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Abstract: This article analyzes the location determinants of foreign direct investment in services, both theoretically and empirically. It hypothesizes four sets of factors as the location determinants of FDI in services based on the standard theory of FDI. The generalized investment theory on China's foreign direct investment is tested empirically utilizing panel data for 17 provinces and cities from 2000 to 2010. The estimation results provide considerable support for the importance of these factors in determining flows of foreign direct investment within a country. It compares the determinants of inward FDI in services to those of the manufacturing within one framework, and concludes that FDI in services tends to be motivated by market-seeking and client-following purposes, and no particularly new theory for explaining service FDI is required, only an adaptation will do.

Keywords: Foreign Direct Investment; Services; Location; Determinants

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Location Determinants of Foreign Direct Investment in Services

Evidence from Chinese Provincial-level Data

1. INTRODUCTION

The structure of Foreign Direct Investment (FDI) has shifted towards services. In the early 1970s, this sector accounted for only one-quarter of the world FDI stock (UNCTAD, 2004).¹ It accounted for 62% of estimated world inward FDI stock in 2006, up from 49% in 1990 (UNCTAD, 2008).² This change may have altered the importance of location factors for investment decisions.

Nowadays, the decline in FDI levels worldwide were partly driven by the impact of financial and economic crisis, the opening up of the service sector in more countries and the expansion of FDI in the service industries— all point to the need to elicit the determinants of cross border investments which is vital in keeping effectiveness of the FDI policies in the host country. In particular, countries need to reassess if the determinants that were instrumental in attracting manufacturing FDI would be as effective in attracting FDI in services. Enhancing location-specific factors which favor services FDI increases the probability of a country being favored over its competitors in the FDI tournament, and thus attract more capital inflow.

While a considerable body of literature on location determinants of FDI is available, most of them tend to focus on manufacturing FDI and relatively little formal work has been done examining FDI in services. Agarwal (1980), Lizondo (1990) and Chakrabarti (2001), in reviewing the determinants of FDI over the last 40 years, have either ignored the role of services FDI or considered these as part of manufacturing FDI. Previous literature on services FDI tend to be country-specific (Ramasamy and Yeung, 2010) or sector-specific. For instance, banking (Moshirian, 2001; Buch and Lipponer, 2004), insurance (Moshirian, 1997), advertising (Terpstra and Yu, 1988), legal services (Cullen-Mandikos and MacPherson, 2002), finance, business, transportation and trade industry (Kolstad and Villanger, 2008).

China has been the largest recipient of FDI among the developing countries since 1992, and has been the second largest recipient in the world (only after the US) since 1993 (UNCTADstat).³ Operating successfully in this market requires understanding its uniqueness. China is a vast country with substantial variation across regions, which makes China an ideal platform to study the determinants of FDI location choices. FDI is unevenly distributed across provinces and industries within China. Most FDI in China locates on the eastern coastal area, and is characterizes by its concentration on secondary industries (see Table 1). By the end of 2010, the share of contracted FDI in secondary industry amounted to 62.08 percent, while the contracted FDI in tertiary industry only

¹ UNCTAD (2004), *World Investment Report 2004: the Shift towards Services* (New York and Geneva: United Nation), 97.

² UNCTAD (2008). *World Investment Report 2008: Transnational Corporations, and the Infrastructure Challenge*, (New York and Geneva: United Nation), 9.

³ http://unctadstat.unctad.org/wds/ReportFolders/reportFolders.aspx?sCS_ChosenLang=en.

occupied 35.87 percent, lagging far behind the world average level that services accounted for about two-third of total FDI stock in the 2000s.⁴

The development of the services sector is constrained by the country's development strategy, which has focused on manufactured exports, and by the substantial barriers to trade and investment in service sectors. The strategy to open up the local economy to foreign investors has proceeded in stages, targeting light manufacturing first, followed by more technology-intensive industries and, more gradually, the service sectors. Since China's entry into the WTO, China has gradually lifted the limits on foreign investment in service sectors in aspects such as geographic regions, equity and business scope. Services sectors were more open to the outside world, resulting in attraction of more foreign investment and further expansion of commercial presence in China. The share of FDI in services has grown substantially over the past few years. In 2010, the share of FDI inflow in services accounted for more than 50 percent (see Table 1). FDI in services, as in manufacturing, has promoted the structural transformation and upgrade, enhanced the efficiency, productivity and supply capacity of China's service industry, contributed to an acceleration of the pace of industrialization. It can be expected that further deregulation of service sector will motivate more cross border investment.

TABLE 1
FDI Inflow by Industry (percent)

	<i>Primary Industry</i>	<i>Secondary Industry</i>	<i>Tertiary Industry</i>
1979~1990	2.9	60.3	36.8
1990	1.8	84.4	13.8
1991	1.8	81.5	16.7
1992	1.2	60.1	38.7
1993	1.1	49.4	49.4
1994	1.2	56.0	42.7
1995	1.9	69.6	28.5
1996	1.6	71.6	26.8
1997	2.1	66.7	31.2
1998	2.3	68.0	29.7
1999	3.6	68.9	27.5
2000	2.38	73.72	23.90
2001	2.55	77.24	20.21
2002	1.95	73.48	24.57
2003	1.87	74.22	23.91
2004	1.84	74.98	23.18
2005	0.99	61.72	37.28
2006	0.86	61.19	37.95
2007	1.11	51.32	47.58
2008	1.10	49.17	49.73
2009	1.52	53.24	45.25
2010	1.67	46.94	51.39

Source: 1979-2001 data are contracted value which comes from various issues of the China Statistical Yearbook. 2002-2010 data are actually utilized value which comes from Investment Statistics of Ministry of Commerce of the People's Republic of China, Invest in China, http://www.fdi.gov.cn/pub/FDI_EN/Statistics/AnnualStatisticsData/default.jsp.

There is extensive empirical evidence supporting that between-country differences may be

⁴ Investment Statistics of Ministry of Commerce of the People's Republic of China, http://www.fdi.gov.cn/pub/FDI/wztj/lntjsj/wstzsj/2010nzwztj/t20120130_140677.htm. Web. April 18, 2013

important determinants of where MNEs decide to locate their overseas activities. There is also good reason to believe that regional distinctions within countries may also influence the location of FDI (e.g., Taylor, 1993 and Mody and Srinivasan, 1998). In general, an MNE should be attracted to regions that offer the economic and institutional facilities necessary for the efficient utilization of the firm's core skills (Dunning, 1998).

The spatial distribution of MNEs in China is highly uneven. China has diverse economic and physical landscapes. The characteristics of its investment environment vary substantially across different regions. Neither the level of economic development nor the economic reform process is distributed uniformly throughout the country. Thus, different regions possess unique characteristics that provide distinctive sources of competitive advantage for MNEs' FDI activities. A sub-national level study allows for a more granular analysis of regional differences, and therefore may offer more accurate evidence for the sensitivity of FDI decisions to location determinants. Although rich amount of research on FDI in China has emerged over the last two decades, the regional distribution of FDI in services and its determinants have not yet been well investigated.

Our purpose is to investigate whether and to what extent the existing theories, when taking into account the nature and characteristics of services, can explain the behavior of service FDI as a first step in expanding and refining these theories to accommodate service firms. This study will also shed light on the debate over the need for developing a separate theory to explain service MNE location choice.

The motivation of this paper is to gain new empirical insights into the location determinants of FDI on an industry basis from the perspective of regional characteristics and provide explanations for the spatial distribution of services FDI in China. The hypotheses regarding the location determinants of FDI in services are developed based on the studies of FDI in manufacturing. These hypotheses are tested through panel data models using data that covers 17 provinces, centrally administered municipalities and autonomous regions⁵ in China during the period of 2000-2010. The main contributions of this study will be that it considers location issues at the regional level within China and compares the relative importance of services FDI location determinants vis-à-vis the traditional determinants that attract manufacturing FDI. Furthermore, we contrast results based on different regional division. By doing so, we are able to see if various determinants have different attributes in attracting FDI in different regions. The findings from this study may also shed light on what the Chinese government should do to attract more FDI flows into service sectors.

The paper is organized as follows. Section 2 provides some stylized facts on FDI in China's service industry. Section 3 reviews previous literatures on FDI and provides theoretical approach for the location determinants of services FDI. Section 4 outlines the main hypotheses to be tested in this study and conducts econometric analyses, with the estimation results reported in Section 5. Section 6

⁵ 17 provinces, centrally administered municipalities and autonomous regions are Beijing, Tianjin, Hebei, Shandong, Shanghai, Jiangsu, Guangdong, Liaoning, Guangxi, Heilongjiang, Shaanxi, Inner Mongolia, Anhui, Jiangxi, Henan, Chongqing, Yunnan. The sample is relatively small because of data availability restriction.

concludes the paper.

2. FOREIGN DIRECT INVESTMENT IN CHINA'S SERVICE INDUSTRY: SOME STYLIZED FACTS

Compared with the world growth trend of services FDI and its changing mix, the stock of China's FDI in services is comparatively small. Up to 2010, the industrial distribution of accumulated foreign direct invested projects has marked difference, with primary industry accounting for 2.85%, secondary industry for 69.19% and tertiary industry for 27.96%; the share of accumulated contracted FDI is 2.05% for primary industry, 62.08% for secondary industry and 35.87% for tertiary industry.⁶

Within the service sector, the distribution of foreign capital is highly uneven, heavily concentrated in real estate.

During 1980s and 1990s, the major proportion of FDI was drawn for the manufacturing field; foreign investment in services was relatively low. The proportions of distributive trade sector, scientific research and technical services, education, culture and arts, and health care, sports and social welfare were very small; the financial sector in China absorbed less than 1 percent of FDI, while FDI in real estate and public facilities services accounted for very large share. In 9 years listed in Table 2, there were 7 years in which real estate and public facilities services maintained at double-digit share, and even reached 39 percent of total FDI in 1993.

TABLE 2
FDI (contract value) by Sector in the 1980s and 1990s (percent)

Sectors	Contracted Value of Foreign Capital				Contracted Value of Foreign Direct Investment				
	1983	1985	1987	1989	1991	1993	1995	1997	1999
Total	100	100	100	100	100	100	100	100	100
Primary Industry									
Farming, Forestry, Animal Husbandry and Fishery	3.11	4.18	2.11	1.36	1.84	1.07	1.90	2.09	3.57
Secondary Industry									
Manufacturing	64.7	34.3	41.26	61.85	80.34	45.92	67.54	61.64	66.20
Construction	1.73	2.10	0.45	0.58	1.12	3.48	2.10	6.12	2.66
Total	66.43	36.40	41.71	62.44	81.46	49.40	69.64	67.75	68.86
Tertiary Industry									
Transport, Storage, Post and Telecommunication Services	8.21	8.22	6.12	3.51	0.79	1.33	1.86	5.14	2.70
Business Activities and Catering Services	1.16	5.34	0.24	0.60	1.45	4.13	3.75	3.61	2.92
Real Estate and Public Facilities Services	2.77	23.01	13.32	7.22	12.56	39.28	19.54	17.43	17.45
Health Care, Sports and Social Welfare	-	0.53	0.82	0.55	0.53	0.43	1.05	0.28	0.16
Education, Culture and Arts	-	1.53	0.12	0.06	0.47	0.41	0.38	0.14	0.15
Scientific Research and Technical Services	18.33	0.32	0.006	0.03	0.15	0.53	0.30	0.27	0.32
Other Services	-	20.49	35.55	24.23	0.74	3.42	1.71	3.25	3.61
Total	30.47	59.45	56.17	36.2	16.69	49.53	28.59	30.16	27.57

⁶ Investment Statistics of Ministry of Commerce of the People's Republic of China, http://www.fdi.gov.cn/pub/FDI/wztj/lntjsj/wstzsj/2010nzwzjt/t20120130_140677.htm. Web. April 18, 2013

Source: China Statistical Information Consultant Services Center

TABLE 3
Actually Utilized FDI in Tertiary Industry 1997-2010 (percent)

Year	1997	1998	1999	2000	2001	2002	2003
Sectors							
Tertiary Industry	100	100	100	100	100	100	100
Geological Prospecting and Water Conservancy	0.12	-	-	0.05	0.09	0.06	0.13
Transportation, Storage, Postal and Telecommunication Services	13.72	12.18	13.11	9.67	8.13	7.46	6.51
Wholesale, Retailing, Hotel and Restaurant	11.62	8.74	8.16	8.20	10.45	7.61	8.38
Finance and Insurance	-	-	-	0.73	0.32	0.87	1.74
Real Estate	42.86	47.44	47.24	44.51	45.94	46.23	39.29
Social Services	16.49	21.93	21.56	20.89	23.21	24.03	23.72
Health Care, Sports and Social Welfare	1.62	0.72	1.25	1.01	1.06	1.05	0.96
Education, Culture, Art, Radio, Film and Television	0.61	0.51	0.51	0.52	0.32	0.31	0.43
Scientific Research and Technical Services	0.17	-	-	0.55	1.08	1.61	1.94
Other Services	12.78	8.48	8.16	13.88	9.40	10.78	16.89
Sectors	2004	2005	2006	2007	2008	2009	2010
Tertiary Industry	100	100	100	100	100	100	100
Transport, Storage and Post	9.06	12.15	9.97	6.48	7.51	6.56	4.49
Information Transmission, Computer Services and Software	6.52	6.80	5.38	4.79	7.31	5.83	4.98
Wholesale and Retail Trades	5.26	6.96	8.99	8.64	11.68	13.99	13.20
Hotels and Catering Services	5.98	3.76	4.16	3.36	2.47	2.19	1.87
Financial Intermediation	1.80	1.47	1.47	0.83	1.51	1.18	2.25
Real Estate	42.34	36.33	41.32	55.16	48.99	43.59	48.01
Leasing and Business Services	20.10	25.11	21.20	12.97	13.33	15.78	14.27
Scientific Research, Technical Service and Geologic Prospecting	2.09	2.28	2.53	2.96	3.97	4.34	3.94
Management of Water Conservancy, Environment and Public Facilities	1.63	0.93	0.98	0.88	0.90	1.44	1.82
Services to Households and Other Services	1.12	1.74	2.53	2.33	1.50	4.12	4.11
Education	0.27	0.12	0.15	0.10	0.10	0.04	0.02
Health, Social Security and Social Welfare	0.62	0.26	0.08	0.04	0.05	0.11	0.18
Culture, Sports and Entertainment	3.19	2.05	1.21	1.46	0.68	0.82	0.87
Public Management and Social Organizations	0.01	0.02	0.04	0.00	-	0.00	-

Source: Calculated from China Statistical Yearbook.

Between 1997 and 2010, the tendency of FDI flowing to real estate was not changed, the share accounted for over 40 percent of actually utilized FDI in tertiary industry on average. See Table 3.

Up to 2010, services FDI are concentrated in real estate, accounting for 43% of total FDI stock in services, leasing and business services account for 14%, wholesale and retail trades account for 11%, financial intermediation accounts for 7.63%, and transport, storage and post account for 7%. FDI in information transmission, computer services and software and scientific research, technical

service and geologic prospecting is limited; the shares of these industries are much smaller than the average level of the world, even smaller than those of the developing countries. The proportions of management of water conservancy, environment and public facilities, education, culture, sports and entertainment, health, social security and social welfare are at very low levels (see Table 4).

TABLE 4
FDI Stock in Tertiary Industry (contracted value) by the end of 2010 (Billion USD, percent)

<i>Sector</i>	<i>Contracted Value</i>	<i>Percentage</i>
Tertiary Industry	861.81	100
Transport, Storage and Post	62.26	7.22
Information Transmission, Computer Services and Software	34.18	3.97
Wholesale and Retail Trades	91.91	10.66
Hotels and Catering Services	16.95	1.97
Financial Intermediation	65.74	7.63
Real Estate	370.20	42.96
Leasing and Business Services	119.21	13.83
Scientific Research, Technical Service and Geologic Prospecting	40.14	4.66
Management of Water Conservancy, Environment and Public Facilities	11.89	1.38
Services to Households and Other Services	31.24	3.62
Education	3.29	0.38
Health, Social Security and Social Welfare	6.44	0.75
Culture, Sports and Entertainment	8.01	0.93
Public Management and Social Organizations	0.35	0.04

Source: Calculated from the Statistic Database of Ministry of Commerce of the People's Republic of China. http://www.fdi.gov.cn/pub/FDI/wztj/lntjsj/wstzsj/2008nzgwztj/t20100427_121013.htm. Web. April 18, 2013

And, services FDI in China are very unevenly distributed geographically. Foreign capital has strong location preference, as evidenced by the high concentration in prosperous eastern coastal provinces and major metropolitan cities. The sectoral distribution in provinces or cities does not have much difference, as it is mostly concentrated in service sectors such as real estate, social services and wholesale and retail trade and catering services (Yin F., 2011).

By the end of 2010, realized FDI stock of Chinese eastern provinces (cities) accounted for 82.08 percent, while the middle and western provinces (cities) only accounted for 7.70% and 5.10% respectively.⁷ Similar to FDI in manufacturing, FDI in services has been highly concentrated in the prosperous eastern coastal provinces and major metropolitan cities, while the share of mid-west is very small.

3. LITERATURE REVIEW

What determines where FDI goes has long remained an intriguing question to academics and policy-makers. Location choice of FDI has been explained by researchers with various approaches, most of which are generated from the rationale and motives of FDI.

Theoretically, the location choice of FDI is determined by relative profitability. Hymer (1960) views the MNC as an oligopolist. FDI is considered to be the outcome of broad corporate strategies and investment decisions of profit-maximizing firms facing worldwide competition. Coughlin et al. (1991) assume that a foreign firm will choose to invest in a particular state if and only if doing so

⁷ http://www.fdi.gov.cn/pub/FDI/wztj/lntjsj/wstzsj/2010nzgwztj/t20120130_140672.htm. Web. April 18, 2013

will maximize profit. They identify state land area, per capita income, agglomeration, labour market conditions (wage rates, degree of unionization, unemployment rate), transportation network, taxes, and state expenditures to attract FDI as the determinants of FDI across the states within the US. Wei et al. (1999) argue that the studies developed from traditional location theory, new location theory, and institutional environment consideration identify labour cost, infrastructure, market size, agglomeration effect, and policy incentives as the major location antecedents. The underlying assumption of these views is that “an investment's profitability is a function of several location characteristics (Shaver, 1998, p. 471).”

Buckley and Casson(1976), Dunning (1977) and Rugman (1981) invoke transaction costs to explain firms' internationalization, putting emphasis on the intangible assets firms have acquired. They focus on another characteristic of firm resource—a rent yielding resource as a public good which is transferred within a firm with lower cost than via some other methods (e.g., licensing or exporting, where the assets is embodied in the product). The theory suggests that firms have an incentive to internalize a transfer of intermediate goods, know-how, and financial capital under common control and ownership so as to reduce transactions costs associated with this transfer. Buckley and Casson (1976) explain that market failure is more prevalent in an international framework, and so multinational firms organize an internal market to avoid excessive transaction costs. Buckley (1988) considers internalization theory has two implications: (1) firms will choose the lowest cost location for any activity, and (2) firms grow via internalization, up to a point where the costs of internalization equal its benefits. Through internalization, the multinational is able to protect and retain control of its tangible and intangible assets, while at the same time, earn an economic rent on these assets. The best way to capture ownership and location advantages is by internalizing production via direct investment in the foreign country. MNEs that engage in FDI possess special advantages to overcome the inherent disadvantages of foreignness.

The eclectic paradigm developed by Dunning (1981) explains FDI behaviour by integrating ownership, location, and internalization advantages (OLI), which provides a way of encapsulating or harmonizing most schools of FDI theory. The eclectic paradigm asserts that it is the interaction between the competitive advantages of firms and the comparative advantage of nations that decide the structure of the foreign value-added activities of the firm. Any engagement of enterprises in international production will depend on the presence of these three groups of advantages, with each group of variables acting interdependently (Dunning, 1981, 1998; Narula and Dunning, 2000). Dunning and Lundan (2008) extended the determinants of FDI in terms of locational components of OLI by underlining the growing impact, brought about by the agglomeration, on the location of an MNC. They argued that there are three types of factors that influence the MNC's location choice: 'endowment effects' which mainly refer to the presence of natural resources or strong low-cost labour force; 'agglomeration effects' which emphasize the 'self-reinforcing tendency' or Myrdal's 'circular causation' (Krugman 1991, Fujita and Thisse 2002), indicating that the 'the attraction of

one firm will generally make it more attractive for another firm to co-locate in the same region' (Dunning and Lundan 2008, 596); and, finally, policy-induced effects' which indicate the impacts on location which are generated by policy intervention and institutions.

Cantwell (1989) suggests that a multinational firm can go abroad using either asset-exploitation or asset-augmentation strategies, with asset-exploitation being transfer of firm's proprietary assets abroad and asset-augmentation being acquisition of strategic assets such as marketing, technological or management skills by firm. Dunning (1998) identifies four FDI motives that MNEs have that comprise resource-seeking, market-seeking, efficiency-seeking, and strategic asset-seeking. Following Dunning's classification, Makino et al. (2002) distinguish FDI motives into asset-exploitation and asset-exploration, either of which leads firms to choose different location patterns. MNEs with asset-exploitation mindsets typically have resource-, efficiency-, and market-seeking motives and tend to prioritize factors such as labour cost and market size and potential; whereas those with asset-exploration mindsets tend to seek strategic assets and emphasize factors such as R&D capability and human capital. Tapping the demand for services in a host country requires a physical presence when services are difficult to trade, which implies that FDI in services is likely to be market-seeking (Kolstad and Villanger, 2008).

Nachum et al. (2000) claim that an FDI decision is the result of the harmonization of motives of MNEs and the location advantages of the host country. Galan et al. (2007) further recognize that the FDI motive of MNEs is the prerequisite of location choice, and MNEs make decisions by linking the evaluation of advantages (characteristics) of a destination with specific motives.

The new economic geography literature (Fujita et al. 1999) focuses on the influence of industry agglomeration and spatial clustering on the location decisions of multinationals, following the evidence that a significant concentration of related firms in a restricted place may strongly reinforce co-location by other firms (Maskell and Malmberg, 1999).

Some characteristics of services, such as simultaneity of production and consumption, consumer participation in production, suggest that a physical presence may be required; that is, a firm has to open a local office or branch in a foreign country in order to service existing firms and consumers or target new users in host country. Boddewyn et al. (1986) highlighted that some services are location bounded – non-tradable and require face-to-face contact between the service provider and customer – which forces parent firms to establish a local facility in the host country. The distinctive characteristics of service provision dictate that the international expansion strategies of MNEs operating in the service sector differ from those in the manufacturing sector (e.g., Mathe and Perras, 1994; Patterson and Cicic, 1995; Chadee and Mattsson, 1998). The intangibility of services and the inseparability of their production and delivery necessitate a higher level of interaction between producers and consumers (Kotler, 1997). The successful provision of services also requires that firms have the ability to adapt their “products” and customize their delivery to fit local culture, tastes, living habits, and industrial needs. Thus, MNEs in the service sector tend to place a priority

on proximity to the consumer. UNCTAD (2004) argued since FDI in services is generally market seeking, there is a need to produce the service at the place of consumption. Thus, FDI is a more natural way of producing services in a foreign market compared to trade.

The current explanation of foreign investment in the service sector is mainly based on Dunning's eclectic theory. Dunning (1989) reviews the conceptual and theoretical issues in applying the eclectic theory of international production to explain the international behavior of service MNEs. Multinational service firms scout for new locations for market-seeking and/or resource-seeking reasons. The eclectic paradigm of international production asserts that it is the interaction between the competitive advantages of service MNEs, the location advantages of potential host countries, and economies of the common governance of cross-border activities that explains the international involvement of service firms (Dunning, 1989; Li and Guisinger, 1992).

Since the fundamental theories of FDI in manufacturing could be used to explain FDI in services as well, most of the determinants tend to be similar (Dunning and McQueen, 1982). Boddewyn et al. (1986) also argue that no special FDI-MNE theories for international service firms are necessary, newer MNE/ FDI definitions and theories are applicable to such firms, provided important characteristics of inter- national services and their providers are kept in mind when researching them. Dunning and Norman (1987) conclude that the ownership advantage of services firms arise from their access to information and markets; economies of scales from spreading organizational and managerial costs over a larger market; and the goodwill that they possess from their brand names. Like their manufacturing counterparts, services MNEs are also subjected to the same motivations and limitations that a location may offer including market size and quality of resources. Buckley (1988) argues that transaction costs are higher in '... vertically integrated process industries, knowledge intensive industries, quality assurance dependent products and communications intensive industries'. These attributes are typical of the service industry. Hence, Internalization theories are applicable for FDI in the services industry as well (Casson, 1990). Williams (1997) discusses the applicability of the Internalization theory and the Eclectic theory in multinational banking, and he concludes that Internalization theory offers a framework with greater internal consistency for the study of multinational bank. The fact that services are an intangible good, whose quality cannot be judged prior to consumption, increases the information asymmetry and transaction cost that follows. In addition, service operations lack the technological specification and legal protection (e.g. patents) that are commonly available to goods production, services MNEs would prefer to internalize the operations. Markusen and Strand (2009) offer an approach to modelling trade and foreign investment in services, and explained the motivations behind trade and investments in business services. They conclude that liberalizations, or technical improvements that reduce costs, may occur for cross-border trade and/or for FDI. Falling investment costs encourage the creation of multi-office horizontal multinationals with local offices serving local customers. When both fall, vertical multinationals, with a skilled-labour-intensive headquarters in one country and a less

skilled-labour-intensive office in the other country serving both markets, can arise. Decreasing trade but not investment costs obviously moves the production of services and the number of service firms headquartered in a country in the same direction. Services production and firm numbers tend to become more concentrated in larger countries, due to the complementarity among services (a larger range of services makes the final goods sectors more productive). In some cases, it may be the case that services must be produced in the same location as where they are used in downstream or upstream manufacturing activities. Markusen coins the term ‘location specific complementarities’ to describe this. Decreasing investment costs but not trade costs has little effect on the location and concentration of services production, but a big effect on headquarter locations. Headquarters become much more concentrated in skilled-labour abundant countries, with a minor effect from country size.

The determinants of inward FDI in services and manufacturing sectors are contrasted within one framework in this article so as to reveal the relative importance of their location factors. It is hypothesized that compared with the manufacturing MNEs, FDI in services tends to be motivated by market-seeking and client-following purposes. It is quite possible that the existing theories are sufficient to explain services FDI, and no particularly new theory is required.

4. LOCATION DETERMINANTS OF FDI IN SERVICES

4.1 Hypothesis Formation and Variable Selection

This study gauges a set of potential determinant variables that might influence the location choice of FDI in services. Our dependent variable is logged Foreign Direct Investment (actually utilized value) per capita in services (*sFDI*) and manufacturing sectors (*mFDI*). We convert the value into RMB Yuan using yearly average dollar/RMB exchange rate and correct for province/city size by dividing FDI flows by population size. We classify the explanatory variables into the following four categories: demand-side factors, supply-side factors, agglomeration effects, and institutional environment factors.

We propose the following hypotheses regarding the location determinants of FDI in services.

Demand-side Factors

Market Size and Market Potential. Market-seeking are the principal motives for investors to undertake FDI. The variables related to market demand, including size and growth rate, have traditionally been considered critical determinants, and their significance and value are expected to correlate positively with FDI. Foreign investors are likely to be attracted by large markets which allow them to internalize profits from sales within the host countries. A reduction in the cost of entry through economies of scale can be exploited in larger markets. Rapid economic growth creates large domestic demands and business opportunities for foreign firms. As FDI is a long-term commitment, a promising future in the host country would naturally attract MNCs to invest. A positive relationship also exists between the growth prospects in the foreign environment and the firm’s willingness to commit its financial resources (Buckley & Casson, 1998). A region that has experienced impressive

economic growth in the past is likely to attract more foreign investors. Since investment in some services requires large initial investments with low marginal costs, economies of scale play an important role in services. Raff and von der Ruhr (2001) find that producer services tend to be located in areas with a large customer base. In industries such as banking, insurance and advertising services, market size and market potential are even more significant drivers of FDI inflow (Terpstra and Yu, 1988; Moshirian, 1997, 2001; Buch and Lipponer, 2004). There is good reason to believe that similar determinants under the market-seeking motivation also exist for services FDI.

Hypothesis 1: Foreign investment of the service MNEs is positively related to the market size and growth potential of the host region.

As GDP represents a good approximation of the size of an economy, this study considers real gross province product (*GDP*) as an indicator of market size and expects to have a positive and significant relation with FDI inflows. The growth rate of GDP (*GDPGR*) is used as a proxy for market potential.

Purchasing Power. MNEs tend to seek locations that are close to a large concentration of affluent consumers (Porter, 1990; Dunning, 1998); an increase in purchasing power allows greater product differentiation to take place that may result in the localization of the product / service. A region with higher disposable incomes has higher level of consumption. According to the hierarchy of consumption demand, the residents tend to consume more services since a greater proportion of income is spent on services when per capita income increases.

Hypothesis 2: FDI in services is positively related to the purchasing power of the host region.

The variable *INCOME* measures the disposable income per capita in a region, which has been considered as a proxy for the purchasing power of the inhabitants.

Development Level of Service Industry. Whether or not the industry is well developed in host region is a critical consideration when transnational capital makes investment. An economy with a well-developed industry is more attractive to foreign investors. The service industry is the key to economic growth, and the development level of services is an important symbol of modern socio-economic development.

Hypothesis 3: The development level of service industry in the host region is a significant determinant of services FDI inflows.

We use the proportion of the value-added of the tertiary industry in GDP (*SERV*) to reflect the level of development in China's service industry.

Supply-side Factors

Labour Cost. Foreign investors generally aim to take advantage of host countries' cheaper factor inputs (Dunning 1988, 1998), and the cost of labour is often considered negatively related to FDI inflows. Foreign production is more likely when production costs are lower abroad than at home, especially for efficiency-seeking FDI. However, if higher labour cost is related to higher labour

quality (and so to higher productivity), that is to say, labour costs reflect the availability of skilled workers in the region, acting as a proxy for qualifications and skills, then labour costs would have a positive correlation with FDI; it is especially true for the knowledge-intensive FDI. Wang and Swain (1995) point out that nominal wage differences may not induce FDI if labour productivity is very low. Countries or regions with low labour productivity coupled with relatively cheap labour may attract less FDI than those with higher labour productivity and more costly labour even when FDI is motivated by efficiency-seeking. The empirical relationship between labour cost and FDI inflows is not conclusive.

Hypothesis 4: Labour cost is an important determinant of FDI inflows in services, while the relationship might vary with regions/sectors.

A region's real wage cost (*WAGE*) is calculated by dividing average wage cost by the retail price index in the region.

Human Capital. All other things being equal, locales with highly-skilled workers would be expected to compete more favorably than others in attracting FDI. The countries with more human capital are likely to grow faster and the increased growth rate would, in turn, motivate foreign investors to supply capital. Using various measures of education level as proxies for skilled labour, Dunning (1980), Kumar (1987), Cheng and Kwan (2000), Noorbakhsh et al. (2001) and Kyrkilis and Pantelidis (2003), respectively, find a positive relationship between skilled labour and FDI inflow. Compared to manufacturing industry, service industry generally has higher requirements on human capital and has a labour force with higher level of skills and experience; this is especially the case in sectors such as banking, insurance, security, consultancy, and IT services.

Hypothesis 5: A larger pool of skilled labour would attract greater amounts of services FDI.

In this study, the number of enrollment in higher education per 10,000 populations (*HEDU*) is used to represent the average level of human capital in the region.

Infrastructure. A positive relationship between infrastructure and inward FDI is often cited in the literature. The availability of adequate and quality infrastructure minimizes the cost of doing business by increasing effective labour hours, and leads to operating efficiency for foreign investors. A reliable and robust infrastructural system such as transportation, information and communication is crucial for the movement of inputs from service providers to users.

Hypothesis 6: Host locations that have sound, reliable infrastructural systems tend to attract greater services FDI inflows.

Infrastructure covers many dimensions ranging from highways and railroads, telecommunication systems to even institutional development. Due to the difficulty of capturing all various dimensions, using an easily calculated variable, we settled on using the transportation route density (*LTRANS*, the

length of transportation routes normalized by geographical size⁸) as a proxy for infrastructure adequacy.

Agglomeration Effects

Agglomeration economies have been recognized as one of important determinants of firm location choices. The new economic geography literatures indicate that the MNE's location choice for investment may be explained by agglomeration economies (Krugman, 1991; Cantwell and Iammarino, 2000). Agglomeration economies emerge when many different economic units, with common characteristics, collect near each other due to the presence of such factors as knowledge spillovers, specialized-labour markets, supplier networks, etc (Fujita, Krugman and Venables, 1999, Maskell and Malmberg, 1999 and Storper, 1997). Investment could flow purely to follow competitors or to follow clients. The rationale is that MNEs are unwilling to cede new markets to their rivals, and thus, they would follow their rivals into those markets. Spatial agglomeration plays an important role in providing knowledge externalities, complementary firms and business or social network. Foreign firms in a host country face greater uncertainties than domestic firms and therefore have a strong incentive to follow previous investors, who may be seen as a signal of the reliability of a particular location (Krugman 1997, Barry et al. 2003), and adding to the existing stock in a particular location is less risky and less costly for subsequent investors (Billington 1999). Hence, there is a positive relationship between investment in a market and the probability of additional investments in the same market. Once the firm is established in a specific foreign market, learning benefits, lower transaction costs, and reduced uncertainty from existing operations can be realized by other projects in that country. Furthermore, existing investors in a location offer opportunities for subsequent investors to develop forward and backward linkages with them, increasing the attractiveness of the location in question. It may also be beneficial for the firms to be located near one another if they require similarly specialized labour that is highly skilled for specific needs and service similar types of clients. Another important cause for agglomeration is the availability of specialized local producer services, such as transportation and communication services, financial and advertising services, repair and maintenance services, consulting and legal services, etc. In addition, producers typically like to choose locations that have good access to large markets. Agglomeration often leads to increased demand by reducing the consumers' transaction costs when they personally need to inspect the goods or services (consumers can be more efficient when firms are spatially concentrated). Along with the traditional view of regional comparative advantages, agglomeration economies induce a 'self-reinforcing phenomenon' (Head and Ries, 1996). Firms relocate their operations according to the variations in production factors, infrastructure, and economic policies that are often heterogeneous and immobile across regions (Maskell, 2001). At the initial stage of local development, these comparative differences in fundamentals are the main attractions of FDI.

⁸ This variable has been constructed by adding the total kilometers of railways in operation, highway and navigable inland waterways present in every province/city, respectively, and then dividing this value by host region land area.

This static effect of resource and incentive differentials across regions then leads to a dynamic agglomeration effect of further attracting foreign investment. As more FDI gathers in a region in order to exploit its comparative advantages, there are subsequent agglomeration economies from information sharing, skilled labour, and specialized intermediate suppliers (Head and Ries, 1996). The initial resource advantages and subsequent agglomeration benefits generate network externalities from the clustering of firms in specific regions. Cheng and Kwan (2000) also indicate that FDI is a special capital flow and has a positive self-reinforcing effect on itself.

An important factor determining whether a foreign service producer can compete with local firms is the quality of its service. However, it is difficult to ascertain the quality of service at the point of purchase. Customers may prefer to use services provided by incumbent firms, although MNEs may promise higher quality service. Under such circumstances, it would be better for an MNE to follow downstream firms from one's own country, as these firms may be more familiar with the MNE provider. After establishing a foreign presence on the strength of their relationship with home country clients, many service companies begin to extend their services to the local and other foreign firms in the host market. Following home country client firms abroad has been observed as a major motive in the early stages of service MNE globalization in developed countries (Li and Guisinger, 1992). As markets become increasingly globalized, firms in other service industries have found the need to expand internationally to win new, or retain existing businesses (Dunning, 1989). It was cited that 'the stock of producer service FDI in equilibrium increases more quickly with local market size if the ratio of downstream investors from the service firm's home country to all potential customers exceed a critical level' (Raff and von der Ruhr, 2001). The benefit of following existing home country customers is that a pool of customers can be created easily to showcase the quality of service, and thereby, to attract host country clients (Li and Guisinger, 1992). Producer services account for a large part of services, which are intermediate inputs to further production activities. Kolstad and Villanger (2008) show that services, especially producer's services tend to follow their clients abroad, binding vertically disintegrated production chains together. Ramasamy and Yeung (2010) conclude that manufacturing FDI is the single most important determinant of services FDI based on data collected among the OECD countries, supporting the agglomeration effect. Agglomeration effect was also suggested to lure FDI as it offers a positive externalities and economies of scale associated with spatial concentration of economic activities and collocation of related production facilities (Porter, 1990; Wheeler and Mody, 1992).

Urbanization is another important type of agglomeration (Hoover, 1936). Externalities from the agglomeration, such as sharing indivisible goods and/or facilities and knowledge spillover, generally occurs at the city level. Urbanization economies, in which the economies are external to the industry but internal to the territory, benefit all the firms in the area. The urbanization economies are generally related to the concentration of services (professional, banking and communication services, and the provision of scientific and technological assets) in urban areas. Larger cities are also more

technologically advanced and have well-established infrastructure, which allow MNEs to achieve economies of scale and efficiencies in production and service deliveries. And deepening urbanization will generate enormous domestic demand and greater market potential that fuel economic growth. While externalities from urbanization typically attract foreign investors, to capitalize on the externalities, a compact geography scope is necessary (Chen, 2009). One point deserves mentioning here, there exist great disparities between urban and rural areas in China. The consumption behavior and structure of the urban dwellers differs drastically from rural dwellers. Urban dwellers consume more, and have greater demand for services than the rural dwellers. There is good reason to believe that MNEs in services tend to concentrate their activities within regions with higher urbanization level.

According to these arguments, the hypothesis on agglomeration is to be made as follows.

Hypothesis 7: Services FDI tends to follow existing FDI, no matter its motivation is market-seeking or client-following.

In order to take into account of the dynamic nature of FDI inflows, one-year lagged inward FDI inflows will be included as an explanatory variable. We include previous year's manufacturing FDI as an independent variable to check for the complementary nature of services and manufacturing FDI. Furthermore, services FDI in t-1 is also included as an additional variable to evaluate if there exist self-reinforcing effect in services FDI.

Hypothesis 8: A region with higher level of urbanization attracts more FDI in services.

Following previous literature, we use the proportion of urban population relative to the total population in the region (*URBAN*) to measure urbanization.

Institutional Environment Factors

It is well understood that firms entering a new market must adapt their overall strategies to environmental conditions in the host country (Hymer 1976, Kindleberger 1969). Recent empirical studies suggest that, many institutional environment factors exist that may affect investment, and therefore will play an important role in investors' decision-making process. In the case of the MNE and FDI decision-making, presumably the closer the institutional environment is able to approximate zero transaction costs for the foreign investor; the more likely the region/country is to receive inward FDI flows, *ceteris paribus*. Especially, the institutional environment factors play a very important role in such transition countries as China. Though China is a unitary nation with a uniform legal system, the institutions that contribute to a well operating market economy can vary across provinces and influence a MNE's location choice (Du et al., 2012).

In this study, we investigated two institutional environment factors: Degree of Openness and Government Intervention.

Degree of Openness. Export expansion leads to GDP growth, which in turn, attract foreign investments. The degree of openness to trade could also measure the national regulatory and control environment of the host countries (Li and Guisinger, 1992). The greater the degree of openness, the

lower the degree of restrictions imposed by the host location on international trade and thus, the lower the cost of doing business in the host country. This is consistent with the observation that international investments and trades are more prevalent in countries with open economy. Gage and Leshner (2005) show that as a result of fragmentation of production processes and the concentration of multinationals in their core competencies, trade in services is becoming more popular. For many service sectors, FDI is complementary to trade. Some empirical analyses show that the extent of bilateral trade turns out to be a significant determinant in services FDI, particularly in financial services (Gray and Gray, 1981; Nigh et al., 1986; Moshirian, 2001; Buch and Lipponer, 2004). But Kolstad and Villanger (2008) disagree with this view and argue that service FDI is market-seeking, and unaffected by trade openness. Because of the characteristics of services, many services are non-tradable or costly to trade. For a sector whose products to a large extent cannot be subjected to cross-border trade, or it is aimed at the local market, the trade openness of a host country might have less of an impact on FDI inflows in that sector. Thus, the impact of trade openness is more of an open question.

Hypothesis 9: The degree of trade openness is not a significant determinant of FDI in services.

The level of international trade is often used as an important indicator of a country's degree of openness. Although it is desirable to use the ratio of international service trade (sum of all imports and exports of services) to GDP, we had to use instead the sum of imports and exports of goods as a percentage of GDP (*OPEN*) to represent degree of openness because appropriate data is not available at the provincial level.

Government Intervention is a typical characteristic of the institutional environment, where the government could intervene in the formulation and implementation of investment policy and, in some unusual cases, the government can even choose to interfere with a firm's operation. Government intervention has generally been viewed as a key variable affecting FDI and alters FDI across regions. A region with less government intervention is more market-oriented and favored by foreign investment.

Hypothesis 10: Heavy government intervention has an adverse effect upon inward FDI.

To test this hypothesis, we use the ratio of government consumption to final consumption expenditure (*GOVINT*) as a proxy of government intervention in economic operation. A negative relationship between the government intervention and FDI inflow is expected.

4.2 Variables and Descriptive Statistics

A summary of all the variables, proxies, expected signs and corresponding data sources is given in Table 5.

TABLE 5
Independent variables, their expected signs and data sources

Determinants	Variable	Measurement	Predicted Effect	Data Source	
Demand-side Factors	Market Size and Growth Potential	GDP(<i>GDP</i>) The Annual Growth Rate of GDP (<i>GDPGR</i>)	Actual Measure	+	China Statistical Yearbook (2001–2012) Statistical Yearbook of 17 Provinces and Cites(2001–2012)
	Purchasing Power	Annual Per Capita Disposable Income (<i>INCOME</i>)	Actual Measure	+	Statistical Yearbook of 17 Provinces and Cites(2001–2012)
	Development of Services Sectors	Services value added (% of GDP) (<i>SERV</i>)	Actual Measure	+	China Statistical Yearbook (2001–2012) Statistical Yearbook of 17 Provinces and Cites(2001–2012)
Supply-side Factors	Cost of Labour	Real Average Wage Rate (<i>WAGE</i>)	average wage rate divided by consumer price index	-	China Labour Statistical Yearbook (2001–2012)
	Human Capital	Enrollment of Higher Education (<i>HEDU</i>)	number of students enrollment per 10,000 populations (higher education)	+	Statistical Yearbook of 17 Provinces and Cites(2001–2012)
	Availability of Infrastructure	Density of Transport Routes (<i>LTRANS</i>)	length of railways in operation, highway and navigable inland waterways(per unit of land mass)	+	Statistical Yearbook of 17 Provinces and Cites(2001–2012)
Agglomeration Effects	Urbanization	Urbanization Rate (<i>URBAN</i>)	percent of the population that lives in urban areas	+	Statistical Yearbook of 17 Provinces and Cites(2001–2012)
	Agglomeration of Foreign Firms	Lagged Manufacturing FDI (<i>mFDI_{t-1}</i>) Lagged Services FDI (<i>sFDI_{t-1}</i>)	actually utilized value of FDI divided by population size	+	Statistical Yearbook of 17 Provinces and Cites(2001–2012)
Institutional Environment Factors	Openness	Ratio of International Trade to GDP (<i>OPEN</i>)	(export+import)/GDP	+	Statistical Yearbook of 17 Provinces and Cites(2001–2012)
	Government Intervention	Ratio of Government Consumption to Final Consumption Expenditures (<i>GOVINT</i>)	government consumption/ final consumption expenditures	-	Statistical Yearbook of 17 Provinces and Cites(2001–2012)

Descriptive Statistics

The descriptive statistics shown in Table 6 reveal that the inward FDI in China has a wide variation. This implies that regions under study largely vary with receiving FDI over the study period. The independent variables also vary largely from region to region with a wide range. That is to say, regions included in the study depict a wide gap with regard to some essential macro-economic variables and thereby their appeal to attract inward FDI. The fact that both dependent and independent variables are widely dispersed indicates that some transformations are needed.

TABLE 6
Descriptive Statistics of Variables

<i>Variable</i>	<i>Observation</i>	<i>Mean</i>	<i>Std. Dev</i>	<i>Minimum</i>	<i>Maximum</i>
<i>SFDI</i>	188	395.8229913	645.7283317	3.61569	2990.25804
<i>MFDI</i>	188	464.875471	524.9067398	5.54366	2585.19988
<i>GDP</i>	188	9383.423904	8461.586285	1539.12	46013.06
<i>GDPGR</i>	188	0.113160428	0.029549349	0.037	0.2363
<i>INCOME</i>	188	11858.9407	5421.240062	4766.26	31838
<i>SERV</i>	188	0.410005882	0.091942138	0.283	0.755
<i>WAGE</i>	188	20992.86374	11904.67365	6884.5	69712.9
<i>HEDU</i>	188	180.8889198	136.394346	21.32	689.7
<i>LTRANS</i>	188	0.734947594	0.509723279	0.0609	2.9017
<i>URBAN</i>	188	0.488655241	0.173710418	0.232	0.893
<i>OPEN</i>	188	0.443750053	0.513033067	0.03678	1.793
<i>GOVINT</i>	188	0.279603743	0.055940007	0.1706	0.4248

4.3 Model Specification and Methodology

Collecting the above-mentioned explanatory variables in a vector x_{it} , the determinants of FDI in services can be summarized by the following equation:

$$sFDI_{it} = \pi x_{it} + \eta_i + \varepsilon_{i,t} \quad (1)$$

where $i=1,2,\dots, 17$ (provinces) and $t=1,2,\dots,11$ (time periods); π is a vector of parameters; η_i denotes a fixed effect and $\varepsilon_{i,t}$ denotes a random disturbance which is assumed to be independent across 17 cities and provinces.

We base our analysis on a balanced panel data compiled from series public publications of National Bureau of Statistics of China: China's Statistical Yearbook, China Labour Statistical Yearbook and Statistical Yearbooks of 17 provinces, centrally administered municipalities and autonomous regions over an 11-year period from 2000 to 2010.

First, we transform all variables appearing in the form of absolute value into the natural logarithm form except for ratio, density and dummy variables. Second, using the panel data method reduces the magnitude of the omitted variable problem. Third, the effects of past FDI on the present FDI are considered in this study. In order to test the presence of these effects, the dynamics are included. Dynamic panel model relies on first-differencing or related transformations to eliminate unobserved individual-specific effects, uses lagged values of endogenous or predetermined variables as instrument variables for subsequent first-differences, and can be expected to perform well in situations where the series are close to be autoregressive.

Benchmark dynamic panel data models for services FDI and manufacturing FDI are specified as follows:

$$lsFDI_{it} = \beta_0 + \beta_1 lGDP_{it} + \beta_2 GDPGR_{it} + \beta_3 lINCOME_{it} + \beta_4 SERV_{it} + \beta_5 lWAGE_{it} + \beta_6 lHEDU_{it} + \beta_7 lTRANS_{it} + \beta_8 lmFDI_{it-1} + \beta_9 lsFDI_{it-1} + \beta_{10} URBAN_{it} + \beta_{11} OPEN_{it} + \beta_{12} GOVINT_{it} + (\eta_i + \varepsilon_{i,t}) \quad (2)$$

$$lmFDI_{it} = \gamma_0 + \gamma_1 lGDP_{it} + \gamma_2 GDPGR_{it} + \gamma_3 lINCOME_{it} + \gamma_4 lWAGE_{it} + \gamma_5 lHEDU_{it} + \gamma_6 lTRANS_{it} + \gamma_7 lmFDI_{it-1} + \gamma_8 URBAN_{it} + \gamma_9 OPEN_{it} + \gamma_{10} GOVINT_{it} + (\eta_i + \varepsilon_{i,t}) \quad (3)$$

The Arellano-Bond (1991) and Arellano-Bover (1995)/Blundell-Bond (1998) linear generalized method of moments (GMM) estimators, known as difference GMM and system GMM, are two prominent estimation procedures for dynamic panel. There are three primary reasons for choosing GMM estimator over other methods. First, there is a possibility that unobserved province-specific effects correlate with the regressors and, thus, it is reasonable to control for such effects. Second, the GMM estimator also controls for a simultaneity bias caused by the possibility that some of the explanatory variables may be endogenous. Third, the panel dataset has a short time dimension ($T = 11$) and a larger regional dimension ($N = 17$). This paper applies the difference GMM estimation procedure instead of system GMM. Arellano and Bover(1995) and Blundell and Bond(1998) found that if the autoregressive process is too persistent, then the lagged-levels are weak instruments. These authors proposed using additional moment conditions in which lagged differences of the dependent variable are orthogonal to levels of the disturbances. However, the coefficient of dynamic term in our model is about 0.5, the autoregressive process is not too persistent. Secondly, we have more instruments than parameters (there are only 17 individuals in this paper), thus, the weak instruments are not much of our concern; the top concern is that a large instrument collection may over fit endogenous variables. Furthermore, system GMM requires additional assumption assuming that changes in any instrument variable are uncorrelated with the fixed effects, which is hardly true in our case. The level equation may result in serious specification error. Thus, we employ difference GMM other than system GMM to estimate our dynamic panel models.

In step one, we use difference GMM to estimate the benchmark models. If we obtain an insignificant dynamic term, we will drop the dynamic term and estimate the fixed effect or random effect model according to the results of Hausman test. As can be seen in Table 7, the result produced by Arellano-Bond Dynamic Panel GMM Estimation shows that there might be no dynamic relationship between past services FDI and present services FDI because β_9 in model 1 is not statistically significant. There is evident dynamic effect in manufacturing FDI, which is different from FDI in services. However, only few variables are statistically significant in model 2.

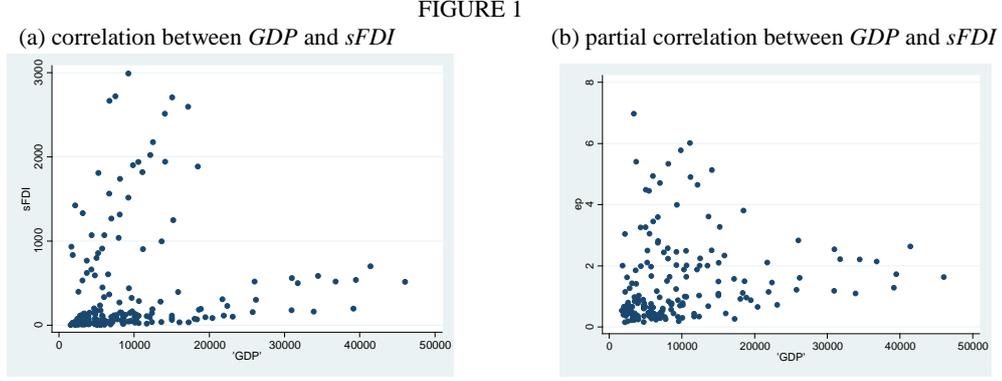
TABLE 7
Empirical Results of Model 1 and Model 2

	<i>Model 1: Services FDI</i>			<i>Model 2: Manufacturing FDI</i>		
	<i>Variables</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>Variables</i>	<i>Coefficient</i>	<i>t-statistic</i>
Demand-side Factors	$IGDP_t$	-0.875	-1.00	$IGDP_t$	-0.941	-1.53
	$GDPGR_t$	2.011	0.93	$GDPGR_t$	1.147	0.63
	$INCOME_t$	1.594	1.12	$INCOME_t$	0.898	0.82
	$SERV_t$	-0.679	-0.23			
Supply-side Factors	$WAGE_t$	0.958	1.2	$WAGE_t$	0.158	0.25
	$HEDU_t$	-0.218	-1.00	$HEDU_t$	0.324*	1.74
	$ILTRANS_t$	0.054	0.26	$ILTRANS_t$	0.302*	1.79
Agglomeration Effects	$lmFDI_{t-1}$	0.382***	3.6	$lmFDI_{t-1}$	0.707***	6.3
	$lsFDI_{t-1}$	0.116	1.03			
Institutional Environment Factors	$URBAN_t$	-0.736	-0.37	$URBAN_t$	-1.850	-1.12
	$OPEN_t$	-0.095	-0.28	$OPEN_t$	-0.020	-0.08
	$GOVINT_t$	-3.704**	-2.41	$GOVINT_t$	0.915	0.67
	AR(1)=-4.00(p=0.000); AR(2)=-0.88(p=0.381)			AR(1)=-4.41(p=0.000); AR(2)=-0.36(p=0.716)		
	Sargan Test=59.54(p=0.059)			Sargan Test=50.99(p=0.218)		

Notes: (1) Statistical significance level: ***<1%, **<5%, *<10%. (2) AR(1) and AR(2) tests are Arellano-Bond test for that average autocovariance in residuals of order 1 or 2. (3) Sargan Test is a test of the over-identifying-restriction for the GMM estimators, asymptotically χ^2 . P-value is reported. This test uses the minimized value of the corresponding two-step GMM estimators.

Thus, for services FDI, we turn to linear panel-data estimation and test whether to select a random effect or a fixed effect estimation approach by using Hausman specification test. But we still find that the coefficients of many variables are not statistically significant. The results indicate that there might be heterogeneity which cannot be represented by η_i . In order to find the source of the heterogeneity, we tried quantile regression and geographically weighted regression. The findings show that the heterogeneity is not caused by the level of FDI, and there is no geographical continuous change in coefficients. However, there does exist the regional heterogeneity, at the same time, the regional division is not always consistent. Take GDP in $sFDI$ equation for example, the scatter plot-Figure 1 (a) shows a strong positive correlation between GDP and $sFDI$ with two distinguished trends. The trend line for centrally administered municipalities is much steeper than the one for other provinces. The scatter plot- Figure 1(b) getting from exp (residual) of Model 1 also shows two different trends, indicating that there are two different partial correlations between GDP and $sFDI$ after controlling for other variables. Thus, we create a regional dummy variable, *Municipality*, and add an interaction term $IGDP \times Municipality$ to illustrate the relationship. As for manufacturing FDI, there is evident regional heterogeneity between Shanghai and other regions, therefore, the interaction term $IGDP \times Shanghai$ is introduced in Model 2. For other variables, we use the same method to examine the possible regional heterogeneity. Our findings show that there are evident regional heterogeneities in *URBAN* and *OPEN* between coastal regions and inland regions, while other variables do not have no matter how we divide the region. Thus, a dummy variable,

$EAST^9$, is created to flag the provinces and cities in the coastal regions and interaction terms such as $OPEN \times EAST$, $URBAN \times EAST$ are added to test whether there are regional variation in the effects of Openness and Urbanization on FDI. Significant interaction terms under various model specifications validate the effectiveness and robustness of such regional division.



Our final model for FDI in services is as follows:

$$\begin{aligned}
 lsFDI_{it} = & \beta_0 + \beta_1 lGDP_{it} + \beta_2 GDPGR_{it} + \beta_3 lINCOME_{it} + \beta_4 lSERV_{it} + \beta_5 lWAGE_{it} + \beta_6 lHEDU_{it} \\
 & + \beta_7 lTRANS_{it} + \beta_8 lmFDI_{it-1} + \beta_9 URBAN_{it} + \beta_{10} OPEN_{it} + \beta_{11} GOVINT_{it} \\
 & + \beta_{12} (lGDP_{it} \times Municipality) + \beta_{13} (OPEN_{it} \times EAST) + \beta_{14} (URBAN_{it} \times EAST) + (\eta_i + \varepsilon_{i,t})
 \end{aligned} \tag{4}$$

The model for manufacturing FDI is as follows:

$$\begin{aligned}
 lmFDI_{it} = & \gamma_0 + \gamma_1 lGDP_{it} + \gamma_2 GDPGR_{it} + \gamma_3 lINCOME_{it} + \gamma_4 lWAGE_{it} + \gamma_5 lHEDU_{it} \\
 & + \gamma_6 lTRANS_{it} + \gamma_7 lmFDI_{it-1} + \gamma_8 URBAN_{it} + \gamma_9 OPEN_{it} + \gamma_{10} GOVINT_{it} \\
 & + \gamma_{11} (lGDP_{it} \times Shanghai) + \gamma_{12} (OPEN_{it} \times EAST) + \gamma_{13} (URBAN_{it} \times EAST) + (\eta_i + \varepsilon_{i,t})
 \end{aligned} \tag{5}$$

5. RESULTS OF AN ANALYSIS AND DISCUSSION

We create two models with satisfactory explanatory power. The results of estimation for the sample regions are shown for both models – Model 3 with services FDI and Model 4 with manufacturing FDI as dependent variables, respectively (Table 8). In what follows we interpret some of the significant findings.

⁹ The role of this variable is to control for the influence of determinants that are either unobservable or observable but not explicitly included in our dataset, which may differ systematically between coastal and non-coastal regions. These may include superior access to ports, geographical proximity to foreign countries, and the increased experience of coastal provinces in utilizing FDI, especially for those provinces that were given preferential treatment, and as a result, gained comparative advantages in infrastructure, capital, technological and management skills during China's early experimentation with FDI.

TABLE 8
Empirical Results of Model 3 and Model 4

	<i>Model 3: Services FDI</i>			<i>Model 4: Manufacturing FDI</i>		
	<i>Variables</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>Variables</i>	<i>Coefficient</i>	<i>t-statistic</i>
Demand-side Factors	$IGDP_t$	-1.071*	-1.7	$IGDP_t$	-1.086**	-2.03
	$GDPGR_t$	4.067**	1.99	$GDPGR_t$	1.941	1.22
	$INCOME_t$	3.656***	3.13	$INCOME_t$	1.689*	1.74
	$SERV_t$	5.131**	2.00			
Supply-side Factors	$IWAGE_t$	-1.440*	-1.86	$IWAGE_t$	-0.422	-0.73
	$IHEDU_t$	0.142	0.64	$IHEDU_t$	0.339**	2.01
	$ILTRANS_t$	0.282	1.55	$ILTRANS_t$	0.330**	2.24
Agglomeration Effects	$lmFDI_{t-1}$	0.235**	2.5	$lmFDI_{t-1}$	0.375***	3.08
	$URBAN_t$	9.990***	3.28	$URBAN_t$	6.026**	2.3
Institutional Environment Factors	$OPEN_t$	-7.002***	-4.05	$OPEN_t$	-2.611**	-2.00
	$GOVINT_t$	-1.467	-1.22	$GOVINT_t$	0.928	0.79
Regional	$IGDP \times Municipality$	0.522***	2.77	$IGDP \times Shanghai$	-0.718**	-2.23
Interaction	$URBAN \times EAST$	-9.274***	-4.03	$URBAN \times EAST$	-6.887***	-3.48
Terms	$OPEN \times EAST$	6.661***	3.88	$OPEN \times EAST$	2.751**	2.13
	$_{cons}$	-12.896***	-4.64			
	Huasman=61.60(p=0.000)			AR(1)=-3.41(p=0.000); AR(2)=-0.24(p=0.812)		
				Sargan Test=47.96(p=0.315)		

In Model 3, the negative sign of $IGDP$ is contradictory to Hypothesis 1, which indicates that larger market size does not lead to a pro rata increase in services FDI. However, we cannot draw the conclusion that foreign capital would flow to the regions with smaller market size. There exists significant difference in economic size between different regions in China. For the centrally administered municipalities, the coefficient of $IGDP$ is negative, but is not statistically significant. Significant interaction term confirms that there is great regional variation between the centrally administered municipalities and other provinces. At the same time, there is a positive relationship between FDI in services and the development level of service industry ($SERV$), and this confirms Hypothesis 3. One percentage point increase in the proportion of value added of the tertiary industry to GDP would increase $sFDI$ by 5.131 percent. The result implies that FDI in services would prefer the development level of service industry to the market size of the host regions if there is a trade-off between them.

The positive sign associated with $GDPGR$ indicates that higher economic growth lead to higher FDI, which confirms Hypothesis 1. A 1 percent increase in GDP growth rate would increase FDI in services by 4.067 percent. $INCOME$ is positively related to $sFDI$, which confirms Hypothesis 2 posited above that purchasing power is a significant driver of services FDI. As disposable income increases, residents tend to consume more service products, which would attract more foreign capital.

The real wage rate ($WAGE$) has a negative effect on services FDI inflows, indicating that high wage rate acts as deterrent to foreign capital, and regions with higher wages tend to attract less $sFDI$. The relationship suggests that services FDI in China are motivated by cheap labour in the host location. The coefficient of $IHEDU$ is positive, but is not statistically significant. It can be explained

by the sector distribution. FDI in some sectors that lays particular stress on human capital (e.g. banking, insurance, securities, consulting, etc.) faces stricter regulations or market accessibility restrictions in China that prevent foreign capital getting access to. As a result, a large portion of FDI has flowed into less regulated and labour-intensive sectors such as real estate, social services, wholesale and retail trade and catering services during last three decades. That can partially explain the reason why low labour cost becomes a determining factor while the quality of labour is not. The coefficient of the density of transport routes (*LTRANS*) is positive, which confirm Hypothesis 6. However, it is not significant either, which may imply that a region with good infrastructural systems tend to attract a greater amount of services FDI, but basic infrastructure is a sufficient attraction for service-based MNEs in China. The result can be explained as follows. As more and more services can be supplied remotely along with the constant development of information and communication technologies, the dependence on traditional physical infrastructure such as transportation facilities is declining, while the soft infrastructure, particularly the institutional environment such as industry regulation becomes relatively more critical. Second, in our sample, a large proportion of the services FDI in China have flowed into the real estate industry which imposes less stress on transportation facilities.

The lagged FDI variable $mFDI_{t-1}$ produces a significant positive coefficient, indicating that foreign firms tend to concentrate their activities at the location where other foreign firms are already located, and thus, it supports the agglomeration effects stipulated in Hypothesis 7, which stem from the positive spillovers from the investors already producing in this area who provide an assurance for the prospect investors of the availability of resources, profitability and stability of the business and economic environment of the host regions. And consistent with the idea that some services bind together a globally disintegrated chain of production, FDI in manufacturing is a robust determinant of FDI in services. Our results provide strong empirical support for the complementarity between location choices of services FDI and manufacturing FDI, that is to say, manufacturing location choices may cause the inflows of services. Many business services sectors have strong input-output linkages with the manufacturing sector, thus FDI in services tends to be motivated by client-following purposes.

The coefficient of *URBAN* has a positive sign, supporting Hypothesis 8. Urban area is expected to create larger demand for services, thus it is the space for the cluster of services. However, there is significant regional variation, for coastal regions, the coefficient is not statistically significant while for other regions, it is significant. By the end of 2012, China's urban population has accounted for 52.57 percent of the country's total population, which is lower than the average level of 60 percent in emerging nations and 80 percent in developed countries. However, the urbanization rates in some areas are likely being underestimated. In some regions, many migrant workers living in urban areas are registered as rural residents under the household registration system, also known as Hukou. According to the National Bureau of Statistics, there were 262.61 million migrant workers in 2012,

accounting for more than a third of the urban population. The regions with more foreign investment are also the regions with more migrant workers. For example, the number of migrant workers in the Yangtze River delta area and the Pearl River delta region accounted for more than 40 percent of the national total. The floating population who are in the area but do not live there permanently are not counted in the official census report. The reason can partially explain why the coefficient of *URBAN* for coastal regions is not significant as expected.

The coefficient of the *OPEN* is negative, and for coastal regions, it is not statistically significant while for other regions, it is, which indicates that the increase in merchandise trade has not lead to the inflow of FDI in services accordingly in inland China. This result deserves further investigation as it conflicts with our previous finding (Yin F., 2011) based on the ratio of international services trade to GDP at the country level. In China, a large proportion of services FDI are concentrated in real estate, leasing and business services, wholesale and retail trades which have no direct relationships with the volume of merchandise trade. Services FDI in China is aimed at domestic markets, rather than serving as an export platform. Thus, the extent to which a region allows free movement of goods is not an important determinant of the level of inward FDI in services.

To compare the determinants of location choices in services and manufacturing, we estimate Model 4 using the same variables except for *SERV* used in Model 3. As shown in Table 7, *GDP*, *INCOME*, *HEDU*, *LTRANS*, *URBAN*, *OPEN* and $mFDI_{t-1}$ are significant determinants of manufacturing FDI, while *GDPGR*, *WAGE* and *GOVINT* are no longer statistically significant.

From the supply side, the labour cost (*WAGE*) has a negative effect on $mFDI$ inflows, but it is not significant. *HEDU* bears a positive sign and significant. We can infer from the results that manufacturing MNEs in China tends to be motivated by efficiency-seeking purpose, one of the most important motivation is taking advantage of the lower labour cost in the host location, but they pay more and more attention on labour quality during the last decade. The coefficient of the density of transport routes (*LTRANS*) is positive, which confirm the importance of infrastructure in attracting manufacturing FDI.

The lagged FDI variable $mFDI_{t-1}$ bears significant positive coefficient, thus confirming the agglomeration effects (Hypothesis 7). The positive results also indicate that MNEs tend to follow their competitors for fear that they might lose market shares and competitive advantage in host regions. This is the herding effect commonly observed among the investors. The coefficient of *URBAN* has a positive sign, which also confirms the agglomeration effects.

Significant interaction term of $IGDP \times Shanghai$ confirms that there is spatial variation between Shanghai and other regions. The coefficients of *OPEN* are 0.140 and -2.611 for coastal regions and inland regions, and the coefficients of *URBAN* are -0.860 and 6.026 respectively, indicating that the levels of openness and urbanization have significant effects on manufacturing FDI in inland China, while they are not significant determinants for coastal regions in our dataset. The reason why the coefficient of *OPEN* is negative for inland China can be explained as follows. First, the lower level

of trade openness and higher trade protection make the MNEs have to enter the host market via foreign direct investment. Second, most inland regions in our dataset are rich in natural resource, a large proportion of their exports are resource-intensive products. At the same time, these resource-intensive industries in China are highly regulated by the government as natural monopoly industries. Limited access to foreign capital in these industries results in the negative sign of openness.

The simultaneous causality between FDI and its explanatory variables such as GDP, GDP growth rate and income deserves further investigation. Next, we set *FDI*, *GDP*, *GDPGR*, *SERV*, *INCOME*, *WAGE* as endogenous variables, *HEDU*, *LTRANS*, *URBAN*, *OPEN* and *GOVINT* as exogenous variables. The results produced by Arellano-Bond Dynamic Panel GMM Estimation show that there is dynamic relationship between past FDI and present FDI, be it manufacturing or services.¹⁰ As noted in Table 9, our results pass the Arellano-Bond test for autocorrelation and Sargan over-identification test. The GMM method we employed is reasonable and our model is statistically sound.

For services FDI, *GDPGR*, *INCOME*, *SERV*, *mFDI_{t-1}*, *sFDI_{t-1}*, *URBAN*, *OPEN* and *GOVINT* are significant determinants, while *GDP*, *WAGE*, *HEDU* and *LTRANS* are not significant.

The lagged FDI variables *mFDI_{t-1}* and *sFDI_{t-1}* bear the expected positive sign and are very significant, indicating an acceptance of Hypothesis 7 of agglomeration effect. It can be inferred from the result there is also a strong self-reinforcing effect of FDI in services on itself. Some services sector such as logistics, finance, insurance helps to establish production, sales and services networks or systems. These ‘downstream services’ in turn attracts further investment.

GOVINT (a proxy for government intervention) is negatively associated with services FDI, which is consistent with Hypothesis 10. The result indicates that services FDI is more responsive to policies targeted at market access and policies affecting domestic demand. Foreign investors are more likely to invest in the areas with less bureaucratic intervention and the industrial sectors less manipulated by government.

Same as Model 3, all the interaction terms in Model 5 are significant, validating the effectiveness and robustness of such regional division, and there exists regional heterogeneity. *GDP* is not significant, both for the centrally administered municipalities and other regions. And the levels of openness and urbanization have significant effects on services FDI in inland China, while they are not significant determinants for coastal regions.

For manufacturing FDI, *GDP*, *GDPGR*, *HEDU*, *LTRANS*, *URBAN*, *OPEN*, *GOVINT* and *mFDI_{t-1}* are significant determinants, while *INCOME* and *WAGE* are no longer significant. The spatial variation effects are statistically significant as Model 4.

¹⁰ A dynamic panel data model is said to be correctly specified if it satisfies the following conditions: it does not reject the null hypothesis of the validity of instruments; it rejects the null hypothesis of no first-order serial correlation in the differenced residuals; it does not reject the null hypothesis of no second-order serial correlation in the differenced residuals (Doornik and Hendry, 2001, p. 69). The two estimated models fit all of these three criteria.

TABLE 9
Empirical Results when considering Simultaneous Causality

	<i>Model 5: Services FDI</i>			<i>Model 6: Manufacturing FDI</i>		
	<i>Variables</i>	<i>Coefficient</i>	<i>t-statistic</i>	<i>Variables</i>	<i>Coefficient</i>	<i>t-statistic</i>
Demand-side Factors	$lGDP_t$	-0.768	-1.26	$lGDP_t$	-0.916**	-2.25
	$GDPGR_t$	3.298*	1.66	$GDPGR_t$	3.467**	2.54
	$lINCOME_t$	2.626**	2.25	$lINCOME_t$	1.075	1.44
	$SERV_t$	4.664*	1.89			
Supply-side Factors	$lWAGE_t$	-0.994	-1.31	$lWAGE_t$	-0.268	-0.55
	$lHEDU_t$	0.131	0.61	$lHEDU_t$	0.264*	1.74
	$lLTRANS_t$	0.159	0.89	$lLTRANS_t$	0.225*	1.78
Agglomeration Effects	$lmFDI_{t-1}$	0.213**	2.35	$lmFDI_{t-1}$	0.493***	7.23
	$lsFDI_{t-1}$	0.232***	3.05	$lsFDI_{t-1}$		
Institutional Environment Factors	$URBAN_t$	7.248**	2.37	$URBAN_t$	7.577***	3.90
	$OPEN_t$	-4.933***	-2.75	$OPEN_t$	-2.803**	-2.37
	$GOVINT_t$	-2.103*	-1.79	$GOVINT_t$	1.456*	1.83
Regional Interaction Terms	$lGDP \times Municipality$	0.444**	2.44	$lGDP \times Shanghai$	-0.473*	-1.80
	$URBAN \times EAST$	-6.642***	-2.80	$URBAN \times EAST$	-6.959***	-5.00
	$OPEN \times EAST$	4.734***	2.68	$OPEN \times EAST$	2.500**	2.14
AR(1)=-6.05(p=0.000); AR(2)=-0.13(p=0.896)			AR(1)=-5.09(p=0.000); AR(2)=-0.19(p=0.845)			
Sargan Test=156.98(p=0.129)			Sargan Test=141.82(p=0.305)			

6. CONCLUSION AND POLICY IMPLICATION

Service sector dominates the world's foreign direct investment flows. However, the stock of FDI in services in China is still relatively small and is unevenly distributed across sectors. Services MNEs exhibit strong location preference, mainly concentrated in the coastal provinces and large cities.

Our findings suggest that growth potential, purchasing power, development of service industry, wage cost and agglomeration effects exercise important influences on FDI inflows to services industry in China. FDI in services is conducted to access domestic markets, rather than serving as an export platform, as indicated by the positive correlations of $GDPGR$, $INCOME$ and $SERV$ and the negative sign of the trade openness variable. The size of the local economy does not seem to affect the choice of location of FDI in services. Labour quality is not of particular importance for services FDI, while high labour cost and government intervention act as deterrent factors. Empirical results indicate that the infrastructure is not a crucial determinant for services FDI. However, a region with good infrastructural systems tends to attract a greater amount of manufacturing FDI. In line with many previous studies, our results indicate that the agglomeration of firms has a self-reinforcing effect on foreign investment; and that investment decisions may well be influenced by the presence of agglomeration economies. Manufacturing FDI is an important determinant of services FDI. There is also a strong self-reinforcing effect of FDI in services on itself. That is to say, FDI in manufacturing cause FDI in services and sFDI is also attracted by other services FDI. The presence of consolidated foreign firms in a province may act as a positive factor in building a locality's reputation, reinforcing the attractiveness of that particular location. From a policy perspective, the

positive influence of agglomeration economies highlights the benefits of attracting large initial investments. Policies that are able to reinforce the agglomeration economies could attract further foreign investments. This is an important implication for economies that compete in the tournament of attracting FDI. However, the agglomeration effects tend to increase the coast-inland disparity in China. Less developed central and western regions of China need to strengthen their location-specific advantages to attract both manufacturing FDI and services FDI into environment-friendly and labour-intensive industries so as to better utilize resources and improve services. The variable *URBAN* is positive and very significant for inland China under various model specifications. Thus, we are inclined to suggest that the policies promoting urbanization would encourage FDI inflows.

There exists significant regional heterogeneity in China in location determinants of FDI. The causes of the unbalanced geographic distribution of FDI and its high concentration in coastal regions and large cities have been identified as the results of superiority in industrial and economic development in terms of larger market size, higher purchasing power, developed infrastructure, more human capital, higher agglomeration effects and biased regional policies. Some differences can also be explained by the different sectoral distribution of sFDI in coastal and inland regions, which will be our further research focus.

This study examines and compares the determinants of inward FDI in the manufacturing and services sectors in China. Our empirical analysis shows that the location determinants of services FDI are close to the ones for manufacturing FDI. The determinants that were instrumental in attracting manufacturing FDI are effective in attracting services MNEs as well. Consistent with previous theoretical discussions (Dunning and McQueen, 1982; Boddewyn et al, 1986; Williams, 1997; Ramasamy and Yeung, 2010), our results suggest that no particularly new theory for explaining services FDI is required, only an adaptation will do. It is important to note, however, that the factors that are unique for service industry must be considered when analyzing the firms' international investment strategies. The inseparability of production and consumption activities in the case of services accounts for the importance of FDI as a means of selling services in foreign markets (Boddewyn, et al, 1986). FDI in services tends to be mainly motivated by market-seeking and client-following purposes which are more prominent for services FDI than manufacturing FDI.

We realized that there are some issues yet to be addressed in the future research and, until then, the followings are limitations of this study. First, our study is based on a relatively small sample due to data availability restriction, and, therefore, the results need to be interpreted with caution. Second, in this study, we did not incorporate heterogeneous nature of business activities within the services industry, and using data at the sub-sector level could be an interesting extension of the research. The location dynamics between local and foreign firms also deserves further attention in following studies.

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