# Determinants and motives of outward foreign direct investment from China's provincial firms*

## Chunlai Chen**

Based on Dunning's OLI framework and the investment development path theory, this paper investigated the determinants of outward FDI by China's provincial firms. The results show that provincial economic development, innovation and technology, and export to GDP ratio are statistically significant determinants, while FDI inflows, import to GDP ratio and provincial market size are not statistically significant determinants. The results suggest that the main motives for China's provincial firms to invest abroad are mainly market-seeking and efficiency-seeking.

Key words: China, outward foreign direct investment, home country determinants

## 1.    Introduction

Since China launched the "go global" strategy, outward foreign direct investment (OFDI) from China has increased dramatically. By 2012, OFDI flows from China reached US$84.22 billion while the stock of Chinese OFDI was worth US$509 billion. China's outward investors can be categorized into two groups: central government-controlled State-owned enterprises (SOEs) and provincial firms (including local government SOEs but majority of them are non-SOEs).[1] China's OFDI flows have been dominated by central government-controlled SOEs. In 2009, central government-controlled SOEs accounted for 82 per cent of China's total OFDI flows. However, since 2010 provincial firms increased OFDI rapidly and their share in China's total OFDI flows increased to 34 per cent in 2012. Although China's OFDI flows are still dominated by

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    [1]  According to China's administrative division, China has 22 provinces, 4 municipalities (Beijing, Chongqing, Shanghai and Tianjin) and 5 autonomous regions (Guangxi, Inner Mongolia, Ningxia, Tibet and Xinjiang). For simplicity, in this paper "province" is used to represent provinces, municipalities and autonomous regions.

central government-controlled SOEs, the importance of provincial firms in China's OFDI flows has been increasing. This article examines the home province determinants of OFDI that have contributed to the rapid increase of OFDI flows from provincial firms and the main motives of provincial firms in conducting OFDI.

Many studies have used the national aggregate OFDI data to investigate and explain the determinants and motives of China's OFDI (e.g. Buckley et al., 2007; Cheung and Qian, 2009; Cheung et al., 2012; Kolstad and Wiig, 2012; Liu et al., 2005; Tolentino, 2010; Wei and Alon, 2010). These studies find that, apart from the market-seeking motive, the main motives of China's OFDI are natural-resource-seeking and strategic-asset-seeking for the purposes of securing supplies of natural resources (mineral resources and fuel) and acquiring advanced technology to support the long-term economic development of China. More importantly, studies find that the Chinese multinational enterprises (MNEs) fundamentally differ from MNEs from developed countries in terms of ownership advantages, internationalization motives and home country parameters (Buckley et al., 2007; Liu et al., 2005). Therefore, it remains an open question whether previous conceptualizations can adequately explain the investment behaviour of Chinese MNEs (Boisot and Meyer, 2008). However, because of the overwhelming dominance of central government-controlled SOEs in China's OFDI flows, what previous studies investigated was actually OFDI by central government-controlled SOEs. As a result, the characteristics such as the determinants and motives of OFDI by provincial firms have not been specifically analysed.

In addition, previous studies focused on national level variables in investigating the home country determinants (e.g. Liu et al., 2005; Luo et al., 2010; Tolentino, 2010; Wei and Alon, 2010). Through over 30 years of economic reform, China has substantially decentralized the decision-making power on economic and social development from the central government to provincial governments, and more importantly, provincial governments have been granted the power to approve OFDI projects by provincial firms. However, the provincial level variables which are expected to have more direct impact on OFDI from local provincial firms have not adequately been taken into account in existing studies.

Recently, a number of studies, using either firm-level data collected by various institutions (e.g. Amighini et al., 2012; Duanmu, 2012; Lu et al., 2014; Wang et al., 2012a, 2012b) or firm-level survey data (e.g. Cui and Jiang, 2012; Liang et al., 2012; Liu and Scott-Kennel, 2011; Voss et al., 2010) analysed the determinants and motives of China's MNEs and found significant differences between SOEs and non-SOEs in terms of government support, risk taking, entry mode, location choice and investment motives in conducting OFDI. These studies have contributed to our understanding of OFDI of non-SOEs. However, the use of firm-level data may suffer from coverage bias. For example, the data used by Amighini et al. (2012), which are from *fDi Markets*[2], cover only greenfield investment projects and do not include cross-border mergers and acquisitions (M&As); the data used by Duanmu (2012) cover only Chinese MNEs from Zhejiang province; and the data used by Lu et al. (2014) are collected from publicly listed companies which may be biased towards large and better performing companies. Likewise, survey-based results are not always reliable because investors may be reluctant to disclose their true motives (Hill and Munday, 1994; Wang et al., 2012a). Although the data used by Wang et al. (2012a, 2012b) overcome such limitations by employing two firm-level datasets collected by Chinese authorities, the data cover only two years (2006–2007), which would not be sufficient, especially for provincial firms which increased OFDI substantially since 2010.

This study will focus on investigating the home province determinants of OFDI and the motives of provincial firms by employing data on provincial OFDI flows for the period 2003–2012 published by the Ministry of Commerce of China. Although the data of provincial OFDI flows include OFDI conducted by local SOEs, majority of provincial OFDI flows are conducted by non-SOEs. In this study, we use the term "provincial firms" to distinguish them from central government-controlled SOEs.

The analysis is based on Dunning's OLI framework and the IDP theory. The results show that the level of economic development, innovation and technological level and export to GDP ratio are statistically significant determinants affecting OFDI flows from China's provinces, while FDI inflows, import to GDP ratio and provincial market

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[2] www.fdimarkets.com/

size are not statistically significant determinants affecting OFDI flows from China's provinces. The results suggest that the main motives for China's local provincial firms to invest abroad are market-seeking and efficiency-seeking through exploiting technology and facilitating provincial exports.

This study makes three contributions to the existing literature on China's OFDI. First, this study finds that home province determinants are very important in determining the level of OFDI flows from each of China's provinces, demonstrating the usefulness of Dunning's OLI framework and the IDP theory. Second, this study reveals that the patterns of OFDI by China's provincial firms are consistent with the traditional international business theories. Third, this study finds that the main motives of China's provincial firms in conducting OFDI are different from those of SOEs as revealed by previous studies.

The paper is structured as follows. Section 2 presents a brief overview of OFDI from China during the period 1979–2012 with regard to the sources of China's OFDI and the characteristics of provincial OFDI. Section 3 presents the theoretical framework and discusses the hypotheses of provincial factors affecting OFDI. Section 4 conducts the empirical tests for the hypotheses. The final section summarizes the basic findings.

## 2. The development and characteristics of China's OFDI

### 2.1. The development of China's OFDI

Since the launch of the economic reform and open door policy in 1979, China has gradually liberalized its OFDI regime from a restricted and centrally controlled regime towards a more liberalized and transparent regime.[3] The relatively short history of China's OFDI can be broadly divided into two phases, 1979–2000 and 2001 to present.

In the first phase of China's OFDI, the political factors played a more important role in China's OFDI than the economic incentives (Cheung and Qian, 2009). In addition, Chinese domestic firms were

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[3] For a detailed survey of China's OFDI policy change in the last 30 years, see Voss et al. (2008).

inexperienced in terms of foreign investments and operations (Voss et al., 2008). As a result, although there were some fluctuations, OFDI flows from China were at a very low level, reaching only US$0.92 billion in 2000.

In 2001, China officially adopted the "go global" strategy as China's national economic strategy, encouraging domestic firms to invest, operate and do business abroad. The implementation of the "go global" strategy, together with China's accession to the World Trade Organization (WTO) in late 2001, boosted Chinese firms' international expansion. Consequently, OFDI flows from China increased rapidly, particularly since 2005, and reached US$84.22 billion by 2012.

## 2.2. The sources of China's OFDI

Chinese firms undertaking OFDI can be categorized into two groups, namely SOEs under the direction of the central government and provincial firms. Figure 1 presents the annual OFDI flows from these two sources and the shares of OFDI flows of central government-controlled SOEs in China's total OFDI flows during the period 2003–2012.[4]

**Figure 1. China's outward FDI flows by central SOEs and local provincial firms**
(Current prices and %)
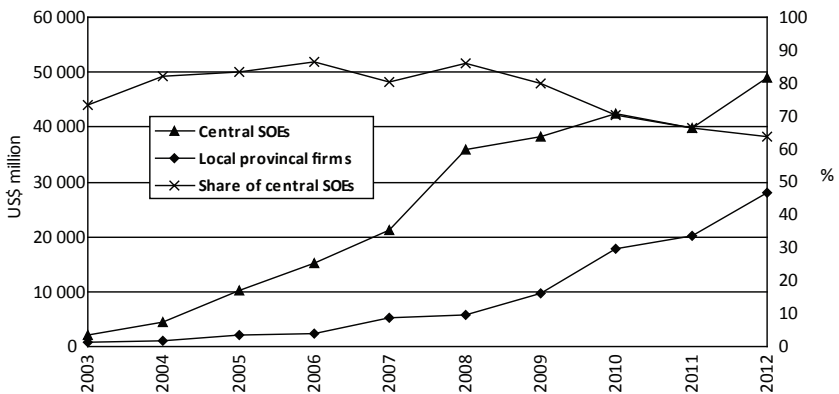


*Sources*: Ministry of Commerce of China (MOFCOM) (2010, 2012), *Statistical Bulletin of China's Outward Foreign Investment*, Beijing: MOFCOM.

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[4] Data for OFDI flows from local provincial firms are not available before 2003.

As the figure shows, OFDI flows from China were dominated by central government-controlled SOEs, accounting for around 77 per cent of China's annual total OFDI flows during the period of 2003–2012. In terms of OFDI stock, central government-controlled SOEs accounted for over 75 per cent of China's total OFDI stock abroad. In terms of project size, the OFDI projects of central government-controlled SOEs are much larger, averaging US$62 million for each OFDI project.

A distinctive feature of the rapid increase of OFDI flows from central government-controlled SOEs during 2003–2012 is the fact that the government provided substantial subsidies to SOEs in order to pursue long-term national interests. For example, Xiao and Sun (2005) suggested that the China National Offshore Oil Corporation (CNOOC) benefitted from a zero interest loan provided by the Government when bidding for the United States oil company Unocal. Yao et al. (2010) reported that Chinalco took advantage of preferential interest rates from the government to bid on Australian mining company Rio Tinto in 2009, and that the government provided this generous support for securing metal supplies.[5]

Compared to central government-controlled SOEs, provincial firms have played a relatively small role in China's OFDI drive. During the period 2003–2012, annual OFDI flows from the provincial firms accounted for around 23 per cent of China's total OFDI flows. However, since 2010 provincial firms increased OFDI rapidly and their share in China's total OFDI flows increased to 34 per cent in 2012. In terms of stock, provincial firms accounted for around a quarter of China's total OFDI stock abroad. In terms of the number of projects, provincial firms account for over 80 per cent of China's OFDI projects. However, in terms

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[5] Chinalco's first investment in Rio Tinto was in February 2008 when Chinalco invested US$14 billion to buy 9 per cent of Rio Tinto's shares. In February 2009, Chinalco agreed to invest another US$19.5 billion in Rio Tinto: US$12.3 billion for minority stakes in iron ore, copper and aluminium assets and US$7.2 billion for convertible bonds to take its equity stake in Rio Tinto to 18 per cent and two non-executive seats in Rio Tinto's board. Four of the biggest Chinese state-owned banks agreed to lend Chinalco US$21 billion. These banks, moreover, charged very low interest rates, only 94.5 basis points above the six-month London inter-bank offered rate (LIBOR). Further, they did not set a time for Chinalco to pay back the loans. By comparison, BHP Billiton at the same time issued ten-year bonds which had to bear interest at 390 basis points above the six-month LIBOR. In June 2009, Rio Tinto unilaterally abandoned its deal with Chinalco and proposed an alternative, to raise US$15.2 billion through right issues and US$5.8 billion from BHP Billiton by forming a joint venture with the latter in Western Australia.

of project size, OFDI projects of provincial firms are small, averaging US$3.57 million for each project.

Unlike central government-controlled SOEs, provincial firms, especially non-SOEs, have less connection with government, therefore, lacking government fiscal and financial supports. Their access to preferential loans from state-owned financial institutions is limited, and they face more obstacles in the OFDI approval process (Voss et al., 2010). As a consequence, while provincial firms may, on the one hand, face more difficulties in conducting OFDI, they may be less subjected to government intervention in making their business decisions and have more freedom to pursue their economic objectives. Hence, the determinants and motives of provincial firms might substantially be different from those of central government-controlled SOEs.

## 2.3. Characteristics of provincial OFDI

Figure 2 presents annual OFDI flows conducted by provincial firms in all provinces and three regions[6] during the period 2003–2012. As the figure shows, in the early stage of the "go global" strategy (2003–2009), OFDI flows from China's provincial firms increased moderately. With further implementation of the "go global" strategy and the adoption of a series of favourable policies, OFDI flows from China's provincial firms grew rapidly since 2010. Total OFDI flows from China's local provincial firms increased from US$9.6 billion in 2009 to US$28.14 billion in 2012.

Among the three regions, OFDI flows from the provinces in the eastern region increased steadily with a remarkably high growth rate, particularly over 2007–2012. For the other two regions, the growth of OFDI was more limited. In 2012, OFDI flows from the eastern region reached US$19.33 billion, compared to US$3.95 billion and US$4.86 billion in the central region and the western region respectively.

Within the eastern region, the province of Guangdong is the largest investor, followed by Shanghai, Zhejiang, Shandong, Beijing, Jiangsu and Liaoning. Fujian, Hebei, Tianjin and Hainan provinces

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[6] The eastern region includes Beijing, Tianjin, Hebei, Liaoning, Shanghai, Jiangsu, Zhejiang, Fujian, Shandong, Guangdong, and Hainan. The central region includes Shanxi, Jilin, Heilongjiang, Anhui, Jiangxi, Henan, Hubei, and Hunan. The western region includes Inner Mongolia, Guangxi, Chongqing, Sichuan, Guizhou, Yunnan, Tibet, Shaanxi, Gansu, Qinghai, Ningxia, and Xinjiang.

made a relatively small amount of OFDI compared to other provinces in the eastern region. Among the central region provinces, Hunan and Heilongjiang are the major investors. In the western region, the provinces of Yunnan and Sichuan are the leading investors while most other provinces undertook a very small amount of OFDI.

**Figure 2. OFDI flows from China by local provincial firms**
(Current prices)
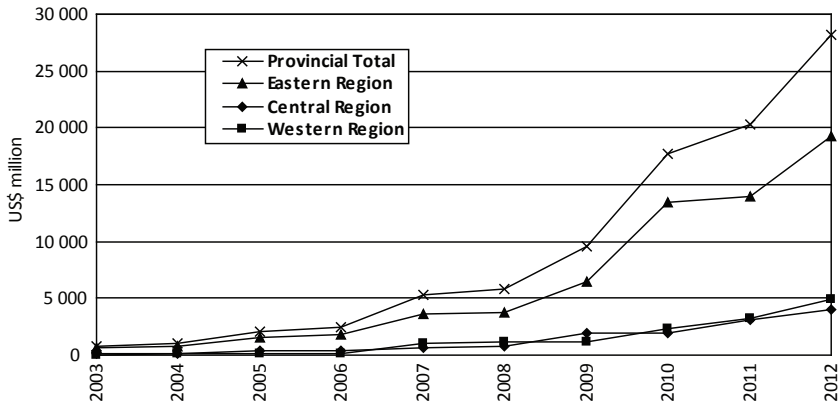


*Sources*:   Ministry of Commerce of China (MOFCOM) (2010, 2012), *Statistical Bulletin of China's Outward Foreign Investment*, Beijing: MOFCOM.

Although provincial OFDI flows were dominated by the provinces in the eastern region, with further implementation of the "go global" strategy and a series of favourable policies, the sources of provincial OFDI gradually expanded from the initial few concentrated areas to other provinces. Increasingly important areas for Chinese OFDI are the Yangzi River Delta region including Shanghai, Zhejiang and Jiangsu and the Bohai Gulf region including Shandong and Liaoning. Several provinces, such as Hunan and Heilongjiang in the central region, Yunnan and Sichuan in the western region, also witnessed relatively large increases in OFDI flows since 2009.

The disparity in OFDI across regions and provinces raises the following questions: what are the determinants affecting OFDI flows from China's provinces, and what are the main motives for local provincial firms to invest abroad? The following sections will address these questions.

## 3. Theoretical framework and hypotheses

The theoretical framework adopted in this study is Dunning's OLI framework and the IDP theory which is an extension of the OLI paradigm.

According to the OLI paradigm (Dunning, 1977, 1980, 1988, 1993, 1995, 2000; Dunning and Lundan, 2008), for a firm to conduct FDI, it must possess certain firm-specific *ownership advantages*. A firm's ownership advantage could be a patent or blueprint that gives rise to a product or a production process that other firms cannot emulate. The market power or cost advantage that the ownership advantage confers to the firm needs to be sufficient to outweigh the disadvantages of doing business abroad. Although ownership advantages are firm specific, they are closely related to the technological and innovative capabilities and the economic development levels of the source countries.

The foreign market must offer a *location advantage* that makes it profitable to produce the product in the foreign location rather than simply produce it at home and export. Location advantages include not only resource endowments, but also economic and social factors, such as market size and structure, prospects for market growth and the level of development, the cultural, legal, political and institutional environment, and government legislation and policies.

Finally, the MNEs must have an *internalization advantage*. If a company has a proprietary product or production process and if it is advantageous to produce the product abroad rather than export it, it is still not obvious that the company should set up a foreign subsidiary. An alternative is to license the technology to a foreign firm. However, because of market failures in the transaction of such intangible assets, it is advantageous for the firm to exploit the product or process internally within the firm rather than at arm's length through licensing. This is referred to as an internalization advantage.

The generalized predictions of the OLI framework are straightforward. At any given moment of time, the more a country's enterprises – relative to those of others – possess ownership advantages, the greater the incentive they have to internalize rather than externalize their use, the more they find it in their interest to exploit them from a foreign location, then the more they are likely to

engage in foreign production. The framework also can be expressed in a dynamic form. Changes in the outward or inward direct investment position of a particular country can be explained in terms of changes in the ownership advantages of its enterprises relative to those of other nations; changes in its location advantages relative to those of other countries; and changes in the extent to which firms perceive that these assets are best organized internally rather than by market (Dunning, 1993).

Based on the OLI paradigm, Dunning (1981) introduced the IDP theory explaining simultaneously both inward and outward FDI. The theory was later refined by Dunning and others (Dunning, 1986, 1988, 1993, 1997; Dunning and Narula, 1994, 1996; Duran and Ubeda, 2001, 2005; Narula, 1996). Although there are some shortcomings, empirical studies have shown that by incorporating some home country variables, like the level of technological and innovatory capabilities, economic and market structure, openness to international trade and institutional factors, the IDP theory is a useful framework for explaining the level of FDI flows (Andreff, 2002, 2003; Dunning et al., 2001; Kalotay, 2006; Kyrkilis and Pantelidis, 2003; Liu et al., 2005; Luo et al., 2010; Pantelidis and Kyrkilis, 2005; Stoian, 2013; Tolentino, 2010; Wei and Alon, 2010).

According to the IDP, the outward and inward FDI of a country depends on the country's level of economic development (usually measured by its GDP per capita). According to this theoretical approach, as a country develops, a structural change occurs, affecting FDI inflows and outflows which, in turn, change the country's economic structure, leading countries to follow an investment development path that consists of five stages. Along these stages, the ownership, internalization and location advantages of the firms change, making the country evolve from a net recipient of FDI to a net direct investor.

In stage 1, a less developed economy neither attracts nor generates FDI. In stage 2, industrializing developing economies attract FDI through their improved location advantages and perhaps generate minimum OFDI, resulting in a negative net investment position (i.e. inward FDI exceeds outward FDI). In stage 3, with the improvement of the country's technological capabilities and the expansion of its domestic market, the country attracts significant FDI and generates OFDI based on its innovations and international specialization. The net investment position remains negative. In stage 4, outward FDI is higher

than inward FDI and the net investment position becomes positive. In stage 5, most advanced countries are characterized by a balanced net investment position with very high levels of both inward and outward FDI. In this model, stages 1–3 are associated with developing economies and 4 and 5 are associated with developed economies (Duran and Ubeda, 2005). Each stage of economic development is associated with certain location advantages that attract FDI as well as certain ownership advantages of local firms that enhance OFDI (Stoian and Filippaios, 2008). Furthermore, the IDP theory assumes that inward FDI contributes to an improvement of the country's location advantages and the local firms' ownership advantages, thus enhancing both inward FDI and outward FDI in the future.

In Dunning's OLI paradigm and the IDP theory, the determinants of FDI can be classified into two groups, home-side and host-side factors. The home-side factors are ownership advantages and the internalization advantages, which determine the capability of a country to conduct outward FDI; and the host-side factors are location advantages, which determine the ability of a country to attract inward FDI. Both sets of determinants have been tested by scholars, examining them together or separately (Dunning, 1993; Dunning and Lundan, 2008). Some empirical studies based on the IDP theory[7] have shown that the home-side factors, such as home country's economic development, innovation and technology, economic and market structure, openness to international trade and the institutional factors, are important in determining the level of FDI outflows. Using the same methodology, this study will focus upon the home-side factors to explore the determinants of FDI from China's provinces. Building on the FDI literature and the IDP theory, we examine the following home-side factors.

### Level of economic development

The development-related variables of the home country can be used to explain levels of OFDI. According to the IDP theory, there is a strong positive relationship between the level of home country development and OFDI. This relationship is confirmed by empirical studies on developed countries (Barry et al., 2003; Bellak, 2001;

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[7] For example, Andreff (2002, 2003), Dunning (1981, 1986, 1993), Dunning et al. (2001), Kalotay (2006), Kyrkilis and Pantelidis (2003), Liu et al. (2005), Luo et al. (2010), Pantelidis and Kyrkilis (2005), Stoian (2013), Tolentino (2010), and Wei and Alon (2010).

Buckley and Castro, 1998) or on a mix of developed and developing economies (Dunning and Narula, 1994; Tolentino, 1993). Andreff (2002) finds that OFDI from transition and developing economies is a function of the home country's level of economic development. Stoian (2013) finds that per capita GDP is positively related to OFDI of the Central and Eastern European countries. An empirical study of macroeconomic determinants of OFDI by Kyrkilis and Pantelidis (2003) found that the level of income is associated with OFDI activity. For Chinese FDI, Liu et al. (2005) found that the level of economic development, proxied by GNP per capita plus refinements, was the main factor explaining Chinese OFDI. Economic development can generate ownership advantages that domestic companies can exploit when investing abroad. These ownership advantages arising from economic development of the home country include greater capital availability, higher productivity, specialized know-how and research and development (Duran and Ubeda, 2005). In this study, we use the real GDP per capita (*PGDP*) as the variable to reflect the level of economic development of the province. A higher level of economic development (*PGDP*) is the basis for a province to invest abroad. We therefore derive the first hypothesis:

> *Hypothesis 1: The level of provincial economic development (PGDP) has a positive impact on provincial OFDI flows.*

## *Level of innovation and technology*

The OLI framework and the IDP theory suggest that countries with larger innovative and technological capabilities generate more OFDI. This link has received extensive theoretical and empirical support, especially for developed countries (Cantwell, 1981, 1987; Dunning, 1993; Duran and Ubeda, 2001; Grubaugh, 1987; Kogut and Chang, 1991; Lall, 1980, 1996; Manolopoulos et al., 2007; Narula, 1996; Pearce, 1989; Pugel, 1981). However, in terms of developing countries, some studies find that the competitive advantages of emerging economies' MNEs tend to be based on price competitiveness rather than technology or brand (Gammeltoft et al., 2010). Salehizadeh (2007) also finds that some emerging economies' MNEs have access to "lower level" technologies and management practices that may be better suited to other emerging markets, thus enabling them to generate OFDI into similar economies.

In the case of China, over 30 years of fast economic growth saw China not only increase its income level but also improve its technological level. Although China's technologies in general are still less sophisticated than Western technologies, they are relatively advanced compared to those of other developing countries. It is reasonable to assume therefore that Chinese firms equipped with relatively advanced technologies have the motivations to exploit such technologies in other developing countries through OFDI. Therefore, we expect that provinces with higher level of technology would have higher level of OFDI flows. There are many proxies that can be used to measure innovative and technological capabilities, such as R&D expenditure, R&D personnel, technology balance payment and patent. However, due to data limitations at the province level, we use patent numbers as the proxy. Patent number as an indicator to represent the level of technology and innovative capabilities has been widely used in empirical studies (Archibugi and Pianta, 1996). In this study, the annual number of patents granted per 10,000 persons in each province is used to represent the innovative and technological capability of each province. We formulate the second hypothesis as follows:

> *Hypothesis 2: The level of provincial innovative and technological capability (PATP) has a positive impact on provincial OFDI flows.*

## Level of inward FDI

According to the OLI paradigm, foreign firms can compete locally with domestic firms, which would have the superior understanding of the market and environment, because they possess firm-specific ownership advantages. Since both foreign and domestic firms can imitate each other in the same market, domestic firms can benefit from FDI firms through knowledge spillovers (Caves, 1996; Dunning, 1993). These include imitation and learning-by-doing by local firms, technology spillovers through backward and forward industrial linkages, international experience through strategic alliances with FDI firms, information spillovers and competition. The IDP theory also postulates that inward FDI enhances OFDI. As a result of knowledge spillovers from FDI, local companies improve their ownership advantages and exploit these new ownership advantages through OFDI (Dunning, 1981, 1986, 1988; Duran and Ubeda, 2001; Stoian, 2013; Stoian and Filippaios,

2008). However, empirical findings on the existence of positive spillovers generated by FDI vary (Gorg and Greenaway, 2004). Despite the inconclusive evidence, we expect that inward FDI will have positive impact on OFDI if there are positive spillovers from FDI on domestic economy. We thus have the third hypothesis:

> *Hypothesis 3: The level of provincial inward FDI flows (INFDI) has a positive impact on provincial OFDI flows.*

## Level of international trade openness

The liberalization of a country's international trade is expected to influence positively OFDI (Dunning et al., 2001; Kyrkilis and Pantelidis, 2003). China's open policy on international trade and capital flows are likely to influence the patterns of Chinese OFDI (Buckley et al., 2007). The more a country is open to foreign economic transactions, the easier for domestic firms to access foreign markets, the easier for them to obtain information and experience and, therefore, the easier for them to invest abroad.

One of the motives for MNEs to conduct OFDI is market-seeking – to sustain or protect the existing foreign markets, or explore or promote new foreign markets (Dunning, 1993). Apart from directly setting up production bases abroad, establishing business centres and trading firms overseas to facilitate exports of the parent companies is an effective way to maintain existing foreign markets or explore new ones, especially when the home country still enjoys cost advantages. During the 1980s and 1990s, much of Chinese OFDI was directed at providing local support functions for Chinese exporters and to help them increase their hard currency earnings. Typically, such investments were small scale, with local subsidiaries providing information, import and export services, transportation and financial services to their parent companies and other Chinese firms (Gang, 1992; Zhan, 1995). After China's accession to the WTO and the implementation of the "go global" strategy in 2001, many Chinese companies, especially those of non-SOEs based in the coastal provinces that witnessed a rapid increase in exports like Guangdong, Zhejiang, Fujian and Jiangsu, established trading firms overseas to facilitate exports (MOFCOM, 2010). The ratio of export to GDP of a province captures the market orientation of that province's firms. Provinces with a higher export to GDP ratio would

have more incentives to invest abroad to facilitate their exports. Thus we have the following hypothesis:

*Hypothesis 4: The level of provincial export to GDP ratio (EXGDP) has a positive impact on provincial OFDI flows.*

Another motive for MNEs to conduct OFDI is resource-seeking – to obtain access to natural resources abroad then export them back to China (Dunning, 1993). In order to pursue long-term national interests and to secure supplies of strategic natural resources, Chinese companies have been very active in investing in natural resource sectors in recent years. The recent high-profile investments in Australia, Canada and the United Sates as well as developing countries in Asia and Africa put Chinese companies in the spotlight. Although most of the OFDI projects in natural resources are conducted by large central government-controlled SOEs through cross-border mergers and acquisitions (M&As), it is worth investigating whether provincial firms also have this motive in undertaking OFDI. If that is the case, then provinces with a higher level of import of resources would see a higher level of investment overseas in natural resource sectors. However, due to data limitation, we use provincial total imports and total OFDI as proxies for import of resources and OFDI in resource sectors respectively.[8] Thus we have the following hypothesis:

*Hypothesis 5: The level of provincial import to GDP ratio (IMGDP) has a positive impact on provincial OFDI flows.*

## Control variable

Drawing on existing literature, we control for provincial GDP. Despite the mixed evidence in the literature (Andreff, 2002; Chudnovski and Lopez, 2000; Wei and Alon, 2010), researchers have suggested that larger home markets lead to higher OFDI (Andreff, 2002; Buckley et al., 2007; Stoian, 2013) as these markets allow the firms to derive ownership advantages from economies of scale. However, firms can use

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[8] With fast economic growth, China's imports of primary products (mainly natural resources) have increased very rapidly. As a result, during the period 2003-2013, on average the imports of primary products accounted for 55.18 per cent of China's total ordinary imports.

the national market to realize economies of scale and scope. Therefore, provincial GDP may affect OFDI flows but this impact is not clear.

## 4. Empirical analysis and discussion

### 4.1. Variable specification and the model

The relationship between OFDI and the home-side variables of China's provinces is investigated over time and across provinces. Data for 30 provinces for the period from 2003 to 2012 are included.[9] In this study, the dependent variable, denoted as $OFDI_{it}$, is the aggregate OFDI flows from China's province $i$ in year $t$. There are nine missing values for OFDI flows (Hainan for years 2003-04, Chongqing for year 2003, Guizhou for years 2003–06, Qinghai for year 2004 and Ningxia for year 2003). So the total observations are 291. There are six independent variables which are summarized in Table 1.

We formulate the following model to test the determinants of provincial OFDI flows.

$$lnOFDI_{it} = \beta_0 + \beta_1 lnPGDP_{it-1} + \beta_2 lnPATP_{it-1} + \beta_3 lnINFDI_{it-2} + \beta_4 lnEXGDP_{it-1} + \beta_5 lnIMGDP_{it-1} + \beta_6 lnGDP_{it-1} + v_i + \varepsilon_{it} \tag{1}$$

The ordinary least squares (OLS) regression can be applied to equation 1. But the OLS estimates may be biased if the independent variables are correlated with some province-specific and time-invariant unobserved factors in the error term. To eliminate the province-specific and time-invariant factors which may affect FDI outflows, we adopt the fixed-effects panel regression model to estimate equation 1.[10] Another concern is the potential endogeneity problem. Without appropriate instruments, it may be difficult to control for possible endogeneity. For example, OFDI is not only affected by economic development and patents, but it may also boost economic growth and innovation and technological capability. However, as most Chinese FDI projects have started only recently, there is little reason to be seriously concerned about reverse causality running from outward FDI to parent firm characteristics (Wang et al., 2012a), thus to home province characteristics. Nevertheless, in order to mitigate the potential causality

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[9] Tibet is excluded from the test due to a lack of data.
[10] The Hausman test results prefer the fixed-effects model.

**Table 1. List of variables of provincial OFDI flow equation**

| Variable name | Specification of variables | Sources |
|---|---|---|
| **Dependent variable** | | |
| OFDI$_{it}$ | Aggregate OFDI flows from province i in year t. Million US dollars at 2000 constant prices. | Ministry of Commerce of China (2010, 2012), *Statistical Bulletin of China's Outward Foreign Investment*. |
| **Independent variables** | | |
| PGDP$_{it}$ | Per capita GDP of province i in year t. *Renminbi* yuan per capita at 2000 constant prices. | National Bureau of Statistics of China (various issues), *China Statistical Yearbook*. |
| PATP$_{it}$ | Patent granted per 10,000 persons of province i in year t | Same as above. |
| INFDI$_{it}$ | FDI inflows into province i in year t. Million US dollars at 2000 constant prices. | Before 2005 (including 2005), National Bureau of Statistics of China (various issues), *China Statistical Yearbook;* After 2005, Provincial Bureau of Statistics (various issues of each province), *Provincial National Economic and Social Development Statistics Bulletin*. |
| EXGDP$_{it}$ | Export to GDP ratio of province i in year t. | National Bureau of Statistics of China (various issues), *China Statistical Yearbook*. |
| IMGDP$_{it}$ | Import to GDP ratio of province i in year t. | Same as above. |
| GDP$_{it}$ | Gross Domestic Product of province i in year t. *Renminbi* million yuan at 2000 constant prices. | Same as above. |

problem, following previous studies (e.g. Raff et al., 2009; Wang et al., 2012a), we lag all the independent variables by one year, except for the FDI inflow variable which is lagged 2 years.[11]

## 4.2. Regression results and explanations

Table 2 reports the regression results of the fixed-effects model. Model 1 includes the three key variables of the IDP theory – the level of economic development (*PGDP*), technology and innovatory capabilities

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[11] We assume that FDI will take a longer period of time to generate spillovers on domestic economy.

(*PATP*) and FDI inflows (*INFDI*). Model 2 includes the three key variables of the IDP theory and the two trade openness variables – export to GDP ratio (*EXGDP*) and import to GDP ratio (*IMGDP*). Finally Model 3 includes all independent and control variables.[12] The estimated results are robust throughout all 3 models. Therefore, despite shortcomings owing to the short span of available data, this study does present an initial insight into China's provincial OFDI determinants in terms of home-provincial variables. The following explanations are based on Model 3 which includes all independent and control variables.

The regression results show that the level of economic development (*PGDP*), innovation and technology capability (*PATP*) and the export to GDP ratio (*EXGDP*) are positive and statistically significant determinants of OFDI flows from China's provinces. However, the level of FDI inflows (*INFDI*), the import to GDP ratio (*IMGDP*) and the market size (*GDP*) are not statistically significant.

**Table 2. Regression results of China's provincial OFDI flows,**
**fixed-effects 2003–2012**
(Dependent variable: lnOFDI)

| Variables | Model 1 | Model 2 | Model 3 |
|---|---|---|---|
| Constant | -26.70 (-8.56)*** | -29.71 (-9.47)*** | -32.84 (-6.19)*** |
| lnPGDP | 3.06 (8.47)*** | 3.26 (9.02)*** | 2.50 (2.30)** |
| lnPATP | 0.39 (2.16)** | 0.45 (2.50)** | 0.40 (2.07)** |
| lnINFDI | 0.14 (0.86) | 0.04 (0.23) | 0.03 (0.21) |
| lnEXGDP | | 0.85 (3.70)*** | 0.81 (3.45)*** |
| lnIMGDP | | -0.09 (-0.33) | -0.07 (-0.26) |
| lnGDP | | | 0.79 (0.73) |
| Number of observations | 291 | 291 | 291 |
| Number of groups | 30 | 30 | 30 |
| R² Overall | 0.56 | 0.52 | 0.60 |
| F-statistics | 226.23*** | 146.06*** | 121.58*** |

Note:   t-statistics are in parentheses.
    * Statistically significant at 0.10 level.
    ** Statistically significant at 0.05 level.
    *** Statistically significant at 0.01 level.

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[12] A multicolinearity test is conducted for all independent and control variables. The mean VIF is 4.87, which is within the acceptance level.

More specifically, we find that the coefficient of per capita GDP is positive and statistically significant at the 5 per cent level; thus hypothesis 1 is supported. Consistent with the propositions of the IDP, provinces with a higher level of economic development generate more OFDI. This suggests that local firms have developed ownership advantages that they can exploit through investing abroad. These advantages may be a result of the development and accumulation of advanced technologies, production know-how, management and marketing skills and international business networks associated with a higher level of economic development.

We also find that the patent variable is positive and statistically significant at the 5 per cent level; thus hypothesis 2 is supported. This indicates that OFDI is associated with a higher level of technological development of the province. This also suggests that provincial firms that have accumulated and developed certain technologies have incentives to exploit their ownership advantages through investing abroad. This finding is consistent with the explanations of international business theories.

The motives for MNEs to conduct technology-exploiting OFDI can be either market-seeking – to sustain or protect existing markets or to explore or promote new markets; or efficiency-seeking – to use particular and specific resources (especially labour and raw materials) at a lower real cost (Dunning, 1993). For China's provincial firms, the main motive to invest abroad is market-seeking, given the pressure of increasing competition and the acceleration of industrial restructuring and upgrading at home, and facing increasing use of non-tariff trade barriers by China's trading partners. At the same time, facing the rapid increase in production costs at home (increasing costs of labour and raw materials), efficiency-seeking is an increasingly important motive for them to invest abroad. For example, some Chinese non-SOEs in the manufacturing industries, such as machinery, automobiles and home appliances, have established market-seeking and efficiency-seeking foreign subsidiaries through technology-exploiting OFDI mainly in developing countries. Notable examples include Sany Group, which stablished construction equipment plants in Brazil, Germany, India, Indonesia and the United States; Wanxiang Group, which has 25 foreign subsidiaries in production and distribution of auto parts; Zongshen Industrial Group, which established a motorcycle manufacturing

subsidiary in Viet Nam; and Haier Group which established fridge manufacturing subsidiaries in Asia (India, Indonesia, Jordan, Malaysia, Pakistan and the Philippines), in Africa (Algeria, Egypt, Nigeria, South Africa and Tunisia) and in the United States.

Some studies find that China's OFDI flows are negatively related to technology development.[13] One possible explanation for such findings is that these studies used the aggregate Chinese OFDI data. As we discussed in the previous section, nearly 80 per cent of China's OFDI is carried out by central government-controlled SOEs. These large SOEs rely on various forms of government support, such as easy access to state-owned financial institutions, low interest loans and foreign currency reserves in exchange for implementing national long-term and strategic interests. Because of these favourable advantages granted by the Government, firm-specific ownership advantages are a less important factor in determining OFDI flows of large SOEs. Therefore, the motives of large SOEs to conduct OFDI abroad are mainly resource-seeking in resource rich countries and asset- and technology-seeking in developed countries (e.g. Buckley et al., 2007; Wei and Alon, 2010). In contrast to central government-controlled SOEs, provincial firms, especially non-SOEs, do not receive as much government support. Therefore, creating and developing their firm-specific ownership advantages are important for provincial firms to invest abroad. However, it should be noted that the ownership advantages of provincial firms may not be the most advanced technologies but matured technologies, production know-how, management skills and business and marketing networks that are most suited for emerging and developing countries. Therefore, the exploitation of ownership advantages is one of the main motives for China's provincial firms to conduct OFDI, which is consistent with the explanations of traditional international business theories.

Contrary to our expectations, we find that FDI inflows have no significant impact on OFDI from China's provinces; thus hypothesis 3 is not supported. Wang et al. (2012a) find that inward FDI even has a negative impact on outward FDI in China. This suggests that FDI in China has not yet generated sufficient positive spillovers on provincial firms to help them generate ownership advantages. Furthermore, foreign-funded enterprises (FFEs) in China, including enterprises funded by foreign investors and investors from Hong Kong (China), Macao (China)

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[13] For example, Wei and Alon (2010).

and Taiwan Province of China, have not been very active in conducting OFDI. By the end of 2010 the share of OFDI projects conducted by FFEs is only 5.2 per cent of China's total OFDI projects abroad (MOFCOM, 2010).

Consistent with our expectations, we find that the export to GDP ratio is positive and statistically significant at the 1 per cent level; thus hypothesis 4 is supported. The finding is consistent with conventional empirical findings that FDI follows exports.[14] This finding is consistent with the view that one of the key motives of provincial firms to invest abroad is to promote and facilitate provincial exports.

Contrary to our expectations, we find that the import to GDP ratio is not significant; thus hypothesis 5 is not supported. The insignificance of the import to GDP ratio suggests that securing resource supplies through OFDI may not be an important motive for local provincial firms. This result could also be due to the relocation production from China to other developing countries. Imports of resources and intermediate products to China for processing and assembling and then re-exporting are reduced when Chinese firms relocate processing and assembling abroad via OFDI (Buckley et al., 2007).

This finding is very interesting and is different from other studies. For example, Wei and Alon (2010) find that imports have a positive and significant impact on China's OFDI flows; Buckley et al. (2007) find that natural resource-seeking is a main motive of Chinese OFDI. As we discussed earlier, the main reason for such results may be that these studies used the aggregate data of China's OFDI flows. It is well known that one of the important aspects of China's "go global" strategy is to encourage domestic firms to invest abroad to secure supplies of natural resources to assist long-term economic growth. Chinese companies invest overseas to access to resources mainly through cross-border M&As. However, most of these deals are carried out by central government-controlled SOEs, like China National Offshore Oil Corporation (CNOOC), PetroChina, China National Petroleum Corporation (CNPC), and Chinalco. Because of the dominance of large SOEs in the strategic resource sectors in China, provincial firms, especially non-SOEs, have effectively been excluded

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[14] For example, Buckley et al. (2007) find that export positively affects China's OFDI flows.

from those sectors. In addition, provincial non-SOEs have less support from government, lacking access to loans from state-owned banks and other financial institutions. As a result, provincial non-SOEs have less incentive and capabilities to engage in cross-border M&As to secure resource supplies.

Finally, we find that provincial GDP is insignificant in determining provincial firms' OFDI. This suggests that the size of the provincial economy may not influence provincial OFDI directly since firms can realize economy of scale and economy of scope by relying on the national market. It may also suggest that the larger the provincial economy, the greater the opportunity for firms serving domestic market and thus reducing the incentives for investing abroad.

## 5.    Conclusion

Based on Dunning's OLI framework and the IDP theory, we investigated the home-province determinants affecting OFDI flows from China's provincial firms. The study finds that the province's level of economic development, innovation and technology capability and the export to GDP ratio are important determinants of OFDI by provincial firms. The results suggest that market-seeking is the main motive for provincial firms to invest abroad. In addition, facing the intense competition and rapid increase in production costs at home, efficiency-seeking is an increasingly important motive for provincial firms to invest abroad.

This study reveals the characteristics of OFDI from China's provincial firms. In contrast to OFDI of China's central government-controlled SOEs, which has been motivated primarily by the desire to secure supplies of key natural resources, circumvent host country trade barriers, penetrate new markets, acquire advanced technology and management expertise, and seek strategic assets (Wei and Alon, 2010), OFDI of China's provincial firms has been motivated not only by the desire to circumvent host country trade barriers, sustain and protect existing markets, and explore and promote new markets, but also by the desire to exploit ownership advantages, such as matured technology, know-how, management skills and business and marketing networks, and the pressure of intense competition and the acceleration of industrial restructuring and upgrading at home.

Given that OFDI brings benefits to the home economy through increased competitiveness, facilitating exports, industrial restructuring and upgrading and economic growth, provincial governments should consider implementing policies to encourage and facilitate OFDI. This includes policies to encourage R&D and technology development; policies to increase competition and to accelerate SOE reform and enterprise restructuring; policies to encourage the interaction between FFEs and domestic firms in order to enhance positive spillovers from FDI and increase the ownership advantages and the ability to generate OFDI of domestic firms.

We should, however, acknowledge the limitations of this study. Because the data on provincial OFDI flows do not include the information on destinations, we cannot test the patterns of OFDI and motives of local provincial firms in terms of location choice, risk taking and the motives of strategic and technological asset-seeking in the empirical model. Further work should pay more attention on these aspects by including the host country variables and bilateral variables in the empirical model in order to have a more comprehensive understanding of the determinants and motives of China's OFDI.

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