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The Growth Impact of Chinese Direct Investment on Host Developing Countries

Abstract

This paper examines the growth impact of Chinese outward foreign direct investment (OFDI) on host developing countries and investigates whether it is different from that of OFDI from Western countries. The analysis covers the distinctive characteristics of Chinese OFDI, in particular, weak ownership advantages and strong state supportiveness, and how they influence the growth impact of OFDI through different transmission channels. Using a cross-country panel dataset for 52 countries over the 2004-2012 period and OFDI originating from China and the US as examples, the results attest to our argument that it is not absolute but relative ownership advantage and the gap-filling compatibilities between FDI and host economies that determine the growth impact of FDI on the host countries. It finds that both Chinese OFDI and US OFDI have a significant positive impact on capital accumulation in developing countries; however, Chinese OFDI has a stronger effect on employment and productivity growth than US OFDI. Moreover, the growth impact of Chinese OFDI is stronger in low-income countries, while US OFDI demonstrates significant effects mainly in middle-income countries.

Key words: Outward foreign direct investment, growth, employment, productivity, capital accumulation, China, emerging market

I. Introduction

Over the past twenty years, outward foreign direct investment (OFDI) from emerging markets has rapidly increased. Adequately understanding OFDI from emerging market multinational enterprises (EM_MNEs) has, however, proved challenging in several respects. Although the existing literature on inward foreign direct investment (FDI) and economic growth offers valuable insights into the potential impact of inward FDI on economic growth in developing countries (e.g., Borensztein et al., 1998; Balasubramanyam et al., 1996; De Mello, 1999; Javorcik, 2008), existing theory in explaining the benefits of FDI is not necessarily sufficient to analyse the relatively recent emergence of emerging market OFDI (EM_OFDI) (Buckley and Hashai, 2014). This is due to several structural and institutional differences between EM_MNEs and traditional MNEs going against the important implicit assumption that MNEs enjoy widely superior "ownership advantages" in technological, managerial and marketing knowledge over entities in host countries (Dunning, 2000).

EM_MNEs conducting OFDI into developing markets typically differ from traditional MNEs in two respects. First, EM_MNEs do not have as strong "ownership advantages" as those possessed by traditional MNEs (Narula and Dunning, 2010; Buckley and Hashai, 2014). Second, the state has often played a significant institutional role facilitating or incentivising the activities of EM_MNEs. These distinctive characteristics have led many scholars to conceive of EM_OFDI as a 'new breed' of FDI (e.g. Cuervo-Cazurra, 2012; Ramamurti and Hillemann, 2018). Although recognition of the novelty of EM_OFDI has opened new avenues for academic research, our understanding of its impact on host countries, and how this impact differs from that of traditional OFDI from developed countries, remains limited, with extant academic and policy debates on the issue being fragmented and inconclusive.

On the one hand, some scholars argue that the emergence of EM_OFDI has provided a new source of capital, technology and skills (UN, 1993). South-South FDI is also thought to have an advantage over traditional FDI from developed countries because the technology used in EM_OFDI may be 'more appropriate' (e.g., Aykut and Goldstein, 2007). On the other hand, EM_MNEs are found to be less experienced in building linkages and integrating themselves into local communities. For instance, some have argued that Chinese OFDI (CN_OFDI) in Latin America may crowd out local industries and cause these economies to remain resource dependent (Ademola et al., 2009).

With EM_OFDI and traditional OFDI acknowledged to possess significantly different attributes, do their effects on the economic growth of host countries differ systematically? If so, *how* and *why*? The plurality of views on the matter testify to how the effects of EM_OFDI remain an open issue with no clear consensus. As EM_OFDI rapidly becomes a rising force within international investment flows into many developing regions, these are important questions with significant economic and political implications (Buckley and Ghauri, 2004; Buckley et al., 2018). This paper addresses this gap in our understanding through a study of the growth impact of Chinese OFDI. This is also juxtaposed against the OFDI from the US as a form of traditional Western FDI.

In the context of OFDI from China, although substantial recent literature has been published, most of it focuses on its determinants (e.g., Cui and Jiang, 2009; Wang et al., 2012a; Kang and Jiang, 2012; Kolstad and Wiig, 2012; Ramamurti, 2012; Lu et al., 2014; Hong et al., 2015; Shi et al., 2017; Gaur et al., 2018) and how these affect its behaviour, such as entry mode and its capability development (Luo and Tung, 2007; Meyer et al., 2009; Driffield et al., 2014; Liu and Giroud, 2016; Buckley and Munjal, 2017). These studies provide valuable insights into the determinants and behaviour of CN_OFDI and their impact on MNEs' capability upgrading (Li,

et al., 2016; Li, et al., 2017), especially relating to the role of the state in this process (e.g., Wang et al., 2012a; Gaur et al., 2018; Wei, et al., 2015; Huang, et al., 2017; Deng, et al., 2018). However, research on the impact of CN_OFDI on host economies is limited except for a few case studies (e.g., Gu, 2009; Kaplinsky and Morris, 2009; Brautigam, 2009).

Our first contribution, therefore, lies in the extension of the 'global factory' perspective and the development of an analytical framework that combines the 'global factory' perspective with the FDI and development literature through the 'growth accounting' approach, which is widely used in economic studies to analyse the fundamental determinants of economic growth (Barro, 1999; Young, 1992; Crafts, 2003; Brandt and Zhu, 2010). Theoretically, under such a framework, it can be argued that the various determinants of economic growth, such as financing, employment, and production, should be understood as factors which are increasingly influenced by the interaction of both domestic and foreign investment decisions for any single economy (Buckley, 2009; Buckley and Hashai, 2014). This framework enables us to understand how FDI invested by the MNEs in different sectors of the host economies may (or may not) help the host countries unblock the growth constraints and result in significant economic growth. This contributes to the debate on globalisation and international development by extending our understanding of how the strategic decisions made by the MNEs, their location decisions in particular, interact with the host country economies and influence their economic growth, either positively or negatively, through different growth mechanisms. This paper also explains how state supportiveness to the OFDI may lead to a modified location strategy of the MNEs, which may generate different impacts deviating from the conventional trajectory suggested by the existing theory, when state supportiveness attracts or pushes FDI flow into untraditional sectors which would otherwise not receive FDI, based on pure commercial considerations. This hence makes some previously under-invested sectors in the low-income countries, such as the manufacturing industry, the recipient of some FDI.

The second area to which we contribute concerns the impact of FDI which has different country origins. As Ramamurti (2012) argues, the rise of OFDI from the EM serves as a valuable natural experiment for probing whether the impact of FDI varies by country of origin. Different from earlier research by Kojima (1975) which argues that Japanese FDI had more beneficial welfare effects on the host countries than the US FDI did because of the different types of FDI from these two countries, this paper argues that country origin of FDI matters for its growth impact in host countries because of the different compatibilities between the FDI and the host economies due to different country origin. This paper develops an analytical framework based on the literature on FDI and economic development and on the location decision of FDI from the 'global factory' perspective (Buckley and Ghauri, 2004; Buckley, 2009; Buckley and Hashai, 2014). It considers the compatibilities between FDI and the host countries as a result of MNEs' location strategies in the 'global factory' and the characteristics of the host countries. It suggests that the growth benefits from FDI in a host country do not require an *absolute* advantage in resources and capabilities, such as the advantage enjoyed by traditional MNEs. Instead, possible growth effect pathways may be dependent on *relative* terms, involving comparative strength along multiple dimensions. Therefore, OFDI from a developing country may have a positive effect on economic growth in other host developing countries where they can provide the appropriate compatibilities to the host economies to fill specific local gaps in capital, labour or technology and thus alleviate their constraints to growth. The net growth effect is the outcome of a combination of different effects in multiple dimensions. The findings from this research will help to demystify the growth impact of South-South FDI with important policy implications.

The third area that this research contributes is that empirically it provides the first large cross-country panel data-based evidence on the growth impact of CN_OFDI, in comparison with US

OFDI, showing the variation in strength and significance in different regions through different channels. We use Chinese OFDI as an example to empirically analyse and test the hypotheses developed in the theoretical discussion. The empirical analysis is based on a cross-country panel dataset of 52 host developing countries for the 2004-2012 period. Income growth is broken down into growth in capital, labour, and productivity. The impact of CN_OFDI on these growth factors is examined for country groups of different development levels. We also investigate whether Chinese and 'traditional' FDI have differential impacts in the host developing countries. We choose the US as a proxy for traditional FDI because the US has the largest OFDI stock and flow over the sample period, distributed in a wide range of developing countries. As far as we are aware, this is the first large panel data-based evidence on the growth impact of CN_OFDI in comparison with that of US_OFDI. This paper also provides the first large dataset-based evidence on the employment effect of EM_OFDI on host countries. This reveals larger job creation effects of EM_OFDI in host developing countries despite the considerable number of expatriates.

II. Gap-filling compatibilities and growth impact of Chinese OFDI: Theoretical framework

2.1 The drivers of economic growth and the role of FDI

In the economics literature, the economic growth of an economy is assumed to be driven by growth in capital (K), labour (L), and other factors affecting productivity, such as technology and competition. Therefore, the growth effects of FDI, positive or negative, occur through capital formation, job creation and productivity enhancement (Solow, 1957; Collins and Bosworth, 1996; Díaz and Franjo, 2016). Theoretically, inward FDI can produce substantial gains. These include 1) development financing; 2) job creation; 3) knowledge transfer and spillovers through the demonstration effect, movement of trained labour, and transfers within

the supply chain; and 4) the competition effect, whereby foreign entry forces local firms to enhance efficiency to compete with foreign invested firms (Blomstrom and Kokko, 1997; Borensztein et al., 1998; de Mello, 1999; Javorcik, 2008). On the other hand, FDI may also have negative effects on the host economy, for example the crowding-out effect (Driffield and Taylor, 2000; Fu, 2004)[1].

Moreover, as the literature suggests, the impact of inward FDI on the growth of host economies depends on the country origin of the FDI (Kojima, 1975; Javorcik, 2008), which shapes some important characteristics of the FDI as well as the technological, institutional, and cultural distances between the home and host countries. These factors determine MNEs' location decisions for their overseas investments (Dunning, 2000; Dunning and McKaig-Berliner, 2002; Storper, 2000; Buckley and Ghauri, 2004), which subsequently also shape the compatibilities between their FDI and the host economies.

2.2 The 'global factory' and the location decision of MNEs

According to the 'global factory' framework, the global economy is a single system in which the division of financing, employment and economic activity by location and ownership is determined at an international level (Buckley, 2009; Buckley and Hashai, 2014). This is intensified with globalisation, with CN_OFDI rising quickly in parallel. The eclectic paradigm of international business suggests that MNEs generally seek resources, markets, efficiency or strategic assets (Dunning, 2000). In the era of globalisation, MNEs are slicing the activities of firms even more finely and using sophisticated decision-making measures to find optimum locations for each closely defined activity. Therefore, based on their objectives, they may invest in resource-rich countries; countries with high incomes or large populations from which to form

[1] A detailed elaboration of each of these channels and the literature are provided later in this section.

a large market and obtain cheap and skilled labour, which enables efficiency gains for an MNE; or countries strong in technology and innovation. MNEs hence locate different sections of production activities, e.g., resource extraction and agricultural production; marketing and after-sales services; manufacturing and assembling; or research and development, in these countries, respectively (Buckley and Ghauri, 2004). The first three types of objectives, and hence the MNEs' corresponding activities, may all take place in developing countries, while the R&D and design-related activities are most likely to be located in developed countries.

The rising prevalence of the global factory of MNEs spreading differentiated operations across international networks has significant implications upon what factors influence a country's economic growth. After all, "where an activity is placed it interacts with its immediate hinterland and this has profound consequences for changing economic power and development" (Buckley and Ghauri, 2004, p. 82). Therefore, combining this 'global factory' view with the growth accounting approach, it can be argued that the various determinants of economic growth, such as financing, employment, and production, should be understood as factors which are increasingly influenced by the interaction of both domestic and foreign investment decisions for any single economy (Buckley and Casson, 1976, 1985; Buckley, 2009; Buckley and Hashai, 2014). Here, the host country's endowment of resources (capital, labour and technology) is supplemented by those of foreign multinational companies. This interaction results in heterogenous development effects (both positive and negative), as reflected in our hypotheses. Specifically, CN_OFDI can have a significant positive effect on economic growth in host countries insofar as it contributes to fill their local resource and technology gaps and thus alleviate major constraints to growth. In contrast, if inward FDI is not compatible with the domestic economy, it may crowd out the local players or distort the domestic economy, generating limited benefits or even negatively affecting its growth. The presence of such compatibility is a mutual result of characteristics and decisions of both the MNEs and the host

countries, especially MNEs that actively drive the globalisation process and proactively select the optimal location for their subsidiaries or joint ventures.

2.3 Country origin of FDI and the distinctive characteristics of EM_OFDI

Our discussions in sections 2.1 and 2.2 demonstrate how different characteristics of the host country will attract different types of MNEs to locate in different countries, and how the bottlenecks to growth in these countries may or may not be alleviated, and how drivers of growth will be enhanced through different transmission mechanisms. Because multinationals of different nationalities normally have distinctive strengths in financial resources, ownership advantage, path-dependent preferences in the type of technologies they use, which are often inherited from their home countries, and different growth trajectories because of the markets they internalise (Buckley et al., 2007), we expect diverse MNEs to have differential effects on any single host country depending on the origin of their national ownership.

2.3.1 Weak ownership advantage

Here, we must consider two special features of Chinese MNEs. First, as mentioned above, Chinese MNEs often do not possess a strong 'ownership advantage', which is an important condition upon which the existing theories of FDI impact summarised above are built. When an MNE does not possess a strong advantage in managerial, technological and marketing knowledge, based on the literature (e.g., Girma and Görg, 2007; Kokko et al., 2001; Chen et al., 2011), its impact on technology transfer and productivity growth depends on the difference in the level of development between the MNE and that of the host countries. This subsequently determines the strength of the technology spillovers from FDI and the productivity effect of competition in the host countries.

Therefore, the weak ownership advantage will result in different growth impacts of CN_OFDI in comparison to those of traditional Western MNEs. 1) The technological gap between CN_OFDI and host economies will be smaller than that between Western OFDI and host economies. Smaller gaps may often mean that local firms have a greater absorptive capacity with regard to the external knowledge provided by the MNEs. Therefore, firms in low-income countries find themselves more capable of mastering the technology transferred from the South than they do with frontier technology embedded in the FDI from the North. In contrast, for other middle-income countries, the technology gap between them and CN_OFDI may be too small for them to upgrade significantly.

Moreover, although the ownership advantage of the Chinese MNEs is weak, the technologies that they employ may be more appropriate to the local conditions in other developing countries, as they are created or adapted according to their own, possibly similar, developing country context. The appropriateness of foreign technology in relation to local economic and socio-technical conditions also affects the degree to which the advanced technology embedded in FDI is diffused and assimilated in the local economy. The theory of directed technology change suggests that new technologies will be designed to make optimal use of the factors that are abundant in the country where the technology is created. Hence, technologies created in the North may not be appropriate for many of the countries in the South (Acemoglu, 2002). For example, technologies embedded in CN_OFDI will be more efficient in labour-abundant countries as they make more use of cheap labour. Moreover, Chinese MNE technology is less sophisticated and is thus easier for workers in developing countries to learn and grasp. Based on these characteristics, one cannot conclude *prima facie* that the strength of knowledge spillovers from CN_OFDI is necessarily weaker than that from Western FDI. They may even be stronger than Western FDI when the technology gap, local absorptive capacity, and local geophysical, technology conditions, including industry structure, present better compatibility

than Western FDI. Therefore, the productivity enhancement impact of CN_OFDI on host developing economies is likely to be different between countries of different development levels.

Hypothesis 1: The productivity enhancement impact of CN_OFDI is likely to be stronger than US OFDI in low-income countries but weaker in middle-income countries.

The weak ownership advantage of Chinese MNEs will also affect the labour market through low-technology unskilled or semi-unskilled labour-intensive technologies and immature managerial capacities. The direction and significance of the employment effect of FDI depend on the labour-capital ratio of the production technology deployed by the MNEs and the entry mode of FDI. Generally, the higher the labour-intensity of the production technology used by the FDI, the greater the job creation effect. In contrast, if the technology adopted by MNEs is capital intensive, technology is a substitute for labour. Such FDI may have only a limited job creation effect or may even directly reduce employment.

Traditionally, FDI from developing countries is more labour intensive than FDI from industrialised economies (Lecraw, 1977; Wells and Warren, 1979). In the case of recent EM OFDI, the previous research in Ghana has found that Chinese MNEs in the construction sector are several times larger than Western MNEs in terms of the number of employees, while they are similar in terms of sales. Although the proportion of local employees tends to be smaller in Chinese MNEs than in Western MNEs, the absolute number of local employees working in Chinese MNEs is often 3-4 times that in Western MNEs (Auffray and Fu, 2015)[2]. Notably, the

[2] The entry mode also affects the employment effect of FDI. Greenfield FDI generally contributes to job creation directly, while FDI entering an economy through M&A may not create new jobs and may even lead to worker layoffs following the M&A. In this respect and in most of the developing countries, because of the lack of satisfactory target firms for

employment effect also depends on the type of activities that the MNEs locate in the developing countries. If the motivation for FDI is efficiency gains based on cheap and skilled labour and locating labour-intensive manufacturing and assembly activities in developing countries, then the job creation effect can also be significant. Examples of this include the US direct investment in the Maquila sector in Mexico (Waldkirch et al., 2009) and inward FDI in China (Fu and Balasubramanyam, 2005). Of course, these are often middle-income or upper-middle-income countries where a cheap labour force with a threshold level of education is available.

Overall, the availability of surplus labour and the prevailing gap in finance in most developing countries means that FDI will be able to develop productive capacity and create jobs in the host countries, although the strength and direction depends on the mode of FDI and the technology used by the MNEs[3]. Thus, we predict the following:

Hypothesis 2a: The job creation impact of CN_OFDI on host developing economies is likely to be significantly positive.

Hypothesis 2b: Compared with Western OFDI, CN_OFDI is likely to have a more significant job creation impact in low-income countries than US OFDI.

Hypothesis 2c: The advantage of CN_OFDI in job creation over US OFDI might not be significant in middle-income countries in Latin America.

2.3.2 State supportiveness

acquisition, most of the FDI in these countries are likely to be greenfield. Thus, the employment effects of EM_OFDI and Western OFDI due to entry mode are likely to be similar.

[3] The low level of managerial capacities especially in human resource management possessed by the EM_MNEs will have other impacts on the local labour market in the host countries, such as labour standards and working conditions. This will have a long-term effect on growth. This is beyond the scope of this paper and deserves systematic and in-depth study for future research.

The second distinctive feature of the CN_OFDI is the strong state support as part of the 'Go Global' strategy for many Chinese MNEs undertaking OFDI. Gaur et al. (2018) find that institutional support from the home government is an important determinant of CN_OFDI; this is particularly significant for investment undertaken by state-owned enterprises (Liang et al., 2015; Wang et al., 2012b). The "government-created advantages" that have complemented China's natural endowments have improved Chinese MNEs' international competitiveness (Ramamurti and Hillemann, 2018). Therefore, the recent literature on CN_OFDI suggests that the strong support from the state played an important role influencing or enabling Chinese MNEs' decisions to directly invest overseas and their location decisions.

The impact of state supportiveness upon the location and the effects of CN_OFDI take place through three mechanisms. First, home government support reduces the importance of prior entry experience and significantly increases the likelihood of FDI entry into a host country. Such substitution effects are stronger when Chinese MNEs enter developing countries (Lu et al., 2014). Second, state ownership is also found to encourage more CN_OFDI in developing countries than in developed countries. Government involvement through state ownership plays a more important role in stimulating resource-seeking OFDI (Wang et al., 2012b).

Third, FDI by nature has a financial component. These investments will spur economic growth. However, the strength of the impact of FDI on growth through financial capital formation can vary with the different sectors into which they flow and the amount of FDI that is invested in the host economy.[4] Some sectors have wider linkages to the rest of the economy; growth in

4 The types of FDI, e.g., greenfield or mergers and acquisitions, may also affect the development financing effect. Greenfield investment and mergers and acquisitions (M&As) have different impacts on economic growth. Wang and Wong (2009) find that greenfield investment promotes economic growth, while M&As are negatively associated with the host country's economic growth. M&As can be beneficial to a host country only if the country reaches a certain level of human capital, a result unique to M&As. Most of the FDI going to

these ‘leading sectors’ may have stronger spillover effects on the overall growth of an economy. Some such leading sectors have suffered from under-investment. A smaller amount of foreign investment may thus trigger disproportionately large growth effects in these sectors through complementary linkages and feedback loops.

From the ‘global factory’ perspective, MNEs are likely to internalise resource extraction and processing activities by direct investment in a resource-rich country. This may result in FDI flowing into the mining sector of a resource-rich country or into the agriculture sector of an agrarian-dominated economy. These are indeed the types of countries that lack investment, not only in the extractive and agriculture sectors but also in the manufacturing sector, which has more linkages to the rest of the economy. MNEs driven by profit-maximising objectives are unlikely to invest in manufacturing sectors or other non-resource public sectors, such as infrastructure, in these countries. However, buoyed by government policies that embrace broader objectives than mere profit maximisation, CN_OFDI may flow into the manufacturing sector in these resource-rich or low-income agriculture economies. As argued by Bera and Gupta (2009), EM_OFDI tends to flow more into growing sectors, while FDI from the North does not. In the case of Africa, it is argued that the opportunity cost of accepting CN_OFDI is low because it often goes to sectors in which others generally do not invest. These investments benefit sectors that normally face a lack of investment due to de-industrialisation (Brautigam, 2009). For example, in 2013, the top four industries of CN_OFDI in Africa were construction (36.8%), mining (26.7%), manufacturing (15.1%), and scientific research and technical services (13.3%) (SC, 2013; MOC et al., 2013). In comparison, the top four industries of US_OFDI in

developing countries, especially low-income countries, are greenfield. The difference between EM_OFDI and Western OFDI is small and hence not included in the main discussion.

Africa in the same year were mining (59%), holding companies in services[5] (17%), finance and insurance (6%), and manufacturing (6%) (ITA, 2014).[6]

In these ways, in addition to market forces, the state will influence both the type and location of CN_OFDI. State support will give the Chinese MNEs extra resources for investment through other channels, e.g., loans from state-owned banks, especially policy banks such as China Development Bank (Irwin and Gallagher, 2014; Brautigam, 2009). State involvement is more likely to exist in capital-intensive investments in sectors such as mining and infrastructure, and be less prevalent in manufacturing where many small- and medium-sized privately owned Chinese manufacturing firms are engaged (Fu, et al., 2012) in regions such as Asia and Africa. Hence, FDI with state support is more likely to go to the developing countries where Western FDI are less likely to invest, due to small market sizes, unstable political environments, factors that all entail lower prospects for profit-oriented objectives. As a result, the development financing effect of CN_OFDI in the developing countries will be different from those of Western OFDI. Despite the possible counter-effects of crowding out (e.g., Agosin and Machado, 2005), the recent research suggests that greater inward FDI is positively associated with more domestic investment (Desai et al., 2005; Ndikumana and Verick, 2007). Hence, it is likely that the impact of FDI on capital formation in the host country is largely positive, especially in the developing countries.

5 The Bureau of Economic Analysis (BEA) defines "holding company" as a business enterprise that would be classified under industry code 5512; they are businesses engaged in holding the securities or financial assets of companies and enterprises for the purpose of owning a controlling interest in them or influencing their management decisions. Businesses in this industry do not manage the day-to-day operations of the firms whose securities they hold. Source: https://bea.gov/faq/index.cfm?faq_id=1173.

6 Moreover, the 2007-2009 financial crisis led to the worst economic downturn in the US since the Great Depression (Atkinson et al., 2013). Consequently, the average growth rate of US FDI outward stock dropped substantially from 18% in 2004-2006 to 4% in 2007-2012, and its average growth rate during the entire sample period was only 10%. In contrast, the average growth rate of OFDI stock from China was 37% over the 2004-2012 period (UNCTAD, 2017).

Given the prevailing gap in financing typically existing within the developing countries, both CN_OFDI and Western OFDI are likely to have a positive effect on growth in these countries. In resource-rich countries, the development financing impact is likely to be weaker than that in other countries, while the effect of CN_OFDI may be stronger than Western OFDI due to the influence of state support extending the flow of CN_OFDI to the non-extractive sector. Thus, we predict the following:

Hypothesis 3a: The development financing impact of both CN_OFDI and US OFDI on host developing economies is likely to be significantly positive.

Hypothesis 3b: Compared with US OFDI, CN_OFDI is likely to have a stronger development financing impact in low-income countries.

Hypothesis 3c: Compared with US_OFDI, CN_OFDI is likely to have a stronger development financing impact in resource-rich developing countries.

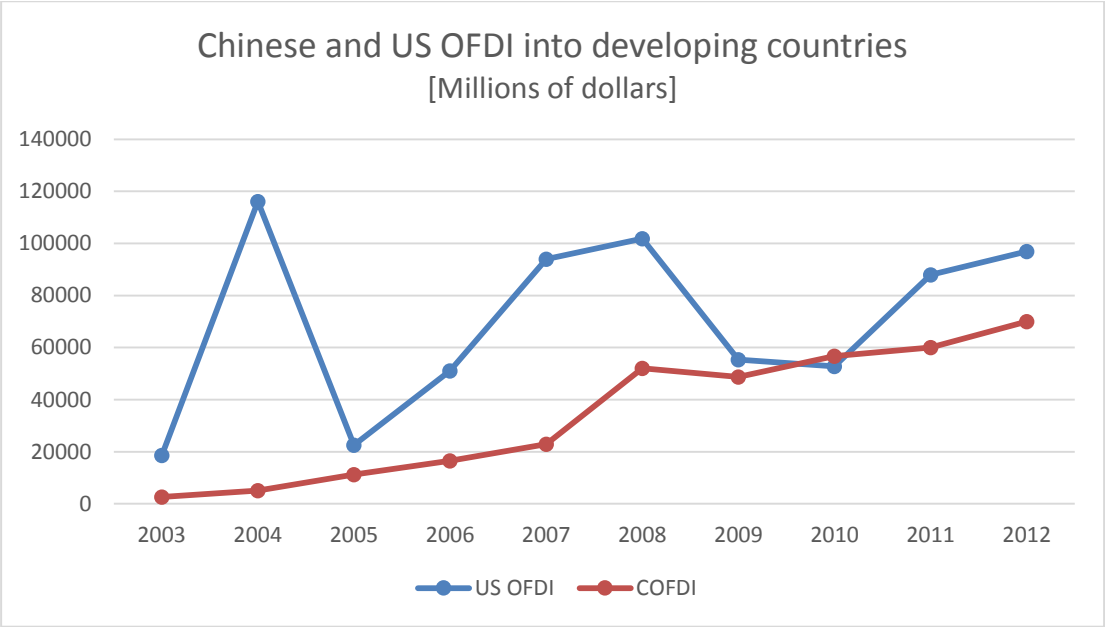
III. Chinese OFDI in host developing countries: an overview

For the empirical analysis, we choose Chinese OFDI (CN_OFDI) as an example of EM OFDI. China presents a good case for this study, as it has been the second largest investor in the world in terms of OFDI flow since 2016 and the largest investor in the developing world, in addition to the distinctive characteristics of CN_OFDI as discussed above. We compare the growth effects of CN_OFDI to those of traditional OFDI from industrialised countries that enjoy strong ownership advantage, high-level technological and managerial capabilities and rich capital resources and marketing networks that support their international operation and management (Buckley and Casson, 1985). As detailed previously, we choose the US as a proxy to benchmark traditional FDI because FDI from the US is the largest in the world in terms of OFDI stock and flow over the sample period. The US also has the largest geographical presence in the

developing countries, being heavily embedded in different domestic political, economic, institutional and cultural environments. This further allows for differentiation of US MNEs from Chinese MNEs.

As a 'world manufacturing plant' engaging mainly with activities in the middle of the value chain, China introduced the 'Going Global' strategy in the late 1990s to increase its capability in value creation through vertical OFDI to internalise upstream or downstream production activities. Commensurately, over the past twenty years, CN_OFDI has increased rapidly. The total value of CN_OFDI increased from approximately USD 28 billion in 2000 to USD 196 billion in 2016, making China the world's second largest investor only after the US. The majority of this CN_OFDI flows into the developing world. In 2014, approximately 83% of the total CN_OFDI was invested in developing economies (UNCTAD, 2016). This figure went up slightly to 84% in 2016 (MOC, 2016). This makes China the largest emerging market investor in developing countries. CN_OFDI stock in 2016 was more than double of that in 2012 (NBS, 2018). In comparison, OFDI from the US has been the largest in the world as well as the highest among the flows into the developing countries. However, the US' advantage in OFDI, especially that into the developing countries, has been decreasing in comparison with China's fast rise in this regard. Up to 2012, the US_OFDI in developing countries reduced to only 38% more than that of CN_OFDI. This trend has continued since then (Figure 1).

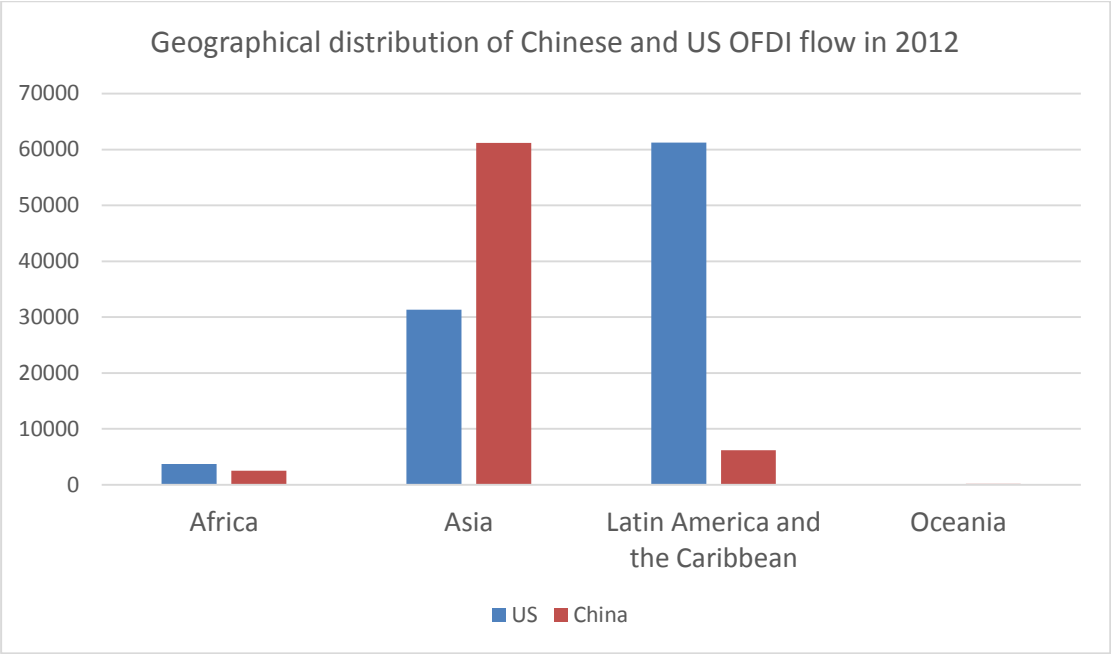
Figure 1. Chinese and US OFDI flow into developing countries (millions of USD)



Source: UNCTAD

Asia, excluding Hong Kong, Macao, and Taiwan, received the largest amount of CN_OFDI. Latin America, excluding the Virgin Islands and the Cayman Islands, received the least CN_OFDI (Figure 2). By the end of 2013, leasing and business services accounted for 29.6% of CN_OFDI stock, followed by financial services (17.7%) and mining (16.1%). Manufacturing accounted for 6.4% of total CN_OFDI stock but was the largest in terms of the number of OFDI projects (MOC, 2013). By the end of 2016, the share of mining was reduced to 11.2%, while that of manufacturing increased to 8% of the total CN_OFDI (MOC, NSB and SFEA, 2016). The top 5 industries of China's outward FDI stock in each continent are presented in Appendix 1. The average distributions of CN_OFDI and US OFDI between 2004 and 2012 are presented in Appendix 2.

Figure 2. Geographical distribution of Chinese and US OFDI flow in 2012 (millions of USD)



IV. Methodology and data

4.1 Model

In the typical setting of the neoclassical production function, economic growth is a function of the capital stock, labour force, and the total factor productivity of an economy. The growth-accounting approach decomposes economic growth into components related to changes in factor inputs and total factor productivity that reflect technological progress and other elements. The growth-accounting approach is widely employed in the literature as a preliminary step in the analysis of the fundamental determinants of economic growth. Income growth of an economy is decomposed into three (or more) attributes: growth in capital, labour and total factor productivity, respectively, according to the estimated weights of each of the factor inputs in the production function and the actual changes in these factor inputs over a certain period. The final step usually involves the relationships of factor inputs and productivity change to elements such as openness, and innovation (Barro, 1999). Following Barro (1999), Young (1992), Crafts (2003) and Brandt and Zhu (2010), the empirical tests of the hypotheses are carried out in two steps. First, a growth-accounting approach is employed to decompose the economic growth in

the sampled host countries into growth in capital, labour and total factor productivity growth (TFP). Second, we test our hypotheses by estimating the impact of CN_OFDI on different drivers of growth obtained via the decomposition exercise in step 1, respectively. Following common practice, a fixed-effects panel data approach is used to account for unobserved and persistent country characteristics such as entrepreneurship.[7]

In Step 1, we carry out the growth-accounting estimation. For the purposes of this study, the production function is assumed to be Cobb-Douglas:

$$lnY_{i,t} = \alpha_0 + \alpha_1 lnL_{i,t} + \alpha_2 lnK_{i,t} + e_{i,t} \quad (1)$$

where *lnY* is the logarithm of real GDP, *lnL* is the logarithm of labour, *lnK* is the logarithm of financial capital, and *e* is an error term. Subscripts *i* and *t* stand for country and time, respectively. Following Senhadji (2000), we estimate the production function in levels rather than in first differences because the first-difference operator removes all long-run information in the data. As shown in the co-integration literature, we know much more about the long-run than the short-run relationships among the macroeconomic variables. Therefore, we may disregard the most valuable piece of information in the data by differencing. For example, key macroeconomic variables such as productivity, labour force participation, savings and investment, and industrial structure are assumed to have long-term economic impacts. By taking the first difference, one can only capture the short-term fluctuation in these data and remove most of the low-frequency information (Duffy and Papageorgiou, 2000; Graham, 2000; Jones, 2003). Moreover, technically, the first-difference operator is usually applied if the variables in the model are non-stationary to avoid the loss of efficiency in estimation.

[7] Entrepreneurship is also an important driver of economic growth. However, entrepreneurship is difficult to measure, especially at the macro level. Therefore, in this paper, we take it into account as unobservable country-specific fixed effects in the model rather than including it in the model using an explicit indicator, while recognizing that this is not a perfect solution due to data limitations.

For the second step, we estimate the various impacts of CN_OFDI on the host developing countries with the aim of testing the three sets of hypotheses developed in section II. US_OFDI is also included in the models to test whether CN_OFDI's impact on the host developing countries is different from that of US_OFDI. Our panel data models have the following general forms[8]:

$$lnTFP_{i,t} = \beta_0 + \beta_1 lnCN\_OFDI_{i,t} + \beta_2 lnUS\_OFDI_{i,t} + \delta_{i,t} + \theta_{i,t} + e_{i,t} \quad (2)$$

$$lnEMPLOY_{i,t} = \gamma_0 + \gamma_1 lnCN\_OFDI_{i,t} + \gamma_2 lnUS\_OFDI_{i,t} + \zeta_{i,t} + \theta_{i,t} + e_{i,t} \quad (3)$$

$$lnK_{i,t} = \chi_0 + \chi_1 lnCN\_OFDI_{i,t} + \chi_2 lnUS\_OFDI_{i,t} + \psi_{i,t} + \theta_{i,t} + e_{i,t} \quad (4)$$

where *lnTFP* is the logarithm of productivity, i.e., the difference between *lnY* and ($\alpha_1 lnL$ + $\alpha_2 lnK$), *lnEMPLOY* is the logarithm of number of employees, *lnK* is the logarithm of financial capital, *lnCN_OFDI* is the logarithm of FDI stock from China, *lnUS_OFDI* is the logarithm of FDI stock from US, and *e* is an error term. Subscript *i* indicates host country, and *t* indicates time.

For the empirical estimation, we first include a vector of the common control variables as the major determinants of growth, as suggested by the literature. These include FDI from other regions in the traditional investment triad (*lnG6_OFDI*), measured by total FDI stock from G7 countries except the US[9]; openness (*lnOPEN*), measured by the ratio of total trade to GDP; industry structure (*lnAGR*), measured by the percentage of agricultural value added in the total

[8] Empirically, the observed productivity change will be a combination of both knowledge spillover and competition effects of FDI on the host economy. It is difficult to disentangle the effects from each other. We follow the common practice in the empirical literature on FDI and include the competition and technology spillover effects in the analysis and tests of the overall productivity effects of FDI.

9 We only control G6 (advanced economies) to investigate the local effects in developing economies, because the majority of developing economies' inward FDI stock comes from developed economies. According to World Bank (2018), only 11 out of around 140 developing economies had half or more of their inward FDI stock coming from other developing countries in 2001. In 2012, only 55 developing economies did. On the other hand, the developed economies' share of global outward FDI was 71% in both 2016 and 2017 (UNCTAD, 2018).

GDP. Moreover, technological gap is captured by income gap between the host country and China (*lnCNDGDPPC*). Institutional gap is proxied by institution development level (*lnINST*), measured by regulatory quality[10]. Cultural distance is time invariant. It is captured in the time invariant country specific effect variable (θ) embedded in the fixed effects panel model. Moreover, we have also grouped the host countries by geographical location - Asia, Africa and Latin America - which also captured cultural distance to a certain extent. The results are broadly consistent with the results reported in the revised version; the results are not reported in the latest version due to space limitations.

As indicated in the literature, productivity growth, employment, and capital formation also have different determinants. Therefore, a vector of model-specific control variables is introduced in each equation, i.e., $\delta_{i,t}$, $\zeta_{i,t}$, and $\psi_{i,t}$ for Equations (2), (3), and (4), respectively. Specifically, the literature on the impact of FDI on the host country's economic growth suggests that the presence of a threshold level of human capital in the host country is a crucial condition. Secondary school education of the labour force has the most significant impact (e.g., Borensztein et al., 1998; Balasubramanyam et al., 1999; Xu, 2000). Moreover, labour force skill significantly affects the demand for labour and hence the number of employees. Therefore, we choose the percentage of secondary school enrolment in the gross population as a proxy for labour skills (*lnHC*) and include it in the baseline model of Equations (2) and (3). Furthermore, the literature on capital formation and investment suggests that savings is an important factor that significantly affects capital accumulation. Therefore, following Bond et al. (2010), we include the percentage of gross savings over GDP (*lnSAVINGS*) in the baseline model of Equation (4).

[10] The Worldwide Governance Indicator has six dimensions. Regulatory quality is used in our study because it directly captures the soundness of the policies and regulations that permit and promote inward FDI. Its scores range between -2.5 and 2.5. The higher the score, the sounder the policies.

Meanwhile, to capture the potential growth impact of technology distance between FDI and host economies, the logarithm of the difference between China's GDP per capita and the host country's GDP per capital (*lnCNDGDPPC*) is included in Equations (2) and (3). Similarly, *lnUSDGDPPC*, measuring the technology distance between the US and the host country is also included in the same Equations. In addition, the quadratic terms for these two variables (i.e., *lnCNDGDPPC^2* and *lnUSDGDPPC^2*) are included in these two Equations to test if there is any U- or inverted U-shaped relationship between the technology distance and the strength of knowledge spillover to the local economy. Moreover, the literature on employment determination suggests that the wage rate significantly affects the demand for labour. Ideally, we would include the average monthly wage rate (*lnWAGE*) in Equation (2). However, due to data limitations, including this variable leads to a significant loss of observations. Therefore, it is not included in the baseline employment function. Rather, a separate model is estimated as a robustness check. Meanwhile, natural resource rents as a percentage of GDP (*lnRENT*) are also included in Equations (2)-(4) to control for the resource endowment of a host country.

Moreover, to test whether CN_OFDI would have a stronger development financing impact in resource-rich developing countries than its developed peer (Hypothesis 3c), two interaction terms *lnCN_OFDI*lnRENT* and *lnUS_OFDI*lnRENT* are included in Equation (4). Similarly, two interaction terms *lnCN_OFDI*lnHC* and *lnUS_OFDI*lnHC* are included in Equation (2) to test whether FDI has more significant productivity impact in the host developing countries where a great proportion of the labour force has a threshold level of education.

To test whether CN_OFDI and US_OFDI would generate different growth impacts in terms of productivity enhancement (Hypothesis 1), job creation (Hypothesis 2b & 2c), and development financing (Hypothesis 3b) between low- and middle-income host countries, we also divide the

full sample into two sub-samples. The middle-income host countries refer to the developing countries that are categorised as upper middle-income economies by the United Nations Secretariat (2012). The other sub-sample is labelled as low-income host countries, including developing countries that are categorised as lower-middle- and low-income economies in the same report.

Finally, to further test the robustness of the results concerning productivity, we also use the full productivity model as employed in the literature to capture the productivity effects of OFDI on productivity. The model has the following general form.

$$lnY_{i,t} = \beta_0 + \beta_1 lnL_{i,t} + \beta_2 lnK_{i,t} + \beta_3 lnCN\_OFDI_{i,t} + \beta_4 lnUS\_OFDI_{i,t} + \delta_{i,t} + \theta_{i,t} + e_{i,t} \quad (5)$$

where *lnY* is the logarithm of real GDP, *lnL* is the logarithm of labour, *lnK* is the logarithm of financial capital, *lnCN_OFDI* is the logarithm of FDI stock from China, *lnUS_OFDI* is the logarithm of FDI stock from US, and *e* is an error term. Subscripts *i* and *t* stand for country and time, respectively.

4.2 Data

We perform empirical tests on the host developing countries because the effects in these countries are the main focus of the study. We use a cross-country dataset for 52 developing countries for the 2004-2012 period. It was compiled from various sources, including the Ministry of Commerce (MOC) of China, the US Department of Commerce, the World Development Indicator (WDI) published by the World Bank, and UNCTAD. The value of CN_OFDI stock in these countries over the 2004-2012 period was collected from the Bulletin of Chinese Outward Direct Investment published by the MOC. The data were cross-checked with the UNCTAD Bilateral FDI database to confirm consistency. The US OFDI data were collected from the UNCTAD Bilateral FDI database. The data were cross-checked with the database provided by the US Department of Commerce to confirm consistency. The FDI stock

from G7 countries were obtained from the UNCTAD Bilateral FDI database. Information on the other variables was collected from the WDI. Appendix 3 includes a list of the countries that are included in the sample and grouped according to the World Bank criteria. Appendix 4 summarises the definitions and sources of the variables used.

Although the official CN_OFDI data provide valuable information for research, they contain some problems that should be considered in the analysis. First, the official data are likely to under-estimate the scale and scope of CN_OFDI, as many SMEs do not register with the MOC. Second, a large quantity of investment goes to Hong Kong, Macau, Taiwan and a small number of tax havens. Because the tax havens are not the final destinations of CN_OFDI, investments arriving there are often re-directed to other destinations, which affects the overall picture of CN_OFDI.

However, comparing the different available sources reveals that the data published by the MOC still offer the most comprehensive coverage. First, the MOC data are more comprehensive than those of the State Administration of Foreign Exchanges (SAFE) because SAFE registers only those investments that require SAFE approval. All CN_OFDI projects must be approved by the MOC regardless of whether they rely on foreign exchanges from SAFE. Investments made by subsidiaries overseas, e.g. from Hong Kong, should also be registered with MOC, especially if the investors want to remit the dividends back to Mainland China.

Second, it is true that the funds that flow to the tax havens and Hong Kong can be re-invested in other countries. However, only a proportion of these funds will be used as direct investment to a third country because offshore assets can also be used for portfolio investment. We exclude these five destinations from our empirical sample to avoid distortions derived from money kept in offshore accounts that does not go into investment-related projects. This also helps correct

for industry misrepresentation. The MOC (2013) suggests that the largest industry recipient of CN_OFDI in Hong Kong, the Virgin and Cayman Islands and Luxemburg (accounting for 71% of CN_OFDI flow in 2013) is business services. Therefore, the exclusion of these destinations also excludes this industrial outlier in the sample. We thus use the MOC data for our analysis while drawing conclusions cautiously in light of their limitations. Of course, the relatively short time span of the data restricts us from using the mean group estimator method, which requires a large number of cross-sectional observations and time-series observations (Pesaran et al., 1997).

Before proceeding to the estimation, we carried out unit root tests on the main variables because the estimated coefficients can be spurious if the variables are non-stationary. Given the nature of the data, i.e., N>T, we employed the Levin–Lin–Chu (Levin et al., 2002) and Im–Pesaran–Shin (Im et al., 2003) methods, with the null hypothesis that the variable contains a unit root and the alternative hypothesis that the variable was generated by a stationary process. The unit root test results reported in Appendix 5 suggest that the variables are stationary at level. Descriptive statistics of all variables are reported in Appendix 6. Focusing on CN_OFDI and US_OFDI, the table shows that the magnitude of US_OFDI is greater than that of CN_OFDI in the full sample and the middle-income economies on average, whereas CN_OFDI outnumbers US_OFDI in the low-income economies. Over the entire sample period, the average annual growth rate of CN_OFDI is 10.67%, which is much higher than that of US_OFDI (1.96%). Appendix 7 presents the correlation matrix for the full sample as well as the two sub-samples.

V. Results

5.1 Main results

The estimation results of Equation (1) concerning growth accounting are reported in Appendix 8. It indicates that the share of financial capital is 0.31 and that of labour is 0.69 for all sampled countries. This finding is similar to the conventional shares found/assumed in the existing growth-accounting literature, i.e., 0.30/0.35 for capital and 0.70/0.65 for labour (e.g., Bosworth and Collins, 2003; Schadler et al., 2006). To test Hypothesis 1, we estimate Equation (2) using the full sample, mid-income sample, and low-income sample, separately. The results are reported in Table 1 with Models (1)-(5) for the full sample, Models (6)-(10) for the mid-income economies, and Models (11)-(15) for the low-income economies. The coefficient of *lnCN_OFDI* is significantly positive in almost all fifteen models, suggesting that CN_OFDI helps stimulate productivity in both the low- and mid-income host developing countries. The coefficient of *lnUSOFDI* is significantly positive in the middle-income countries only (Models 6-10), implying that US_OFDI mainly helps enhance productivity in middle-income economies. The Chi^2 statistics indicate that the differences in the coefficients for both *lnCN_OFDI* and *lnUSOFDI* are statistically significant across Models (11)-(15) but statistically nonsignificant across Models (6)-(10). Thus, the results provide partial support to Hypothesis 1, suggesting that the productivity enhancement impact of CN_OFDI is stronger than US_OFDI in low-income countries; however, it is not necessarily weaker in middle-income countries.

The coefficient of the interaction term *lnCN_OFDI*lnHC* is significantly positive in Models (5) and (15), whereas the coefficient of the interaction term *lnUS_OFDI*lnHC* is significantly positive in Model (10). The result suggests that overall, countries with a higher level of labour skills have great absorptive capacity and will benefit more from knowledge transfer and spillovers from inward FDI. However, such significant moderating effect of labour skills is significant for CN_OFDI mainly in the low-income countries, while this is true for US OFDI in the middle income countries. The coefficient of *lnCNDGDPPC* is significant and positive in Models (2), (7), and (12), indicating that greater technology distance between the host

developing countries and China may facilitate productivity enhancement in general. However, once the quadratic items are included into the picture, a U-shape relationship is observed between the China-host country technology distance and productivity enhancement in low-income economies, as evidenced by the positive and significant coefficient on *lnCNDGDPPC^2* in Model (13). This result indicates that TFP decreases as the technology distance between China and the host developing economies increases, up to a certain point beyond which further increases in such technology distance lead to increases in TFP in the host developing low-income economies. Overall, the results suggest that productivity gains from Chinese MNEs are significant largely because the technologies created in China and embedded in CN_OFDI are more appropriate (compatible) in developing countries. They are more easily adopted and integrated into local production in countries where local technical conditions and governance environments are similar to those with which Chinese firms are already familiar.

Turning to the job creation impact of OFDI, Table 2 presents the estimation results of Equation (3). The main results are provided in Models (1)-(5) for the full sample, (6)-(10) for the mid-income economies, and (11)-(15) for the low-income economies. Again, the estimated coefficient of *lnCN_OFDI* is significantly positive in almost all fifteen models, suggesting that CN_OFDI significantly enhances job creation in both mid- and low-income host developing economies. The result lends support to Hypothesis 2a, implying that despite the possible crowding-out effect in some industries, the net job creation effect of CN_OFDI on host developing economies is significantly positive. The coefficient of *lnUS_OFDI* is significantly positive only in middle-income countries (Models 6-10), indicating that US_OFDI mainly helps increase employment in middle-income economies. The Chi^2 statistics indicate that the differences in the coefficients for both *lnCN_OFDI* and *lnUS_OFDI* are statistically significant across Models (1)-(5) and (11)-(15) but statistically nonsignificant across Models (6)-(10). The results therefore provide full support to Hypotheses 2b & 2c, suggesting that CN_OFDI has a

more significant job creation impact in low-income economies, whereas its advantage in this regard over US OFDI is less significant in mid-income economies. Moreover, when *lnWAGE* is included in Models (4), (9), and (14), the coefficient of *lnCN_OFDI* is still significantly positive, whereas the coefficient of *lnUS_OFDI* remains significantly positive and nonsignificant for mid- and low-income economies, respectively.

Moving to the development financing impact of OFDI, we estimate Equation (4) and report the results in Table 3. It shows that the coefficients of *lnCN_OFDI* and *lnUSOFDI* are positive and statistically significant in all sample sets and across all model specifications. These results suggest that both Chinese and US OFDI increase capital formation in the host developing countries, supporting Hypothesis 3a. In addition, Model (3) shows that the coefficients of the two interaction terms *lnCN_OFDI*lnRENT* and *lnUSOFDI*lnRENT* are significantly positive and negative, respectively. The results support Hypothesis 3b, illustrating that, compared with US_OFDI, CN_OFDI is likely to have a stronger development financing impact in resource-rich developing groups. Furthermore, the coefficient of *lnCN_OFDI*lnRENT* is significantly positive and negative in Models (6) and (9), respectively, suggesting that such a stronger development financing impact is mainly found in the mid-income economies and not in the low-income economies. Finally, the difference between *lnCN_OFDI* and *lnUS_OFDI* is significant and positive in Models (7)-(9), and insignificant in Models (4)-(6), suggesting that CN_OFDI has a stronger development financing impact in low-income countries, supporting Hypothesis 3c.

Table 1. Productivity enhancement impact of CN_OFDI on hosting developing economies (FE)

lnTFP	**Full sample**					**Mid-income economies**					**Low-income economies**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
lnCN_OFDI	0.0188***	0.0164***	0.0166***	0.0175***	0.0579***	0.0150***	0.0143***	0.0137***	0.0150***	0.0959	0.0211***	0.0132**	0.0049	0.0257**	0.0949***
	(0.0026)	(0.0027)	(0.0028)	(0.0037)	(0.0174)	(0.0031)	(0.0032)	(0.0035)	(0.0035)	(0.0786)	(0.0045)	(0.0052)	(0.0058)	(0.0113)	(0.0224)
lnUS_OFDI	-0.0009	-0.0010	-0.0006	0.0013	0.0103	0.0122**	0.0125**	0.0117**	0.00819	0.188*	-0.0017	-0.0029	-0.0024	-0.0104	0.0264
	(0.0026)	(0.0026)	(0.0026)	(0.0045)	(0.0183)	(0.0057)	(0.0057)	(0.0057)	(0.0061)	(0.1060)	(0.0033)	(0.0033)	(0.0033)	(0.0097)	(0.0228)
lnG6_OFDI	0.0004	0.0002	0.0000	0.0003	0.0013	0.0006	0.0000	-0.0002	0.0000	0.0012	0.0000	0.0001	0.0003	-0.0002	0.0013
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0023)	(0.0022)	(0.0023)	(0.0023)	(0.0023)	(0.0018)	(0.0018)	(0.0017)	(0.0018)	(0.0017)
lnOPEN	-0.0987***	-0.0800***	-0.0795***	-0.115***	-0.0758***	-0.148***	-0.115***	-0.103***	-0.174***	-0.153***	-0.0759**	-0.0707**	-0.0721**	-0.0885**	-0.0288
	(0.0226)	(0.0233)	(0.0236)	(0.0238)	(0.0227)	(0.0339)	(0.0362)	(0.0368)	(0.0380)	(0.0339)	(0.0312)	(0.0320)	(0.0321)	(0.0343)	(0.0306)
lnAGR	-0.0783***	-0.0721***	-0.0721***	-0.0666***	-0.0535**	-0.0543**	-0.0406*	-0.0358	-0.0421*	-0.0436*	-0.110***	-0.0945**	-0.0859**	-0.111***	-0.0471
	(0.0222)	(0.0220)	(0.0220)	(0.0227)	(0.0224)	(0.0237)	(0.0237)	(0.0241)	(0.0243)	(0.0243)	(0.0387)	(0.0384)	(0.0378)	(0.0398)	(0.0384)
lnHC	-0.0201	-0.0361	-0.0497	-0.0201	-0.0312	0.0053	0.0728	0.0609	0.0195	-0.275	-0.0249	-0.0485	-0.110***	-0.0219	-0.0573
	(0.0244)	(0.0245)	(0.0274)	(0.0246)	(0.0262)	(0.0560)	(0.0613)	(0.0615)	(0.0575)	(0.1810)	(0.0327)	(0.0336)	(0.0398)	(0.0330)	(0.0329)
lnINST	-0.0151	-0.0295	-0.0328	-0.0180	0.0064	0.0008	0.0057	0.0043	-0.0039	0.0029	-0.0352	-0.0363	-0.0299	-0.0302	-0.0191
	(0.0219)	(0.0222)	(0.0225)	(0.0219)	(0.0219)	(0.0243)	(0.0239)	(0.0239)	(0.0246)	(0.0243)	(0.0422)	(0.0419)	(0.0411)	(0.0427)	(0.0397)
lnCNDGDPPC		0.0124***	-0.0098				0.0124**	0.0193				0.0227***	-0.0674**		
		(0.0038)	(0.0198)				(0.0051)	(0.0291)				(0.0078)	(0.0307)		
lnUSDGDPPC		-0.0982	2.943				-0.0948	15.88				0.142	-47.64		
		(0.0789)	(8.2100)				(0.0703)	(9.7850)				(0.2410)	(125.0000)		
lnCNDGDPPC^2			0.0018					-0.0004					0.0084***		
			(0.0016)					(0.0023)					(0.0028)		
lnUSDGDPPC^2			-0.142					-0.756					2.225		
			(0.3870)					(0.4630)					(5.7990)		
lnRENT				0.0270**					0.0286**					0.015	
				(0.0116)					(0.0140)					(0.0286)	
*lnCN_OFDI*lnRENT*				0.0003					0.0001					-0.0026	
				(0.0015)					(0.0014)					(0.0050)	
*lnUS_OFDI*lnRENT*				-0.0013					-0.0013					0.0038	
				(0.0018)					(0.0020)					(0.0041)	
*lnCN_OFDI*lnHC*					0.0185***					-0.0181					0.0300***
					(0.0042)					(0.0176)					(0.0057)
*lnUS_OFDI*lnHC*					-0.0032					0.0454*					-0.0075
					(0.0045)					(0.0239)					(0.0057)
Constant	6.794***	7.739***	-8.395	6.790***	6.683***	7.429***	7.876***	-76.5	7.462***	8.653***	6.232***	4.589*	261.6	6.249***	5.963***
	(0.1380)	(0.8340)	(43.5000)	(0.1420)	(0.1460)	(0.2730)	(0.7920)	(51.7300)	(0.2730)	(0.8010)	(0.1950)	(2.6050)	(673.7000)	(0.2050)	(0.1980)
R^2	*0.2607*	*0.2869*	*0.2896*	*0.2755*	*0.3009*	*0.4028*	*0.4346*	*0.4448*	*0.4226*	*0.4163*	*0.2189*	*0.254*	*0.2905*	*0.234*	*0.3232*
F test	*17.74****	*15.64****	*12.9****	*13.27****	*16.74****	*15.61****	*13.67****	*11.51****	*11.64****	*12.68****	*7.32****	*6.85****	*6.66****	*5.50****	*9.60****
Hausman test	*121.3****	*190.11****	*203.24****	*130.83****	*136.46****	*20.81****	*50.38****	*53.14****	*24.18****	*19.52****	*33.75****	*66.48****	*32.27****	*38.13****	*32.06****
lnCN_OFDI vs. lnUS_OFDI	*3.31**	*0.47*	*1.22*	*0.1*	*3.73**	*0.08*	*1.07*	*1.07*	*0.02*	*3.20**	*10.04****	*3.69***	*2.77**	*4.34***	*11.74****
Observations	*411*	*411*	*411*	*411*	*411*	*192*	*192*	*192*	*192*	*192*	*219*	*219*	*219*	*219*	*219*

*Notes: The table contains the results estimated using a fixed effects panel data model. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

Table 2. Job creation impact of CN_OFDI on hosting developing economies (FE)

lnEMPLOY	**Full sample**					**Mid-income economies**					**Low-income economies**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
lnCN_OFDI	0.0341***	0.0291***	0.0292***	0.0335***	0.0319***	0.0400***	0.0325***	0.0306***	0.0326***	0.0380***	0.0252***	0.0144***	0.00378	0.0291**	0.0228***
	(0.0031)	(0.0032)	(0.0032)	(0.0065)	(0.0029)	(0.0045)	(0.0044)	(0.0048)	(0.0076)	(0.0040)	(0.0046)	(0.0052)	(0.0055)	(0.0117)	(0.0046)
lnUS_OFDI	0.0026	0.0015	0.0018	0.0061	0.0014	0.0317***	0.0265***	0.0250***	0.0179*	0.0226***	-0.0033	-0.0049	-0.00544*	-0.0042	-0.0030
	(0.0031)	(0.0030)	(0.0030)	(0.0060)	(0.0030)	(0.0083)	(0.0078)	(0.0078)	(0.0094)	(0.0084)	(0.0034)	(0.0033)	(0.0031)	(0.0061)	(0.0033)
lnG6_OFDI	-0.0020	-0.0023	-0.0023	-0.00517*	-0.0023	-0.0017	-0.0020	-0.0021	-0.00555*	-0.0029	-0.0020	-0.0019	-0.0021	-0.0039	-0.0019
	(0.0016)	(0.0016)	(0.0016)	(0.0028)	(0.0015)	(0.0033)	(0.0031)	(0.0031)	(0.0030)	(0.0032)	(0.0018)	(0.0017)	(0.0016)	(0.0076)	(0.0018)
lnOPEN	-0.0560**	-0.0184	-0.0175	-0.0830*	-0.0981***	0.0768	0.175***	0.194***	0.0802	0.0067	-0.0952***	-0.0845***	-0.107***	-0.113**	-0.115***
	(0.0268)	(0.0273)	(0.0277)	(0.0476)	(0.0270)	(0.0492)	(0.0497)	(0.0504)	(0.1010)	(0.0516)	(0.0317)	(0.0319)	(0.0306)	(0.0418)	(0.0322)
lnAGR	-0.0103	0.000254	0.0004	-0.0282		0.0135	0.0222	0.0266	-0.05		0.0271	0.0487	0.0531	0.0816	
	(0.0264)	(0.0258)	(0.0258)	(0.0397)		(0.0344)	(0.0325)	(0.0329)	(0.0491)		(0.0392)	(0.0382)	(0.0361)	(0.0777)	
lnHC	0.246***	0.236***	0.226***	-0.0979	0.252***	0.0138	-0.0149	-0.0325	-0.0218	0.06	0.302***	0.268***	0.164***	-0.461**	0.304***
	(0.0290)	(0.0287)	(0.0321)	(0.0998)	(0.0277)	(0.0813)	(0.0841)	(0.0842)	(0.1190)	(0.0793)	(0.0332)	(0.0334)	(0.0379)	(0.1750)	(0.0326)
lnINST	0.0585**	0.0584**	0.0558**	0.124*	0.0477*	0.0409	0.051	0.0479	0.0988	0.0233	0.053	0.0492	0.0515	0.0081	0.0528
	(0.0260)	(0.0261)	(0.0264)	(0.0676)	(0.0243)	(0.0353)	(0.0327)	(0.0327)	(0.1020)	(0.0326)	(0.0428)	(0.0417)	(0.0392)	(0.0752)	(0.0413)
lnCNDGDPPC		0.0070	-0.0081				-0.0057	0.0250				0.0302***	-0.0805***		
		(0.0045)	(0.0232)				(0.0070)	(0.0399)				(0.0078)	(0.0293)		
lnUSDGDPPC		-0.399***	2.895				-0.520***	21.21				0.0937	326.4***		
		(0.0925)	(9.6390)				(0.0964)	(13.3900)				(0.2400)	(119.2000)		
lnCNDGDPPC^2			0.0012					-0.0023					0.0112***		
			(0.0019)					(0.0032)					(0.0027)		
lnUSDGDPPC^2			-0.155					-1.03					-15.12***		
			(0.4540)					(0.6330)					(5.5290)		
lnWAGE				0.0577**					0.0469					0.0882**	
				(0.0224)					(0.0288)					(0.0339)	
lnRENT					0.0499***					0.0447***					0.0354**
					(0.0096)					(0.0132)					(0.0146)
Constant	19.10***	23.21***	5.741	20.21***	19.16***	18.95***	24.28***	-90.37	18.87***	19.10***	19.29***	18.12***	-1,741***	22.21***	19.38***
	(0.1640)	(0.9780)	(51.0800)	(0.4540)	(0.1520)	(0.3960)	(1.0870)	(70.8000)	(0.6420)	(0.3800)	(0.1980)	(2.5920)	(642.3000)	(0.7300)	(0.1720)
R^2	*0.5423*	*0.5695*	*0.5701*	*0.6626*	*0.5746*	*0.5315*	*0.6035*	*0.6125*	*0.6998*	*0.562*	*0.6158*	*0.6465*	*0.6914*	*0.7853*	*0.6268*
F test	*59.59****	*51.44****	*41.95****	*21.60****	*67.93****	*26.25****	*27.06****	*22.71****	*16.90****	*29.70****	*41.90****	*36.79****	*36.46****	*10.06****	*43.90****
Hausman test	*72.92****	*97.67****	*93.92****	*47.01****	*59.27****	*41.76****	*41.35****	*37.74****	*40.94****	*45.75****	*37.65****	*68.17****	*5.12***	*6.6*	*36.84****
lnCN_OFDI vs. lnUS_OFDI	*42.00****	*31.44****	*30.93****	*5.88***	*44.64****	*0.14*	*0.08*	*0.09*	*0.27*	*1.12*	*22.51****	*7.57****	*1.03*	*7.01****	*19.20****
Observations	*411*	*411*	*411*	*123*	*411*	*192*	*192*	*192*	*83*	*192*	*219*	*219*	*219*	*40*	*219*

*Notes: The table contains the results estimated using a fixed effects panel data model. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

Table 3. Development finance effect of CN_OFDI on hosting developing economies (FE)

lnK	**Full sample**			**Mid-income economies**			**Low-income economies**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
lnCN_OFDI	0.128***	0.0945***	0.0946***	0.0945***	0.0922***	0.0754***	0.1303***	0.0784***	0.1860***
	(0.0085)	(0.0088)	(0.0125)	(0.0127)	(0.0130)	(0.0141)	(0.0129)	(0.0133)	(0.0356)
lnUS_OFDI	0.0327***	0.0326***	0.0693***	0.0787***	0.0774***	0.0764***	0.0291***	0.0250***	0.0938***
	(0.0089)	(0.0082)	(0.0152)	(0.0238)	(0.0239)	(0.0245)	(0.0103)	(0.0090)	(0.0298)
lnG6_OFDI	0.0045	0.0027	0.0045	0.0026	0.0023	0.0002	0.0037	0.0024	0.0045
	(0.0047)	(0.0043)	(0.0046)	(0.0093)	(0.0093)	(0.0091)	(0.0056)	(0.0049)	(0.0056)
lnOPEN	0.313***	0.303***	0.341***	0.172	0.146	0.163	0.3874***	0.3857***	0.4964***
	(0.0802)	(0.0735)	(0.0836)	(0.1480)	(0.1520)	(0.1580)	(0.0997)	(0.0868)	(0.1079)
lnAGR	-0.137*	-0.233***	-0.161**	-0.255**	-0.257**	-0.255**	-0.1912	-0.2479**	-0.2286*
	(0.0776)	(0.0721)	(0.0786)	(0.1020)	(0.1020)	(0.1030)	(0.1219)	(0.1064)	(0.1228)
lnINST	0.268***	0.173**	0.308***	-0.138	-0.0918	-0.052	0.5590***	0.3386***	0.5802***
	(0.0896)	(0.0829)	(0.0887)	(0.1230)	(0.1360)	(0.1270)	(0.1388)	(0.1244)	(0.1376)
lnSAVINGS	0.104***	0.134***	0.0982***	0.0826	0.088	0.0517	0.0908**	0.1491***	0.0772*
	(0.0372)	(0.0343)	(0.0367)	(0.0796)	(0.0800)	(0.0784)	(0.0444)	(0.0395)	(0.0444)
lnRENT			0.0041			0.0478			0.1558*
			(0.0407)			(0.0587)			(0.0933)
*lnCO_FDI*lnRENT*			0.0180***			0.0163***			-0.0286*
			(0.0052)			(0.0058)			(0.0166)
*lnUS_OFDI*lnRENT*			-0.0164***			-0.0099			-0.0290*
			(0.0060)			(0.0086)			(0.0125)
lnHC		0.650***			0.195			0.7068***	
		(0.0816)			(0.2430)			(0.0959)	
Constant	20.60***	18.33***	20.48***	22.13***	21.36***	22.25***	19.9073***	17.5526***	19.2858***
	(0.3940)	(0.4600)	(0.4080)	(0.6820)	(1.1850)	(0.7260)	(0.5301)	(0.5611)	(0.5657)
R^2	*0.5126*	*0.5926*	*0.5337*	*0.5238*	*0.5258*	*0.5552*	*0.5566*	*0.6664*	*0.5802*
F test	*48.84****	*58.9*	*36.86****	*23.89****	*20.93****	*18.60****	*29.77****	*41.19****	*22.53****
Hausman test	*125.04****	*119.29****	*130.45****	*29.79****	*29.66****	*32.54****	*80.55****	*81.64****	*79.22****
lnCN_OFDI vs. lnUS_OFDI	*17.68****	*8.02****	*0.03*	*0.3*	*0.32*	*0.55*	*16.05****	*5.12***	*0.41*
Observations	*381*	*381*	*381*	*181*	*181*	*181*	*200*	*200*	*200*

*Notes: The table contains the results estimated using a fixed effects panel data model. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

5.2 Robustness tests

The significant endogenous relationship between FDI and productivity /employment /capital formation is well documented in the literature. For instance, Li and Liu (2005) argue that FDI may have a positive impact on TFP, resulting in an enlarged market size, which in turn attracts further FDI. Similarly, openness is not free of endogeneity problems. Andersen and Babula (2008) indicate that although an economy's trade volume can be a significant contributor to growth, a higher level of economic activity may also lead to an increased exchange of goods and services. Due to the concern about potential endogeneity between FDI and openness on the one hand and productivity/employment/capital formation on the other hand, we estimate Equations (2)-(4) using a fixed-effects two-stage least-squares (2SLS) instrument variable method for each sample/sub-sample. It is widely recognized that it is difficult to find ideal instruments. We therefore follow Clemens et al. (2012), Hayo et al. (2010) and Vergara (2010), using the lagged value of the endogenous variable as the instrument. We use only the first lag of the endogenous variable as the instrument due to the limited number of observations in this study[11]. Hence, there are four instrumental variables in total, which are *l.lnCN_OFDI*, *l.lnUS_OFDI*, *l.lnG6_OFDI*, and *l.lnOPEN*. The LM test statistics suggest that instrumental variables are not under-identified for most of the model specifications. An endogenous test to determine whether endogenous regressors in the model are in fact exogenous is also performed for each of the models. Given that the majority of the endogeneity test statistics are insignificant, the 2SLS FE estimates can be treated as a robustness test on our main models stipulated above, and the results are presented in Tables 4-6.

[11] We also carried out the tests for robustness check with T+2 and T+3. The results with T+2 are broadly consistent with the main results that we report in the main text, whereas the results with T+3 show that the coefficients on all key variables are insignificant. In both cases, the LM statistics are insignificant in all models, suggesting that these instrumental variables are under-identified. The results are available upon request.

Table 4 shows that the coefficient of *lnCN_OFDI* is significantly positive in the majority of model specifications, suggesting that CN_OFDI plays an important role in stimulating productivity in both middle- and low-income host economies. Meanwhile, the coefficient of *lnUS_OFDI* is insignificant in all cases. The results are in line with the main findings presented above, lending partial support to Hypothesis 1. Table 5 provides the results regarding the job creation effect. It shows that the coefficient of *lnCN_OFDI* is significantly positive in most cases, whereas the coefficient of *lnUS_OFDI* is significantly positive mainly in the mid-income economies. The results confirm our main findings and provide support for Hypotheses 2a, 2b, and 2c. The results related to the development financing effect are reported in Table 6. Again, a very similar picture is found, i.e., the coefficients of both *lnCN_OFDI* and *lnUS_OFDI* are significantly positive in the majority of cases, confirming support for Hypothesis 3a. Meanwhile, the coefficient of the interaction term *lnCN_OFDI*lnRENT* is also significantly positive in Models (3) and (6), whereas the coefficient of *lnUSOFDI*lnRENT* is negative in Model (3). The results are consistent with our major finding above and provide full support for Hypothesis 3c, i.e., compared with US_OFDI, CN_OFDI is likely to have a stronger development financing impact in resource-rich developing groups.

To further test the robustness of the results concerning productivity, we use the full productivity model as employed in the literature to capture the productivity effects of OFDI on productivity. Both fixed effects panel data and instrumental variable 2SLS fixed effects approaches are applied to estimate Equation (5). The results are presented in Tables 7 and 8, respectively. Overall, the results are broadly consistent to those reported above. In sum, Hypothesis 1 is partially supported, i.e., the productivity enhancement impact of CN_OFDI on the host developing economies does vary across different countries: stronger than the US OFDI in the low-income countries, although not necessarily weaker in the middle-income countries.

Table 4. Productivity effect of CN_OFDI on hosting developing economies (2SLS)

lnTFP	**Full sample**					**Mid-income economies**					**Low-income economies**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
lnCN_OFDI	0.0239***	0.0215***	0.0220***	0.0330**	0.7	0.0164**	0.0177**	0.0192**	0.0237*	1.648	0.0301***	0.0198*	0.0080	0.0512	0.879
	(0.0038)	(0.0041)	(0.0042)	(0.0160)	(1.0960)	(0.0074)	(0.0073)	(0.0078)	(0.0124)	(2.4220)	(0.0082)	(0.0104)	(0.0110)	(0.1150)	(2.1810)
lnUS_OFDI	-0.0059	-0.0058	-0.0048	-0.0172	-0.0401	-0.0108	-0.0064	-0.0109	-0.0374	-1.9360	-0.0064	-0.0097	-0.0085	0.1560	-0.0587
	(0.0096)	(0.0096)	(0.0098)	(0.0380)	(0.2300)	(0.0199)	(0.0187)	(0.0177)	(0.0329)	(2.7870)	(0.0161)	(0.0157)	(0.0152)	(0.3920)	(0.3740)
lnG6_OFDI	0.0032	0.0019	0.0008	0.0028	-0.0226	0.0084	0.0046	0.0028	0.0051	0.0407	0.0005	0.0012	0.0005	0.0023	-0.0305
	(0.0036)	(0.0035)	(0.0037)	(0.0034)	(0.0400)	(0.0097)	(0.0094)	(0.0097)	(0.0111)	(0.0517)	(0.0048)	(0.0046)	(0.0042)	(0.0124)	(0.0758)
lnOPEN	-0.160***	-0.136**	-0.128**	-0.185***	-0.495	-0.375***	-0.344***	-0.318**	-0.503***	-0.297*	-0.0835	-0.0813	-0.0704	-0.11	-0.657
	(0.0537)	(0.0560)	(0.0559)	(0.0621)	(0.5410)	(0.1100)	(0.1280)	(0.1270)	(0.1810)	(0.1770)	(0.0724)	(0.0721)	(0.0696)	(0.2470)	(1.4550)
lnAGR	-0.0419*	-0.0369	-0.0369	-0.0226	-0.167	-0.0775***	-0.0678**	-0.0571*	-0.0396	0.0504	-0.0281	-0.0111	-0.0154	0.00568	-0.33
	(0.0248)	(0.0242)	(0.0241)	(0.0261)	(0.2010)	(0.0298)	(0.0295)	(0.0305)	(0.0375)	(0.1690)	(0.0546)	(0.0547)	(0.0515)	(0.2180)	(0.7870)
lnHC	-0.0769**	-0.0822***	-0.101***	-0.0601*	0.114	0.0137	0.0712	0.0542	0.0985	-1.778	-0.0787*	-0.0805*	-0.143***	-0.153	0.224
	(0.0301)	(0.0294)	(0.0326)	(0.0346)	(0.2890)	(0.0755)	(0.0807)	(0.0797)	(0.0993)	(3.9600)	(0.0471)	(0.0442)	(0.0491)	(0.2260)	(0.6820)
lnINST	0.0120	-0.0016	-0.0066	-0.0066	-0.1260	0.0574	0.0528	0.0532	0.0549	0.092	-0.0221	-0.0291	-0.0248	-0.0075	-0.1700
	(0.0264)	(0.0266)	(0.0268)	(0.0279)	(0.2230)	(0.0362)	(0.0340)	(0.0333)	(0.0407)	(0.0845)	(0.0583)	(0.0581)	(0.0551)	(0.1350)	(0.4270)
lnCNDGDPPC		0.0097**	-0.0139				0.0096	-0.0038				0.0172**	-0.0705**		
		(0.0040)	(0.0199)				(0.0063)	(0.0368)				(0.0083)	(0.0317)		
lnUSDGDPPC		-0.0671	5.1780				0.0356	15.9500				0.0592	-35.4800		
		(0.0936)	(8.8900)				(0.1120)	(11.970)				(0.3210)	(133.20)		
lnCNDGDPPC^2			0.0020					0.0012					0.0088***		
			(0.0017)					(0.0030)					(0.0032)		
lnUSDGDPPC^2			-0.246					-0.753					1.661		
			(0.4200)					(0.5670)					(6.1790)		
lnRENT				0.0345					0.0519*					0.369	
				(0.0319)					(0.0266)					(0.5770)	
*lnCN_OFDI*lnRENT*				-0.0052					-0.0028					-0.0179	
				(0.0064)					(0.0034)					(0.0411)	
*lnUS_OFDI*lnRENT*				0.0036					0.0040					-0.0637	
				(0.0119)					(0.0044)					(0.1560)	
*lnCN_OFDI*lnHC*					-0.158					-0.364					-0.21
					(0.2560)					(0.5390)					(0.5370)
*lnUS_OFDI*lnHC*					0.0113					0.439					0.0144
					-0.0576					-0.6280					-0.0944
F test	*11.66****	*11.06****	*9.40****	*8.28****	*1.45*	*8.05****	*7.61****	*6.82****	*4.60****	*2.68****	*4.48****	*4.23****	*4.59****	*1.09****	*0.31*
LM test	*25.32****	*23.943****	*22.154****	*4.537***	*0.562*	*12.953****	*12.471****	*12.882****	*7.589****	*0.718*	*7.518****	*7.427****	*7.418****	*0.25*	*0.214*
Endogeneity test	*9.925***	*6.647*	*6.771*	*7.674*	*7.678*	*9.202**	*6.057*	*6.653*	*8.793**	*9.985***	*7.358*	*3.315*	*0.938*	*6.961*	*4.487*
lnCN_OFDI vs. lnUS_OFDI	*7.56****	*6.59***	*6.36***	*0.89*	*0.36*	*1.12*	*0.97*	*1.66*	*1.96*	*0.59*	*7.57****	*5.61***	*1.54*	*0.04*	*0.14*
Observations	*344*	*344*	*344*	*344*	*344*	*168*	*168*	*168*	*168*	*168*	*176*	*176*	*176*	*176*	*176*

*Notes: The table contains the results estimated using a 2SLS IV fixed effects model to address the potential endogeneity problem. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. The instrumental variables are l.lnCN_OFDI, l.lnUS_OFDI, l.lnG6_OFDI, and l.lnOPEN. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

Table 5. Job creation impact of CN_OFDI on hosting developing economies (2SLS)

lnEMPLOY	**Full sample**					**Mid-income economies**					**Low-income economies**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
lnCN_OFDI	0.0380***	0.0311***	0.0301***	-0.0003	0.0359***	0.0359***	0.0264***	0.0241**	0.0194	0.0349***	0.0169*	0.0001	-0.0111	0.0524	0.0175*
	(0.0047)	(0.0049)	(0.0051)	(0.1700)	(0.0045)	(0.0095)	(0.0091)	(0.0096)	(0.1020)	(0.0097)	(0.0101)	(0.0134)	(0.0141)	(0.0362)	(0.0090)
lnUS_OFDI	-0.0002	-0.0034	-0.0038	0.0438	0.0004	0.0679***	0.0535**	0.0412*	0.0373	0.0701**	-0.0286	-0.0328	-0.0356*	0.0096	-0.0146
	(0.0116)	(0.0115)	(0.0118)	(0.2260)	(0.0111)	(0.0256)	(0.0235)	(0.0218)	(0.2200)	(0.0334)	(0.0198)	(0.0202)	(0.0195)	(0.0252)	(0.0156)
lnG6_OFDI	0.0020	0.0014	0.0012	-0.0530	0.0010	-0.0064	-0.0044	-0.0048	-0.0270	-0.0057	0.0067	0.0072	0.0027	-0.0590	0.0058
	(0.0043)	(0.0043)	(0.0044)	(0.1800)	(0.0041)	(0.0125)	(0.0118)	(0.0119)	(0.0243)	(0.0125)	(0.0058)	(0.0059)	(0.0054)	(0.0680)	(0.0052)
lnOPEN	-0.109*	-0.0761	-0.0753	-0.793	-0.137**	0.228	0.400**	0.429***	-0.199	0.235	-0.212**	-0.204**	-0.208**	-0.0476	-0.229***
	(0.0651)	(0.0673)	(0.0674)	(2.2800)	(0.0672)	(0.1420)	(0.1600)	(0.1560)	(1.8340)	(0.1780)	(0.0888)	(0.0927)	(0.0889)	(0.2480)	(0.0851)
lnAGR	0.0073	0.0190	0.0216	0.1110		0.0183	0.0368	0.0495	-0.0012		0.1100	0.138**	0.121*	0.298	
	(0.0302)	(0.0290)	(0.0291)	(0.4850)		(0.0384)	(0.0371)	(0.0375)	(0.4520)		(0.0670)	(0.0703)	(0.0658)	(0.2860)	
lnHC	0.218***	0.216***	0.211***	0.103	0.229***	0.015	0.0305	-0.0119	0.014	0.00923	0.314***	0.304***	0.204***	-0.933	0.300***
	(0.0366)	(0.0353)	(0.0393)	(0.9200)	(0.0348)	(0.0972)	(0.1010)	(0.0981)	(0.6660)	(0.1060)	(0.0578)	(0.0568)	(0.0627)	(0.7870)	(0.0521)
lnINST	0.0883***	0.0905***	0.0898***	0.563	0.0658**	0.0094	0.0173	0.0197	0.2630	0.0076	0.0803	0.0620	0.0536	-0.1750	0.0528
	(0.0321)	(0.0319)	(0.0323)	(1.2720)	(0.0289)	(0.0466)	(0.0428)	(0.0410)	(1.2560)	(0.0435)	(0.0716)	(0.0746)	(0.0704)	(0.4460)	(0.0621)
lnCNDGDPPC		0.0036	0.0092				0.0020	0.0468				0.0243**	-0.0463		
		(0.0048)	(0.0240)				(0.0079)	(0.0452)				(0.0107)	(0.0406)		
lnUSDGDPPC		-0.345***	8.463				-0.602***	32.49**				-0.164	508.8***		
		(0.1120)	(10.7200)				(0.1400)	(14.72)				(0.4130)	(170.20)		
lnCNDGDPPC^2			-0.0005					-0.0034					0.0084**		
			(0.0020)					(0.0037)					(0.0040)		
lnUSDGDPPC^2			-0.416					-1.571**					-23.60***		
			(0.5070)					(0.6980)					(7.8960)		
lnWAGE				0.1190					0.0594					0.2010	
				(0.3360)					(0.0762)					(0.1980)	
lnRENT					0.0447***					-0.0099					0.0478**
					(0.0126)					(0.0303)					(0.0202)
F test	*39.27****	*35.15****	*29.05****	*2.78****	*43.76****	*15.31****	*15.40****	*13.90****	*8.11****	*15.56****	*20.76****	*16.22****	*15.27****	*1.65*	*25.47****
LM test	*25.321****	*23.943****	*22.154****	*0.07*	*26.215****	*12.953****	*12.471****	*12.882****	*0.087*	*10.037****	*7.518****	*7.427****	*7.418****	*1.091*	*9.391****
Endogeneity test	*14.355****	*9.178**	*8.934**	*5.025*	*11.745***	*10.592***	*7.19*	*6.256*	*4.652*	*8.633**	*9.261**	*7.608*	*6.269*	*8.285**	*7.496*
lnCN_OFDI vs. lnUS_OFDI	*8.45****	*7.27****	*7.02****	*0.01*	*8.31****	*0.93*	*0.78*	*0.35*	*0*	*0.74*	*7.83****	*4.26***	*2.07*	*1.31*	*5.64***
Observations	*344*	*344*	*344*	*105*	*344*	*168*	*168*	*168*	*70*	*168*	*176*	*176*	*176*	*35*	*176*

*Notes: The table contains the results estimated using a 2SLS IV fixed effects model to address the potential endogeneity problem. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. The instrumental variables are l.lnCN_OFDI, l.lnUS_OFDI, l.lnG6_OFDI, and l.lnOPEN. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

Table 6. Development finance effect of CN_OFDI on hosting developing economies (2SLS)

lnK	**Full sample**			**Mid-income economies**			**Low-income economies**		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
lnCN_OFDI	0.141***	0.105***	-0.0643	0.0754**	0.0704**	0.0235	0.184***	0.152***	1.247
	(0.0161)	(0.0167)	(0.1120)	(0.0298)	(0.0301)	(0.0497)	(0.0351)	(0.0435)	(2.1630)
lnUS_OFDI	0.159***	0.155***	0.571**	0.212***	0.211***	0.306**	0.207***	0.194**	-2.458
	(0.0420)	(0.0391)	(0.2540)	(0.0801)	(0.0794)	(0.1250)	(0.0781)	(0.0768)	(6.1560)
lnG6_OFDI	-0.0026	-0.0106	0.0044	-0.0184	-0.0191	-0.0194	-0.0096	-0.0130	-0.0357
	(0.0157)	(0.0147)	(0.0246)	(0.0366)	(0.0364)	(0.0410)	(0.0240)	(0.0218)	(0.1530)
lnOPEN	0.563**	0.563***	0.917**	0.6360	0.5800	1.1210	0.574*	0.607*	2.143
	(0.2270)	(0.2120)	(0.4210)	(0.5010)	(0.5220)	(0.7530)	(0.3340)	(0.3120)	(3.6930)
lnAGR	-0.297***	-0.359***	-0.3	-0.216*	-0.219*	-0.309**	-0.811***	-0.801***	-1.792
	(0.1120)	(0.1050)	(0.1860)	(0.1230)	(0.1220)	(0.1550)	(0.2800)	(0.2630)	(2.9580)
lnINST	0.191	0.105	0.470*	-0.246	-0.189	-0.148	0.594**	0.423	0.329
	(0.1360)	(0.1290)	(0.2420)	(0.1880)	(0.2090)	(0.1930)	(0.2900)	(0.2850)	(1.5530)
lnSAVINGS	0.0540	0.0671	0.0454	0.0511	0.0585	0.0522	-0.0336	-0.0064	0.2550
	(0.0535)	(0.0498)	(0.0858)	(0.1200)	(0.1210)	(0.1280)	(0.0813)	(0.0789)	(0.8960)
lnRENT			0.429*			-0.0821			-3.37
			(0.2300)			(0.1020)			(9.3570)
*lnCN_OFDI*lnRENT*			0.0790*			0.0263**			-0.359
			(0.0417)			(0.0120)			(0.6360)
*lnUS_OFDI*lnRENT*			-0.176**			-0.0291			0.995
			(0.0805)			(0.0179)			(2.4690)
lnHC		0.612***			0.244			0.371	
		(0.1270)			(0.3110)			(0.2470)	
F test	*20.68****	*23.83****	*5.82****	*12.90****	*11.62****	*7.81****	*7.76****	*8.96****	*0.25*
LM test	*23.449****	*23.467****	*4.687***	*11.308****	*11.281****	*7.079****	*7.356****	*6.851****	*0.18*
Endogeneity test	*43.914****	*33.741****	*46.527****	*16.549****	*15.557****	*17.878****	*24.961****	*19.461****	*24.883****
lnCN_OFDI vs. lnUS_OFDI	*0.15*	*1.26*	*3.11**	*1.67*	*1.83*	*2.77**	*0.11*	*0.48*	*0.2*
Observations	*322*	*322*	*322*	*160*	*160*	*160*	*162*	*162*	*162*

*Notes: The table contains the results estimated using a 2SLS IV fixed effects model to address the potential endogeneity problem. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. The instrumental variables are l.lnCN_OFDI, l.lnUS_OFDI, l.lnG6_OFDI, and l.lnOPEN. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

Table 7. Productivity effect of CN_OFDI on hosting developing economies (full model-FE)

lnY	**Full sample**					**Mid-income economies**					**Low-income economies**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
lnCN_OFDI	0.0253***	0.0241***	0.0246***	0.0241***	0.0515***	0.0129***	0.0132***	0.0136***	0.0144***	0.0953	0.0350***	0.0271***	0.0163***	0.0538***	0.0918***
	(0.0033)	(0.0032)	(0.0032)	(0.0040)	(0.0168)	(0.0039)	(0.0039)	(0.0040)	(0.0042)	(0.0793)	(0.0049)	(0.0049)	(0.0047)	(0.0109)	(0.0195)
lnUS_OFDI	0.0018	0.0018	0.0023	0.0058	0.0039	0.0105*	0.0115*	0.0116*	0.0075	-0.18	0.0017	-0.0003	-0.0007	0.0040	0.0210
	(0.0026)	(0.0025)	(0.0025)	(0.0044)	(0.0177)	(0.0061)	(0.0060)	(0.0060)	(0.0064)	(0.1100)	(0.0031)	(0.0029)	(0.0027)	(0.0090)	(0.0199)
lnG6_OFDI	0.0006	0.0003	0.0001	0.0005	0.0015	0.0006	0.0001	-0.0002	0.0000	0.0011	0.0001	0.0001	0.0001	0.0001	0.0014
	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0013)	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0023)	(0.0016)	(0.0015)	(0.0014)	(0.0016)	(0.0015)
lnOPEN	-0.0695***	-0.0358	-0.0328	-0.0899***	-0.0492**	-0.151***	-0.119***	-0.103***	-0.175***	-0.155***	-0.0256	-0.0116	-0.0337	-0.0194	0.0188
	(0.0230)	(0.0237)	(0.0239)	(0.0245)	(0.0228)	(0.0344)	(0.0379)	(0.0391)	(0.0387)	(0.0345)	(0.0303)	(0.0298)	(0.0280)	(0.0340)	(0.0280)
lnAGR	-0.0987***	-0.0923***	-0.0921***	-0.0855***	-0.0734***	-0.0531**	-0.0411	-0.0368	-0.0402	-0.0417	-0.141***	-0.116***	-0.0919***	-0.151***	-0.0701**
	(0.0219)	(0.0213)	(0.0213)	(0.0224)	(0.0221)	(0.0250)	(0.0250)	(0.0252)	(0.0258)	(0.0258)	(0.0353)	(0.0336)	(0.0305)	(0.0365)	(0.0339)
lnHC	0.0200	0.0217	0.0050	0.0294	0.0114	0.0022	0.0726	0.0612	0.0179	-0.2610	0.0881**	0.0913**	0.0319	0.0936**	0.0777**
	(0.0278)	(0.0273)	(0.0292)	(0.0279)	(0.0288)	(0.0564)	(0.0617)	(0.0620)	(0.0580)	(0.1870)	(0.0395)	(0.0372)	(0.0347)	(0.0393)	(0.0367)
lnINST	-0.0039	-0.0119	-0.0164	-0.0037	0.0204	0.0004	0.0047	0.0038	-0.0036	0.0034	0.0352	0.0378	0.0584*	0.0524	0.0555
	(0.0214)	(0.0215)	(0.0216)	(0.0214)	(0.0214)	(0.0247)	(0.0243)	(0.0242)	(0.0249)	(0.0247)	(0.0394)	(0.0372)	(0.0337)	(0.0399)	(0.0356)
lnL	0.723***	0.669***	0.661***	0.664***	0.681***	0.732***	0.728***	0.703***	0.694***	0.697***	0.586***	0.430***	0.132	0.570***	0.457***
	(0.0686)	(0.0675)	(0.0676)	(0.0708)	(0.0675)	(0.0927)	(0.0917)	(0.0951)	(0.0944)	(0.0947)	(0.1010)	(0.1000)	(0.1040)	(0.1040)	(0.0936)
lnK	0.228***	0.215***	0.213***	0.231***	0.230***	0.318***	0.311***	0.307***	0.318***	0.319***	0.165***	0.156***	0.155***	0.158***	0.168***
	(0.0169)	(0.0169)	(0.0169)	(0.0169)	(0.0166)	(0.0240)	(0.0244)	(0.0248)	(0.0241)	(0.0239)	(0.0233)	(0.0222)	(0.0201)	(0.0239)	(0.0211)
lnCNDGDPPC		0.0136***	-0.0128				0.0127**	0.0183				0.0341***	-0.129***		
		(0.0037)	(0.0188)				(0.0051)	(0.0301)				(0.0071)	(0.0257)		
lnUSDGDPPC		-0.244***	7.869				-0.0813	15.86				-0.0507	67.44		
		(0.0794)	(7.8650)				(0.0775)	(10.14)				(0.2090)	(102.90)		
lnCNDGDPPC^2			0.0022					-0.0003					0.0162***		
			(0.0015)					(0.0024)					(0.0025)		
lnUSDGDPPC^2			-0.382					-0.755					-3.115		
			(0.3710)					(0.4800)					(4.7740)		
lnRENT				0.0305***					0.0280*					0.0530**	
				(0.0115)					(0.0143)					(0.0264)	
*lnCN_OFDI*lnRENT*				0.0010					-0.0001					-0.0921***	
				(0.0014)					(0.0014)					(0.0045)	
*lnUS_OFDI*lnRENT*				-0.0022					-0.0012					-0.0011	
				(0.0017)					(0.0020)					(0.0037)	
*lnCN_OFDI*lnHC*					0.0187***					-0.0182					0.0335***
					(0.0041)					(0.0177)					(0.0050)
*lnUS_OFDI*lnHC*					-0.0010					0.0434*					-0.0054
					(0.0044)					(0.0249)					(0.0050)
Constant	7.839***	11.36***	-31.47	8.677***	8.359***	6.620***	7.130***	-76.56	7.237***	8.286***	10.44***	13.35***	-346.8	10.73***	12.08***
	(0.9690)	(1.3910)	(41.5900)	(1.0000)	(0.9480)	(1.2300)	(1.6640)	(53.3600)	(1.2710)	(1.6420)	(1.5030)	(2.7260)	(554.3000)	(1.5400)	(1.3740)
R^2	*0.9204*	*0.8857*	*0.9256*	*0.9227*	*0.9219*	*0.9204*	*0.9244*	*0.9256*	*0.9227*	*0.9219*	*0.8697*	*0.886*	*0.9086*	*0.874*	*0.8958*
F test	*205.46****	*245.15****	*149.38****	*156.28****	*169.64****	*205.46****	*175.62****	*149.38****	*156.28****	*169.64****	*134.21****	*126.53****	*135.28****	*102.92****	*139.91****
Hausman test	*94.26****	*235.46****	*90.00****	*88.26****	*94.44****	*94.26****	*98.12****	*90.00****	*88.26****	*94.44****	*81.44****	*98.38****	*49.37****	*81.04****	*83.28****
lnCN_OFDI vs.	*6.04***	*2.44*	*5.06***	*2.83**	*1.93*	*6.04***	*6.98****	*5.06***	*2.83**	*1.93*	*8.43****	*4.78***	*3.64**	*5.18***	*8.30****
Observations	*411*	*411*	*411*	*411*	*411*	*192*	*192*	*192*	*192*	*192*	*219*	*219*	*219*	*219*	*219*

*Notes: The table contains the results estimated using a fixed effects panel data model. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

Table 8. Productivity effect of CN_OFDI on hosting developing economies (full model-2SLS)

lnY	**Full sample**					**Mid-income economies**					**Low-income economies**				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
lnCN_OFDI	0.0365***	0.0340***	0.0355***	0.0341**	0.864	0.0123	0.0143*	0.0165*	0.022	1.161	0.0634***	0.0476***	0.0289**	0.190*	0.966
	(0.0054)	(0.0051)	(0.0053)	(0.0166)	(0.9880)	(0.0085)	(0.0082)	(0.0085)	(0.0136)	(1.4650)	(0.0147)	(0.0138)	(0.0120)	(0.1000)	(1.3140)
lnUS_OFDI	0.0082	0.0099	0.0126	0.0368	-0.0606	-0.0225	-0.0182	-0.0184	-0.0585	-0.8840	0.0269	0.0203	0.0159	-0.2360	-0.0520
	(0.0111)	(0.0107)	(0.0112)	(0.0607)	(0.2450)	(0.0273)	(0.0280)	(0.0263)	(0.0525)	(0.8810)	(0.0261)	(0.0225)	(0.0203)	(0.6910)	(0.3270)
lnG6_OFDI	0.0018	-0.0002	-0.0023	0.0026	-0.0279	0.0096	0.0054	0.0037	0.0066	0.0259	-0.0033	-0.0022	-0.0029	-0.0109	-0.0333
	(0.0035)	(0.0035)	(0.0037)	(0.0035)	(0.0389)	(0.0105)	(0.0104)	(0.0107)	(0.0128)	(0.0244)	(0.0060)	(0.0052)	(0.0041)	(0.0256)	(0.0509)
lnOPEN	-0.116*	-0.0663	-0.0486	-0.119	-0.58	-0.401***	-0.400**	-0.370*	-0.579**	-0.332***	0.0192	0.0152	0.0051	0.293	-0.730
	(0.0625)	(0.0665)	(0.0684)	(0.0922)	(0.5410)	(0.1290)	(0.1780)	(0.1930)	(0.2530)	(0.1290)	(0.1170)	(0.1020)	(0.0928)	(0.5390)	(0.9940)
lnAGR	-0.0756***	-0.0710***	-0.0708***	-0.0529	-0.195	-0.0725**	-0.0621*	-0.0556*	-0.0207	0.00242	-0.173*	-0.133	-0.118	-0.337	-0.350
	(0.0277)	(0.0260)	(0.0261)	(0.0351)	(0.1670)	(0.0328)	(0.0325)	(0.0335)	(0.0503)	(0.0719)	(0.0972)	(0.0845)	(0.0728)	(0.3790)	(0.4340)
lnHC	-0.0003	0.0134	-0.0122	0.0210	0.1720	0.0006	0.0572	0.0503	0.1030	-0.4050	0.0713	0.0830	0.0146	0.0738	0.2960
	(0.0354)	(0.0347)	(0.0355)	(0.0376)	(0.3270)	(0.0795)	(0.0886)	(0.0851)	(0.1140)	(1.8720)	(0.0609)	(0.0518)	(0.0448)	(0.2640)	(0.4560)
lnINST	0.0233	0.0125	0.0061	0.0200	-0.1490	0.0619	0.0579	0.0567	0.0659	0.0838	0.0686	0.0527	0.0638	-0.0667	-0.1790
	(0.0268)	(0.0260)	(0.0264)	(0.0324)	(0.2250)	(0.0402)	(0.0392)	(0.0377)	(0.0506)	(0.0546)	(0.0666)	(0.0575)	(0.0470)	(0.3480)	(0.4060)
lnL	0.573***	0.0129***	0.495***	0.467***	0.584*	0.772***	0.010	0.760***	0.717***	0.384	0.447**	0.0246***	0.131	1.147	0.538
	(0.0924)	(0.0040)	(0.0873)	(0.1220)	(0.3110)	(0.1560)	(0.0067)	(0.1800)	(0.1820)	(0.2810)	(0.1810)	(0.0084)	(0.1630)	(2.1160)	(0.6960)
lnK	0.220***	-0.238**	0.193***	0.213***	0.307***	0.341***	0.127	0.344***	0.370***	0.341***	0.0976	-0.234	0.109**	0.134	0.313
	(0.0265)	(0.0988)	(0.0288)	(0.0500)	(0.1090)	(0.0369)	(0.1790)	(0.0508)	(0.0580)	(0.0413)	(0.0657)	(0.3250)	(0.0508)	(0.2010)	(0.2520)
lnCNDGDPPC		0.525***	-0.019				0.771***	-0.00879				0.341**	-0.119***		
		(0.0869)	(0.0194)				(0.1620)	(0.0407)				(0.1540)	(0.0278)		
lnUSDGDPPC		0.202***	17.26*				0.353***	9.85				0.101*	60.15		
		(0.0276)	(9.1290)				(0.0474)	(17.30)				(0.0570)	(154.20)		
lnCNDGDPPC^2			0.00268					0.00162					0.0151***		
			(0.0016)					(0.0032)					(0.0029)		
lnUSDGDPPC^2			-0.826*					-0.46					-2.783		
			(0.4320)					(0.8250)					(7.1530)		
lnRENT				0.0860*					0.0568*					-0.191	
				(0.0510)					(0.0322)					(1.2490)	
*lnCN_OFDI*lnRENT*				0.0010					-0.0045					-0.0672	
				(0.0089)					(0.0048)					(0.0417)	
*lnUS_OFDI*lnRENT*				-0.013					0.006					0.0948	
				(0.0187)					(0.0061)					(0.2790)	
*lnCN_OFDI*lnHC*					-0.196					-0.254					-0.230
					(0.2310)					(0.3260)					(0.3260)
*lnUS_OFDI*lnHC*					0.0168					0.203					0.0127
					(0.0598)					(0.2000)					(0.0817)
F test	*88.35****	*163.10****	*68.24****	*45.98****	*57.64****	*88.35****	*77.13****	*68.24****	*45.98****	*57.64****	*52.22****	*59.95****	*77.23****	*8.38****	*3.88****
LM test	*9.365****	*18.263****	*7.025****	*4.319***	*1.399*	*9.365****	*7.374****	*7.025****	*4.319***	*1.399****	*3.866***	*3.707**	*3.202**	*0.17*	*0.656*
Endogeneity test	*9.063**	*14.262****	*5.39*	*8.372**	*10.104***	*9.063**	*5.464*	*5.39*	*8.372**	*10.104***	*19.429****	*11.064***	*3.927*	*19.703****	*20.951****
lnCN_OFDI vs. lnUS_OFDI	*1.33*	*5.09***	*1.48*	*1.7*	*1.18*	*1.33*	*1.12*	*1.48*	*1.7*	*1.18*	*4.12***	*3.28**	*0.84*	*0.35*	*0.53*
Observations	*344*	*344*	*344*	*344*	*344*	*168*	*168*	*168*	*168*	*168*	*176*	*176*	*176*	*176*	*176*

*Notes: The table contains the results estimated using a 2SLS IV fixed effects model to address the potential endogeneity problem. Definitions of all variables are provided in Appendix 4. All models include country fixed effects. The instrumental variables are l.lnCN_OFDI, l.lnUS_OFDI, l.lnG6_OFDI, and l.lnOPEN. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Robust standard errors are reported.*

VI. Conclusion and discussion

6.1 Conclusion

This paper contributes to the debate on the impact of emerging market MNEs on host economies by extending the 'global factory' view of international business and developing an analytical framework which links the 'global factory' view to the development literature through the 'growth accounting' approach. It further tests the hypotheses concerning the growth impact of outward direct investment using a cross-country panel dataset over the 2004-2012 period, comparing the impact of Chinese versus US OFDI. Characteristics of the emerging market MNEs are taken into account in the theory development. Evidence from the research proves that it is not the absolute ownership advantage but the relative gap-filling compatibility between the FDI and the host economies that determines the direction and the significance of the impact of FDI on the economic growth in the host economies.

Empirical findings reported in this paper suggest that, due to differences between CN_OFDI and US_OFDI in their compatibilities with host developing countries in multiple growth dimensions such as capital, labour, and technology, their impacts on host economies may vary along these different dimensions. First, the productivity enhancement impact of CN_OFDI is stronger than that of US_OFDI in low-income countries. In middle-income countries, both CN_OFDI and US_OFDI generate significantly positive impacts and the difference between them is not statistically significant. CN_OFDI have a stronger productivity enhancement impact in resource-rich developing groups, in particular the mid-income resource-rich economies. However, US_OFDI leads to greater productivity gains when coupled with greater human capital in the middle-income countries, while such significant productivity gains enabled by greater human capital occur for CN_OFDI only in the low-income countries.

CN_OFDI also has a significant and positive effect on job creation in both middle- and low-income economies, while the job creation effect of US_OFDI is only statistically significant in the middle-income countries, but not in the low-income countries. This may be due to more pure resource-seeking US_OFDI in the extractive sector in the low-income countries while CN_OFDI also invest in the manufacturing sector in these countries. This is consistent with findings that a considerable number of CN_OFDI went into the manufacturing sectors in Africa (Brautigam, 2009) and the labour-intensive technology adopted in the Chinese MNEs led to large absolute numbers of local employees despite a higher proportion of expatriates working in each MNE in comparison to those in the European MNEs (Auffray and Fu, 2015).

Both CN_OFDI and US_OFDI have a positive and significant impact on capital accumulation in host developing economies. This is consistent with earlier findings that FDI constitutes an important driver of economic growth in Africa, and that CN_OFDI went to both resource-rich and non-resource-rich countries in Africa (Brautigam et al., 2017). Compared with US_OFDI, CN_OFDI has a stronger development financing impact in resource-rich economies, particularly in the middle-income economies. This is consistent with our hypothesis that CN_OFDI also flows to non-extractive industries which presents a valuable inflow of funding to the sectors and countries that are under-invested.

6.2 Discussions

Two distinctive approaches are used for the study. First, a systematic analysis of the multi-dimensional gap-filling compatibilities between FDI and host economies is developed to examine why the 'relative ownership advantage' instead of the 'absolute ownership advantage' plays a significant role in determining the growth impact of FDI on the host countries. Instead

of focusing only on either the investing or the host-side characteristics, as most studies do, we argue that it is the relative compatibilities between the two sides that determine the net overall impact of FDI on the economic growth of the host economies. When FDI helps fill in gaps in important growth drivers and alleviates major constraints to growth in host economies, FDI – regardless of whether it is from the North or the South – will generate a significant positive growth impact. In other words, the analysis presented in this paper relaxes the implicit assumptions made in previous literature for prerequisites of advanced technological and managerial knowledge enjoyed by the MNEs for them to generate positive impact in the host economies.

Secondly, the distinctive characteristics of CN_OFDI, namely, (1) weak ownership advantages and (2) strong state supportiveness, are examined with regard to how they may affect the location decision and strategies of the Chinese MNEs. These location decisions may thus shape the degree of compatibilities between the FDI and host countries and subsequently moderate the growth impact of CN_OFDI upon the host developing countries. All these distinctive characteristics, location mechanisms, and the transmission mechanism of growth impact are analysed in an integrated framework. These theoretical developments contribute not only to our understanding of the impact of FDI yielding weak ownership advantage, but also to the impact of FDI that is driven by state supportiveness with additional socioeconomic and political agendas, apart from profit maximisation under pure market forces.

This paper contributes to the literature with an extension of the 'global factory' perspective and the development of an analytical framework that combines the 'global factory' perspective with the FDI and development literature through the 'growth accounting' approach. As the various determinants of economic growth, such as financing, employment, and production, should be understood as factors which are increasingly influenced by the interaction of both domestic and

foreign investment decisions for any single economy (Buckley, 2009; Buckley and Hashai, 2014), this framework enables us to understand how FDI made by MNEs in different locations may (or may not) help the host countries unblock the growth constraints and result in significant economic growth. The paper thus contributes to the debate on globalisation and international development. It also demonstrates how the characteristics of emerging market FDI, for example state supportiveness, may lead to a modified location strategy of the MNEs, which may generate a different impact deviating from the conventional trajectory suggested by the existing theory.

Secondly, the theoretical and empirical analyses of the role played by the special characteristics of the Chinese OFDI in influencing their location and sectoral decision contribute to the literature concerning the impact of FDI with different country origins. Earlier research by Kojima (1975) focuses on the different types of FDI from the US and Japan, and finds that Japanese trade-oriented FDI enhances trade and hence has greater welfare effects than US FDI, which substitutes for trade. This paper is different and argues that different compatibilities between the FDI and the host economies due to different country origin play a significant role in shaping the direction, size and significance of the growth impact of the relevant FDI. It suggests that the growth benefits from FDI in a host country do not require an *absolute* advantage in resources and capabilities. Instead, possible growth effect pathways may be dependent on *relative* terms, involving comparative strength along multiple dimensions. Therefore, OFDI from a developing country may have a positive effect on economic growth in other host developing countries where they can provide the appropriate compatibilities to the host economies to fill specific local gaps in capital, labour or technology and thus alleviate their constraints to growth.

Finally, findings from the research contribute to the ongoing debate on the impact of Chinese MNEs by adding a systematic analysis of empirical evidence based on a large dataset and by providing the first direct comparison of this effect to that of a major traditional OFDI investor. As far as we are aware, this is the first empirical evidence on the growth impact of Chinese OFDI based on a large cross-country dataset. This provides useful empirical findings that complement qualitative case study findings on the impact of CN_OFDI (e.g. Brautigam, 2009; Gu, 2009; Auffray and Fu, 2015; Chen et al., 2016), while adding extra insights by directly comparing the impact of CN_OFDI and US_OFDI.

The results also suggest that CN_OFDI has a significant positive effect on job creation in host economies. Employment has important social and political implications for a country as well as important poverty alleviation and welfare implications for the families of workers. Although the employment effects of CN_OFDI is widely debated, solid empirical evidence on this theme is scarce. The large number of expatriates working in Chinese MNEs in the developing countries have also raised concern as to whether CN_OFDI has few job creation effects or even negative effects in the host countries, due to the crowding out effect. This research has filled a gap in the literature in this respect and has found a significant contribution of CN_OFDI to employment growth in host countries. This diverges from the previous research highlighting the detrimental effects of FDI on employment in developed countries (e.g., Girma, 2005). This finding suggests that MNEs in greenfield projects using labour-intensive technologies contribute significantly to job creation in host countries.

The findings from this research have several important policy implications. First, not only does South-South FDI provide an alternative source of capital and technology, it is not *prima facie* inferior to the traditional Western FDI in terms of growth impact in the host countries. Not only will South-South FDI promote economic growth through development financing, technology

transfer and (sometimes positive) competition effects, it may also facilitate job creation. Despite fielding a considerable pool of expatriates in the subsidiaries of Chinese MNEs and the negative competition pressure, the net employment effect of both CN_OFDI and US_OFDI both appear to be positive, especially for CN_OFDI, which shows a significant and robust positive employment effect in both the low- and middle-income countries. For a country with a labour force of 1 million workers, a one percent increase in CN_OFDI stock will create 300 new jobs. Therefore, developing countries should be welcoming instead of being restrictive to South-South FDI while recognizing that its growth impact will be contingent upon countries' differing levels of development. Secondly, the impact of South-South FDI on income growth in the host countries depends on multi-dimensional compatibility between the FDI and the host economy. Significant growth effects will occur when FDI can help to unblock an important local growth constraint. The developing countries are often constrained by the lack of one or more inputs of production for income growth. Without the presence of the necessary factors of production, a country cannot achieve an effective productive capacity. Therefore, for host-country governments and MNEs, taking these multi-dimensional compatibilities into greater consideration increases the likelihood for more positive growth outcomes. At the same time, the MNEs will also reap higher returns to investment because bringing in the scarcest growth input will enable the investment to have the highest returns. Of course, such gap-filling compatibilities are time specific, relative to a particular stage of development.

Finally, recognizing the different impact of CN_OFDI on countries at different levels of development, different strategies and policy emphasis should be introduced to maximise the benefits. The middle-income countries with levels of economic and technological development similar to those in China should work on effective strategies to benefit from CN_OFDI. For the middle-income Latin American countries, it is important to diversify CN_OFDI away from the resources sector and emphasise sectors that are priorities for long-term economic growth and

industrial development. They should attract FDI that deviates from its natural comparative advantage and attract the type of CN_OFDI that facilitates technology transfer, strong local linkages, and contributes to the countries' development strategies for diversification and growth. For Asian economies, policies should address how to encourage CN_OFDI into the sectors that have the greatest complementarities and how to discourage pure market-seeking investment or efficiency-seeking FDI premised on cheap unskilled-labour. Finally, in resource rich low-income countries, similar to the aims of Western OFDI, CN_OFDI tends to flow to the extractive industry. Policies should be designed to encourage all types of FDI to be invested in other finance-lacking sectors especially the manufacturing industry, to create greater linkages with the local economy and promote knowledge transfer and diversification.

Admittedly, the research is subject to some limitations and there are several areas for future research. First, it is very difficult to find ideal instruments to control for the endogeneity between the dependant and some of the explanatory variables, such as investment and income growth. Although using lagged values of the endogenous variable in instrumental variable estimation is a widespread practice to address endogeneity issues in much empirical economic analysis (Reed, 2015), it may yield inconsistent estimates if certain conditions are not satisfied. Therefore, conclusions should be drawn with caution and future research should find better methods to address this critical issue more effectively. Second, this research uses aggregate country level FDI data for the analysis. As discussed earlier, CN_OFDI includes OFDI from both state-own and private-owned enterprises. Future research using disaggregate data by ownership or ideally using population-wide firm-level data of CN_OFDI to different countries in the world and evaluating its impact on income and employment growth in the host countries will provide greater insights on how the distinctive characteristics of CN_OFDI such as state supportiveness and weak ownership advantage moderate the growth impact of them in the host economies. Lastly, CN_OFDI is also demonstrated by foreign invested firms which were

originally set up in China. OFDI by such firms may be the result of either a strategy to relocate due to rising labour costs in China or for market entry and further expansion. Whether and how their growth impacts differ from those of domestic private Chinese MNEs is also a question requiring further research.

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