the overall 'performance' (*TFP*) of core conurbations in China is higher than peripheral cities, the quality and effectiveness of governmental, legal and regulatory institutions is stronger in peripheral cities. A possible explanation for these seemingly conflicting results is that the administrative burden of peripheral cities is lighter than in core conurbations, where there is likely to be much more economic activity to regulate, administrate and monitor. Furthermore, it is also possible that peripheral cities, in an effort to attract foreign investment away from the more attractive core conurbations have focused on improving their institutional fabric in an effort to confer an '*institutional advantage*' to firms that locate their investments away from core locations. This finding is particularly relevant in light of recent studies which have suggested that variations across institutions in emerging economies influences, not only FDI location choice (Meyer and Nguyen, 2005; Tan and Meyer, 2010), but also the performance levels of foreign affiliates (Chan et al. 2010; Ma et al. 2013). However, most importantly, this finding highlights the need for a re-examination of CP theory as a model of classifying subnational economies hierarchies. A classification approach which attempts to model spatial complementarities between groups of cities may be more valuable to foreign investors in heterogeneous high-growth economies. Indeed, an

interesting extension of this study would be to examine how firms spatially disaggregate their value chains across cities endowed with different sets of advantages within a single country.

As noted in the results section, MNEs seems to prefer investing in core conurbations on the East coast of China, but have no significant geographical preference for peripheral cities. This may further point to the existence of unobserved '*informational advantages*', which may be stronger in the more developed Eastern core conurbations, thus having a stronger gravitational pull on foreign investors. These unobserved informational advantages may mitigate the less efficient institutional structures in core conurbations in China, and perhaps adds further support to the argument of Storper and Venables (2005), which suggests that the true economic power of cities is nested in their conduciveness to facilitating face-to-face contact between key economic and non-economic actors.

In general, the results show that the determinants of FDI location choice significantly differ between core and peripheral cities and that the periphery is indeed different. We find that FDI is most attracted to peripheral cities with strong demand conditions, high levels of foreign firms, low levels of domestic firms from the host country and effective legal and governmental institutions. Interestingly, the lower cost of labour in peripheral cities does not seem to significantly attract FDI. This is interesting considering theory suggests that a key reason that foreign firms invest in emerging economies is to exploit lower labour costs. It would seem that these results confirm those of Sun et al. (2002) and Gao (2005), who also find that labour cost is not a critical matter for importance for FDI location in China. We suggest that this is because under developed and sparse human capital markets create a general need for firms to focus on labour quality, rather than on labour cost, when selecting subnational locations in country's such as China.

The aversion of FDI to domestic firm agglomerations in peripheral cities is interesting in light of the institutional advantages with which these cities seem to be endowed. We previously suggested that foreign firms may perceive peripheral cities as having weaker institutional structures, thus increasing their aversion to large concentrations of domestic firms. However, having found this not to be the case, our alternative explanation, which suggested that fears of localism and outsidership may create this aversion is perhaps more relevant (Johanson and Vahlne, 2009). Indeed, this further

resonates with the informational advantages (and thus disparities) argument which we have promoted in this paper.

Conclusion

In this paper, we set out to examine the influence of urban hierarchies on the determinants of FDI location choice, with a particular focus on identifying the conditions under which FDI is attracted to a country's peripheral locations. Our findings demonstrate that the determinants of FDI in peripheral cities are indeed different to those that determine location choice in core conurbations. However, contrary to our expectations a key motivation for locating in peripheral cities, is not their lower labour costs but, rather, their market potential. Interestingly, however, we also identified special conditions that positively influence FDI in peripheral-cities – more specifically, peripheral cities that have lower concentrations of domestic firms and that have stronger institutional advantages will be more conducive to attracting FDI. Our findings also challenge some of the underlying assumptions of 'core-periphery' theory, particularly in reference to institutional advantages. However, the theory as a whole remains supported (i.e. there is a productivity advantage in core-conurbations). We suggest that future research should to develop new models of urban hierarchies which take into consideration complementarities between different sets of location attribute configurations between geographically proximate locations. This may prove useful to MNEs when fine-slicing their value-chains to the most optimal locations within countries.

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Table 1: location attributes⁵

<i>Variable</i>	<i>Source</i>	<i>Data type</i>	<i>Description</i>
FDI actually utilized	China's city statistical yearbooks	Panel (2003-2007)	FDI actually received by the city
Population	China's city statistical yearbooks	Panel (2003-2007)	Population size
Labour costs	China's city statistical yearbooks	Panel (2003-2007)	Average salary
Disposable income	China's city statistical yearbooks	Panel (2007)	GDP per capita
Domestic agglomeration	World Bank 2006	Cross-sectional	City's % of domestic (non-state) ownership
Foreign agglomeration	World Bank 2006	Cross-sectional	City's % of foreign ownership
Administrative efficiency	World Bank 2006	Construct	Time spent with four different government regulators (tax administration, public security, environmental protection and labour and social security) Average annual number of days of bureaucratic interactions
Legal effectiveness	World Bank 2006	Construct	Likelihood that firms' contracts would be respected in industrial disputes
Government effectiveness	World Bank 2006	Construct	Relationship between foreign firm productivity and composite measure of government effectiveness.
Human capital	World Bank 2006	Construct	Share of workers with formal IT training and the share of employees regularly using computers City's % of population with university level education
Total factor Productivity	World Bank 2006	Construct	Firms' productivity after capital and labour are netted out of the equation (aggregated at city level)

⁵ The World Bank data is cross-sectional, whereas the Chinese statistical yearbook data is continuous. In order to minimize the effects of differences between the data formats, the FDI data only covers the four year period between 2003-2006. The WB data was collected between 2004-2006 and therefore the data covers a comparable temporal range (Ma et al. 2013).

Table 2 – Variations between groups of cities

Factor	Variation between city hierarchies					
	Variation (sum of squares)					
	Between groups	df	Within groups	df	Mean square	F
Population	81.692	2	422.872	489		40.813.4***
GDP per capita	6.191	2	267.843	489		3.0955.06**
Average wage	23.442	2	147.255	489		11.72122.769***
Administrative efficiency	30.452	2	456.438	489		15.22622.873***
Confidence in courts	21.997	2	480.354	489		10.99813.172***
Government effectiveness	19.341	2	475.201	489		9.67111.591***
Human capital	104.013	2	170.136	489		52.00786.692***
Domestic agglomeration	37.791	2	469.342	489		18.89528.819***
Foreign agglomeration	7.522	2	514.72	489		3.7616.098***
TFP	81.692	2	422.872	489		40.84655.598***

*** P = < 0.001, ** p = < 0.05, * p = < 0.10

Table 3 – comparison of location factors in core and peripheral cities

Location attribute	Core cities	Peripheral cities	Difference
Population	0.3852	-0.1389	0.524***
GDP per capita	-0.2902	-0.2009	-0.089
Average wage	0.0126	-0.387	0.399***
Administrative efficiency	-0.4097	0.1371	-0.546***
Confidence in courts	-0.3511	0.1298	-0.480***
Government effectiveness	-0.3135	0.1405	-0.454***
Human capital	0.7552	-0.2563	1.011***
Domestic agglomeration	-0.4638	0.1248	-0.588***
Foreign agglomeration	0.0453	0.0215	0.023
TFP	0.6276	-0.1714	0.799***

***P<0.001

Table 4 – Determinants of FDI location choice

Location factors	Dependent variable: FDI actually utilized (2003-2006)		
	All cities	Core-conurbations	Peripheral-cities
<i>Comparative location advantages</i>			
Population	8.19***	7.384***	7.121***
Average wage	5.63***	3.02***	-1.5
GDP per capita	7.00***	2.569**	2.412***
<i>Agglomeration</i>			
Domestic	0.326	-0.9	-1.789*
Foreign	2.697**	1.885*	1.754*
<i>Institutions</i>			
Administrative efficiency	0.217	0.01	1.517
Confidence in courts	0.796	-1.594	1.905**
Government effectiveness	1.664*	-1.028	3.751***
<i>Labour quality</i>			
Human capital	5.04***	3.274***	1.428
<i>Regional dummies</i>			
Coastal	2.11**	2.569**	0.497
Non-coastal	2.25**	1.555	0.636
Constant	-0.229	-1.789*	-1.789*
R2	0.653	0.665	0.613
F Value	74.3***	44.7***	107.599***
N (observations)	480	120	360

*** P = < 0.001, ** p = < 0.05, * p = < 0.10

Appendix 1: List of cities

<i>Core cities (30)</i>	<i>Peripheral cities (90)</i>		
Beijing	Anqing	Jinhua	Tianshui
Changchun	Anshan	Jining	Weifang
Changsha	Baoding	Jinzhou	Weihai
Chengdu	Baoji	Jiujiang	Wenzhou
Chongqing	Baotou	Langfang	Wuhu
Fuzhou	Benxi	Leshan	Wuxi
Guangzhou	Cangzhou	Lianyungang	Wuzhong
Guiyang	Changde	Linyi	Xiamen
Haerbing	Changzhou	Liuzhou	Xiangfan
Haikou	Chenzhou	Luoyang	Xianyang
Hangzhou	Chuzhou	Maoming	Xiaogan
Hefei	Dalian	Mianyang	Xinxiang
Huhehaote	Daqing	Nantong	Xuchang
Jinan	Datong	Nanyang	Xuzhou
Kunming	Deyang	Ningbo	Yancheng
Lanzhou	Dongguan	Qingdao	Yangzhou
Nanchang	Foshan	Qinhuangdao	Yantai
Nanjing	Fushun	Qiqihaer	Yibin
Nanning	Ganzhou	Quanzhou	Yichang
Shanghai	Guilin	Qujing	Yichun
Shenyang	Handan	Sanming	Yueyang
Shijiazhuang	Hengyang	Shangqiu	Yuncheng
Taiyuan	Huanggang	Shangrao	Yuxi
Tianjin	Huizhou	Shantou	Zhangjiakou
Wuhan	Huzhou	Shaoxing	Zhangzhou
Wulumuqi	Jiangmen	Shenzhen	Zhoukou
Xian	Jiaxing	Suzhou	Zhuhai
Xining	Jilin	Taian	Zhuzhou
Yinchuan	Jingmen	Taizhou	Zibo
Zhengzhou	Jingzhou	Tangshan	Zunyi

Appendix 2: Correlation coefficients for all variables

	Mean	Std. Deviation	1	2	3	4	5	6	7	8	9	10	11	12
1 FDI	-0.0445	0.84454												
2 Population	-0.0068	0.9876	0.214***											
3 GDP per capita	-0.2234	0.74707	0.65***	-0.139**										
4 Average wage	-0.2863	0.58962	0.641***	-0.01	0.727***									
5 Administrative efficiency	-0.0007	0.99581	-0.092**	-0.114**	-0.088**	-0.103**								
6 Confidence in courts	0.0086	1.01149	0.103**	0.056	0.013	-0.111**	0.364***							
7 Government effectiveness	0.0261	1.0036	0.257***	0.052	0.223***	0.121**	0.257***	0.591***						
8 Human capital	-0.0014	0.74723	0.434***	0.208***	0.212***	0.378***	-0.196***	-0.03	-0.08**					
9 Domestic agglomeration	-0.0236	1.0163	-0.505***	0.031	-0.41***	-0.349***	0.187***	-0.073	-0.092**	-0.401***				
10 Foreign agglomeration TFP	0.0275	1.03132	0.542***	-0.089**	0.514***	0.381***	0.06*	0.248***	0.392***	0.187***	-0.87***			
11	0.030	1.014	0.685***	0.202***	0.576***	0.611***	-0.099**	0.244***	0.545***	0.546***	-0.573***	0.641***		
12 Coastal	0.4797	0.5001	0.425***	-0.036	0.502***	0.422***	0.049	0.169***	0.336***	0.04	-0.308***	0.479***	0.528***	
13 Inland	0.3659	0.48216	-0.306***	-0.014	-0.359***	-0.407***	0.034	-0.071*	-0.232***	-0.062*	0.253***	-0.353***	-0.441***	-0.742***

*** P = < 0.001, ** p = < 0.05, * p = < 0.10