Chinese expansion in the international healthcare markets: the role of Chinese OFDI in Europe

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Abstract: The paper sheds light on the increasing interest of Chinese firms operating in key healthcare (HC) industries into Europe. After a description of the economic and policy context for HC in China, we perform an analysis on location choice by Chinese firms, updated to 2014, within Europe. A MofCom database of greenfield and non-greenfield Chinese investments abroad is used. We depict a map of ‘where to where’ of home province vs. host country involved in the integration of Chinese and European healthcare industries. Both spatial localisation, and motivations of Chinese investments in Europe are examined, for the following sub-sectors: pharmaceutical, medical device and equipment and biotechnology. Research and policy implications conclude the paper.

Keywords: healthcare industry; Chinese foreign direct investments; spatial implications.


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1 Introduction

The Chinese Government has been embracing a large reform in the healthcare (HC) system to upgrade the quality and coverage of HC assistance of Chinese people. Multiple strategies have been promoted, both on the demand and on the offer side.

The Twelfth Five-Year Plan for Health Sector Development has been a milestone to launch this process. A key issue in the strategy towards a new HC system was related to the transformation of the Chinese pharmaceutical and biotech industry [Ministry of Health PRC, (2013), p.130]: the Government planned to build an innovative system, led by research-based companies, where integration of local firms with international companies is encouraged and where a new – strong – role for traditional Chinese medicine is promoted. Investments from foreign companies to China were supported, especially in high-end pharmaceutical products, through the New Catalogue of Investments (CCCMHPIE, 2011). At the same time, the development of national global players was encouraged (Mofcom, 2012).

Thanks to a combined effect of supportive policies and booming internal demand, the Chinese HC sector has attracted investors and has become a priority for many Western companies (Spigarelli and Wei, 2014). At the same time, Chinese firms in the HC sector have grown in size and competitiveness, thanks to technological spillovers and huge financial support from the government. In line with the general trend of growth of Chinese investments in the world, Chinese firms in the HC sector have started to go global. Several cases of greenfield and M&As in the Western markets have attracted the attention of press, media, and policy makers.

In this paper, we look at the internationalisation patterns of Chinese companies in the HC sector. We investigate the main features and investment decisions of Chinese outward foreign direct investment (OFDI) in the HC sector in Europe. Currently, European countries are among the preferential target destinations for Chinese investors.

At political and diplomatic level, EU and China have been developing dialogue and effective cooperation initiatives for many years. In the ‘EU-China 2020 Strategic Agenda for Cooperation’, signed during the EU-China Summit in 2013, HC plays a significant
role. Joint research and innovation initiatives are foreseen. The commitment to ‘expand
dialogue and exchange in the field of health’ is reported2.

From an industry perspective, Europe has developed world-class companies in
several HC sectors. European firms can thus offer technology, competencies, know-how,
as well as managerial competencies to support the Chinese firms in upgrading and
repositioning their activities.

We specifically focus on the three sub-sectors of HC industry, namely
pharmaceutical, medical device and equipment, and biotechnology. The paper has two
main goals. First, we intend to define a comprehensive theoretical framework. Secondly,
we want to explore the extent of OFDIs from China to the EU and its motivations. More
specifically, we intend to address the following questions:

1 Which are main destinations in Europe for Chinese firms?
2 Does location choice vary across different HC sub-sectors?
3 What wider motivations can be identified in Chinese investments in HC sector?

The paper will therefore set the ground for a more detailed and comprehensive analysis,
to be performed in a second step. Some research propositions to be tested in the future are
derived.

The paper is structured as follows. In the first part, we provide a literature review on
the topic of Chinese investments abroad that is our theoretical framework of analysis. The
second part sets the background of the analysis and provides an overview of the recent
strategic and sectorial plans on HC, just released by the Chinese Government. We also
consider the state of the art of Europe-China cooperation in the HC sector, including
trade and Chinese OFDI main trends. In the third part we perform a ‘where to where’
analysis of Chinese investments in Europe to address the three questions above. The final
section concludes with a discussion on the theoretical, policy and practical implications
of our work, together with limitations and further research.

2 Theoretical background

Several bodies of the international business field are challenged by the case of emerging
market multinationals (Hennart, 2012) and by Chinese firms in particular (Alon and
McIntyre, 2008; Buckley et al., 2007; Child and Rodrigues, 2005). Scholars have used the
lenses of the resource-based view, of the institutional theory, of the network theory as
well as of industrial organisation to fully understand how location choice occurs and –
mostly – the reasons for going global (Bellabona and Spigarelli, 2007).

Focusing on motivation and spatial localisation, an important contribution is provided
by the discussion about the role of firm specific advantages/disadvantages that promote
Chinese global expansion compared to home and host country specific advantages or
disadvantages that might act as pull or push factors.

Following Ramamurti (2012), Chinese firms go abroad to leverage home country
advantages, i.e., the government support. As they are not mature firms, they
internationalise mostly to gain new competitive advantages to exploit in China.

Also, Rugman and Oh (2008) motivate emerging market firm’s international
expansion with the intent to strengthen home-country advantages, such as access to natural
resources and cheap labour. Williamson et al. (2013) differentiates country specific
factors related to domestic economy conditions (such as land, labour, natural resources, climate, location) and those linked to institutional driven advantages, such as infrastructure, human capital, business climate, and industrial policy. Rugman et al. (2014) consider that Chinese firms have developed firms advantages mainly based upon recombination with home country factors.

In general, the country factor analysis leads to the differentiation of host country ‘pull’ forces, and home country ‘push’ factors that can attract and facilitate Chinese international investments (Luo and Wang, 2012; Wei and Alon, 2010).

Push factors include the access to preferential policies and financial support provided by the Chinese government (Peng et al., 2008), as well as the need to overcome domestic institutional voids (Luo and Tung, 2007). Push factors should also be differentiated on a spatial location basis: dissimilarities within China should be considered in terms of different development and quality of institutions (Liu et al., 2014; Sun et al., 2015). Different degree of legal environment openness and financial market openness in a certain area (province) provide a different outward internationalisation impetus to firms with headquarters located in that specific area (Sun et al., 2015).

Pull factors are host country specific advantages and include the level of economic development (Buckley et al., 2007; Cheng and Ma, 2008; Kolstad and Wiig, 2012; Stoian, 2013), market size, as well as specific endowments such as strategic assets, natural resources, or cheap labour (Buckley et al., 2007; Kolstad and Wiig, 2012). The literature on Chinese OFDI attributes to political risk a key role, among other institutional factors, on the decision on where to invest. Results are nevertheless very different. Investments seem to fly to areas with higher level of risk following some authors (Kang and Jiang, 2012; Kolstad and Wiig, 2012; Ramasamy et al., 2012). Based on other studies, political risk is not related with FDI location decision (Buckley et al., 2007; Cui and Jiang, 2009; Quer et al., 2012). Other authors find that Chinese investment do not fly to firms in countries that have an unstable environment (Duanmu, 2011; Duanmu and Guney, 2009).

Recently, Child and Marinova (2014) highlighted that to interpret strategies of Chinese firms, it is fundamental to take into account, at the same time, home and host country specific contexts, incorporating both institutional and political dimensions.

Looking at the literature on motivation, a large body of evidence confirm that Chinese investments are driven by market factors or market-seeking motivations (Alon et al., 2014; Amighini et al., 2013; Buckley et al., 2007; Kolstad and Wiig, 2012; Deng, 2009). Although Amighini et al. (2011) point out that the effect of host country market size for Chinese investors depends on the sector. For example, it has a positive effect in the case of manufacturing FDI in OECD countries, but acts as a deterrent in resource-intensive sectors.

Some recent studies explored the asset-seeking Chinese FDI: expansion might be driven by the need to secure access to advanced technologies and human capital (Amighini et al., 2011; Spigarelli et al., 2013), especially for technology-intensive sectors (Lu et al., 2011).

Wang et al. (2012) find that, although some “firm specific idiosyncrasies still play a role in explaining variations across firms in the same industry, the theoretical analysis and empirical results consistently indicate that foreign investment of Chinese firms is largely driven by their distinctive institutional and industrial environment”.

Compared to the quite vast range of studies on the topic of Chinese investments, some research areas seems to be under explored and deserve more attention from
scholars. One key gap in the literature includes the fact that there are relatively fewer studies at the industry-level of analysis (Yang et al., 2009). Both Wang et al. (2012) and Lv and Spigarelli (2015, 2016) highlighted the significant role played by the features and dynamics of the single industry on the patterns and scale of Chinese firm investments trends.

First of all, specific industrial policies can significantly promote the development of national firms, through financial, fiscal, managerial measures. Industry specific supportive actions can therefore explain globalisation trends of key national player in a certain sectors rather than others (‘build national champions and then put them on the global stage’). Moreover, the economic development could bring to negative externalities, as in the case of health diseases, thus creating the need (demand) for upgrading products and production. In this case, firms competing in key ‘sensitive’ sectors, could be pushed to rapidly acquire expertise and know how, to try to overcome key problems affecting home country. Sectorial specificity should be considered both in home and in host country. In host country, for example, the level of technology development in the sector could act as pull factors.

Our paper leverages on this gap and tries to provide new insights to the literature of Chinese global expansion. The sectorial focus, brought by a unique firm level database, is probably the most relevant contribution. Also, following Lv and Spigarelli (2016), as home and host country we consider Chinese provinces and European single member states to grasp specificity of regional and institutional endowments, as well as sectorial dynamics and features.

3 Chinese HC sector and the interest for Europe: a background analysis

3.1 The Chinese policy for the HC sector

The analysis of Chinese OFDI in the HC sector must be contextualised in the framework of the massive changes of HC stimulated by the government, that have been affecting both demand and supply (Spigarelli and Wei, 2014).

In 2009 the Chinese government launched new plans to reshape the National HC system (Rein, 2009). According to the Guidelines on Deepening the Reform of Healthcare System (Freeman and Lu Boynton, 2011), the first phase of the reform aimed to: increase the basic medical insurance to reach a 90% of population coverage by 2011; revise the reimbursable essential drugs list; set more restrict regulation on prices [Deloitte, (2011), p.3]. A second phase of the reform should have brought into effect a universal HC system, providing ‘safe, effective, convenient and affordable’ health services to urban and rural residents (Freeman and Lu Boynton, 2011).

The 12th Five-Year Plan (2011–2016), released in 2011, has also put strong attention to HC reforms as a fundamental step towards a more harmonious and sustainable growth for China (Tung, 2011; Deloitte, 2011; WHO, 2012, Wong et al., 2014). On 18 January 2012, the Ministry of Industry and Information Technology released ‘the Pharmaceutical Industry ‘12th Five-Year’ Development Plan’. Eight main objectives were selected for the HC sector, ranging from reinforcement and concentration, improved managerial and quality standards, to enhance international competitiveness through export and international ventures (CCCMHPIE, 2012).
Recently, on March 2015, the Chinese Government released a new Plan for the HC sector, named ‘Essential points of the national plan for the health system and HC (2015–2020)’\(^3\).

The Plan aims at extending progressively basic HC services to the entire population, in line with the design of a harmonious society. Several factors are recognised as putting pressure on the health system. There is the need to strengthen the reform process because of the expected population growth by 2020 (1.4 billion) and ageing. The weight of people aged 60 was already 14.90% in 2013 and will be enhanced by all the young people who, in recent years, moved to the cities, abandoning the one-child policy. The urban population was already at 53.73% in 2013 and will keep growing, with the rapid development of small cities. By 2020 urban population should reach 1 billion.

Among the most challenging issue for the HC reform, the Government has underlined the computerisation of the health system, and the optimisation internal processes. There is the need to increase the number of hospitals and various resources allocated. Key indicators of the reform are summarised in Table A in the Appendix.

On 29 October 2015, the Communist Party of China adopted a proposal on China’s 13th Five-Year Plan, covering 2016 to 2020. The 13th Five-Year Plan will be released in the first quarter of 2016. Both HC reform (see Table 1) and competitiveness of Chinese HC industry are major issues highlighted by the Plan.

In particular, Chapter 3 points out the new Chinese model of growth and development, based on innovation and openness to international competition. HC is considered as one of the strategic sectors in which China has to make huge technological and industrial progress. Bio pharma and medical equipment are considered key industries to involve in this process. HC is also one of the sectors for international cooperation, where China will provide support to third countries to promote global welfare. Those provisions might have relevant impact on Chinese outward FDIs in the next future.

### Table 1 13th Five-Year Plan: key goals for HC reform in China

| • Improved health insurance system | • Reform of payment systems of care, control over insurance rates |
| • Health insurance policy for workers, including coverage for serious diseases both in urban and rural areas | • Harmonisation of inter-hospitalisation expenses for pensioners |
| • Specialisation and diversification of medical personnel | • Integration between the urban and rural insurance policies |
| • Comprehensive reform of public hospitals | • Development of knowledge of the ‘first aid’, especially in rural areas |
| • Developing the quality of health services, even at a distance | • Equality of treatment for public and private hospitals |
| | • Development of the health insurance market, with more openness and encouragement of private sector |
| | • Integration maternity insurance and basic health |
| | • Construction of harmonious relationship and trust between patients and doctors |

*Source:* Authors’ elaboration
3.2 Trade and Chinese outward FDI in the HC sector

A fundamental background analysis in our paper is linked to the level of cooperation developed so far in the HC sector between Europe and China, as witnessed by trade and FDI trends.

Table 2 takes into consideration the bilateral trade performance and its evolution between the two partners, from 2009 to 2013.

**Table 2** China-EU trade performance on 2009–2013

<table>
<thead>
<tr>
<th>Commodities</th>
<th>2009-2013 Variation</th>
<th>Total trade (100 million US$)</th>
<th>Export-on-total trade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Export</td>
<td>Import</td>
<td>2009</td>
</tr>
<tr>
<td>Total</td>
<td>81%</td>
<td>176%</td>
<td>129,71</td>
</tr>
<tr>
<td>Traditional Chinese medicine (TCM)</td>
<td>125%</td>
<td>174%</td>
<td>2,79</td>
</tr>
<tr>
<td>Health products</td>
<td>511%</td>
<td>25%</td>
<td>0,33</td>
</tr>
<tr>
<td>Plant extracts</td>
<td>122%</td>
<td>105%</td>
<td>1,58</td>
</tr>
<tr>
<td>TCM formulations</td>
<td>9%</td>
<td>236%</td>
<td>0,39</td>
</tr>
<tr>
<td>Raw materials for TCM</td>
<td>89%</td>
<td>1200%</td>
<td>0,49</td>
</tr>
<tr>
<td>Medical devices and equipment</td>
<td>93%</td>
<td>200%</td>
<td>39,75</td>
</tr>
<tr>
<td>Accessories</td>
<td>160%</td>
<td>163%</td>
<td>3,13</td>
</tr>
<tr>
<td>disposables</td>
<td>83%</td>
<td>318%</td>
<td>4,68</td>
</tr>
<tr>
<td>Hospital diagnostic equip.</td>
<td>115%</td>
<td>172%</td>
<td>23,84</td>
</tr>
<tr>
<td>Rehabilitation equipment</td>
<td>37%</td>
<td>535%</td>
<td>7,15</td>
</tr>
<tr>
<td>Dental materials</td>
<td>120%</td>
<td>463%</td>
<td>0,95</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>72%</td>
<td>167%</td>
<td>87,17</td>
</tr>
<tr>
<td>Active pharmaceutical ingredients (API)</td>
<td>74%</td>
<td>68%</td>
<td>50,52</td>
</tr>
<tr>
<td>Formulations</td>
<td>323%</td>
<td>182%</td>
<td>27,51</td>
</tr>
<tr>
<td>Bio-chemical drugs</td>
<td>14%</td>
<td>527%</td>
<td>9,15</td>
</tr>
</tbody>
</table>

**Source:** Data elaborated from China Chamber of Commerce for import and export of medicines and health products

Total trade has more than doubled, from 130 billion of USD in 2009 to 296 billion in 2013. The main contribution to this increase has been brought by import, which has increased by 176%. The result is that the total trade surplus is now slightly negative, while on 2009 was null (export on total trade share has moved from 50%, to 40%).

Generally speaking, China is a net exporter for upstream process commodities, traditionally characterised by low and medium value-added output, such as plant extracts and raw materials for TCM, accessories and rehabilitation materials and APIs.

On the contrary, China is a net importer for downstream high value-added process commodities, like formulations, both TCM and pharmaceutical. There are some sectors in which the trade surplus has been inverted: on 2009 China was net exporter for bio-chemical drugs and dental materials, while on 2013 has turned to net importer,
probably because of increasing demand for high quality products and inputs. On the contrary, on 2013 China turned its position from net importer to net export for TCM health products, as a result of increased export performance for this category (+511% from 2009 to 2013).

As for OFDIs, based on Rhodium group database, Table 3 shows investments from 2000–2011. China invested in Eu-27 for more than 300 million USD in pharmaceutical, 93 million USD in HC and medical devices and 34 millions in biotechnology sectors, for a total amount of 2% of total national outflow FDI.

**Table 3** China-EU OFDI projects 2000–2011

<table>
<thead>
<tr>
<th>Sectors</th>
<th>Value (USD million)</th>
<th>Number of projects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Greenfield</td>
<td>M&amp;A</td>
</tr>
<tr>
<td>Pharmaceutical</td>
<td>21</td>
<td>280</td>
</tr>
<tr>
<td>Healthcare and medical devices</td>
<td>30</td>
<td>63</td>
</tr>
<tr>
<td>Biotechnology</td>
<td>24</td>
<td>10</td>
</tr>
</tbody>
</table>

*Source: Hanemann and Rosen (2012)*

**Table 4** Main China-EU OFDI M&A operations, 2007–2014

<table>
<thead>
<tr>
<th>Investor</th>
<th>Target company</th>
<th>Amount (million €)</th>
<th>Year</th>
<th>Sector</th>
<th>Country</th>
<th>Core business</th>
</tr>
</thead>
<tbody>
<tr>
<td>SinoChen</td>
<td>DSM</td>
<td>45 (for 50% stock)</td>
<td>2011</td>
<td>Pharmaceutical</td>
<td>Netherlands</td>
<td>EJV on anti-infective production and distribution</td>
</tr>
<tr>
<td>Lepu Medical Tech</td>
<td>Comed B.V.</td>
<td>5 (for 70% stock)</td>
<td>2012</td>
<td>Medical devices</td>
<td>Netherlands</td>
<td>Production of stents and catheters for cardiovascular applications</td>
</tr>
<tr>
<td>Shanghai Dongbao bio pharmaceutical</td>
<td>Ferring Pharmaceutical</td>
<td>(around 10)</td>
<td>2007</td>
<td>Pharmaceutical</td>
<td>Sweden</td>
<td>Manufacturing facilities acquisition</td>
</tr>
<tr>
<td>Inner Mongolia Free Han</td>
<td>Echosens</td>
<td>20</td>
<td>2011</td>
<td>Medical devices</td>
<td>France</td>
<td>Technology and manufacturing facilities acquisition</td>
</tr>
<tr>
<td>Naton Medical Group</td>
<td>Inion Oy</td>
<td>26</td>
<td>2010</td>
<td>Medical devices</td>
<td>Finland</td>
<td>Manufacturing facilities for surgery implants acquisition</td>
</tr>
<tr>
<td>Sirton Pharmaceuticals Spa</td>
<td>S3Bio Inc.</td>
<td>N.A.</td>
<td>2014</td>
<td>Pharmaceutical</td>
<td>Italy</td>
<td>Injectable pharmaceutical products</td>
</tr>
</tbody>
</table>

*Source: Hanemann and Rosen (2012)*
Great part of investments was related to M&A, which have been concentrated in the Netherlands, Finland, France and Sweden. On the other hand, Denmark, UK, Hungary, Romania, Czech Republic, Germany, Italy and Spain only received greenfield investments. The most relevant M&As in Europe are reported in Table 4.

Greenfield projects were bigger in number but less important in terms of value. Amongst the most important projects in the period, the following are worth mentioning. Shanghai ChemPartner, one of the world’s biggest pre-clinical research centre invested in Denmark on 2009, for its European Headquarter. Tianshi, a TCM producer, and Midea, in the equipment sector, invested in UK in 2002 and 2005 respectively, for starting their distribution in the country. Jiangsu Hengrui invested in Sweden for R&D subsidiary, in 2009.

4 Research design and methodology

As anticipated in the introduction, this is a preliminary study to set the ground for a quantitative analysis on Chinese investments in the HC sector. At this stage, we provide a general overview of location choice and motivation of Chinese firms investing in Europe, using a very unique dataset we use, grounded on detailed information on Chinese investors abroad, from MoFcom. We therefore contribute to satisfy the typical call by scholars to collect better data, in terms of new sources, cleaner measures and longitudinal data for China (Deng, 2012).

The database covers both greenfield and non-greenfield (e.g., M&A, joint venture) investments. For each investment decision, the database provides data on the year of investment, the destination country, the entry mode, overseas activities of the investment. We also collected parent firms’ information, including the year of foundation, the ownership structure, the number of employees and whether it is a listed company, from the sample firms’ homepages or their annual reports.

Our research target is all Chinese firms in HC sectors with foreign subsidiaries in EU, by the end of 2014. We identify three main sub-sectors of HC industry, namely pharmaceutical, medical device and equipment, and biotechnology.

Using information included in the dataset, we created a map of ‘where to where’ of Chinese OFDI in EU in the HC sectors, as shown in Figures 1 to 3. The nodes on the map of China represent different provinces in China and the nodes on the map of EU represent different countries of EU. A bigger node indicates a higher number of destination countries from the specific province or a higher number of source provinces to the specific country. Each directed line from a node on the map of China to a node on the map of EU means that more than one investment in HC sectors are pushed from Chinese provinces to EU areas. The thicker the line, the more investments are pulled from the specific province of China to the specific country of EU.

5 Results and discussion

For each subsector included in the analysis, we provide a map of home province of Chinese investors as well as of host country target locations. Thanks to the ‘where to where’ map, we can have a clear understanding of the level of concentrations in both home and host locations and define – eventually – some pairs. Also, we define the
prevailing activity performed by the European subsidiary, as declared to MofCom by Chinese firms. Sales and services, production, R&D, capital operations are the options (multiple choice is possible). This information is quite relevant to assess, motivations behind investments.

Confronting results from the three subsectors, it is possible to derive some first conclusions on key HC areas where Europe-Chinese partnership seems more promising.

5.1 Chinese OFDI in EU in pharmaceutical sector

In the pharmaceutical subsector, the dataset incorporates 23 location choices by 19 Chinese firms from 1988 (time of the first investment into Europe) to 2014. Over this period, six EU countries were target destinations for Chinese firms.

As shown in Table 5, more than 45% of the sample firms invested in Germany. The next most important destination is the UK. The concentration of investment in Germany could be explained by the strong bilateral diplomatic ties of the two countries, the country’s traditional leading position in pharmaceutical sector and local firms’ strong competitiveness, such as Bayer. Also, Germany had a very focused promotion policy to attract foreign FDI, by decreasing the taxation rate, in the last decade. It is one of the largest European markets for pharmaceutical sector. The case of the UK it is likely to be related to the low cost of investment and promotion policies as well.

Table 5  Country distribution of Chinese OFDI in pharmaceutical sector, 1988 to 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
<th>Country</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>1</td>
<td>4.4%</td>
<td>Netherlands</td>
<td>5</td>
<td>21.7%</td>
</tr>
<tr>
<td>Germany</td>
<td>8</td>
<td>34.8%</td>
<td>Spain</td>
<td>1</td>
<td>4.4%</td>
</tr>
<tr>
<td>Ireland</td>
<td>1</td>
<td>4.4%</td>
<td>UK</td>
<td>7</td>
<td>30.4%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>23</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source:  MoCom and authors calculations

We also note a strong concentration in investment sources on the Chinese side. Investing firms are based in ten provinces, but 21.7% of them are located in Zhejiang Province (see Table 6). Zhejiang locates in the Yangtze River Delta region, and is one of the most active areas of pharmaceutical sector in China, with strong R&D and powerful production capability. It is the home province, for example, of Zhejiang Pharmaceutical Holdings Limited, which has been one of the most active firms in globalisation strategies.

Table 6  Source province distribution of Chinese OFDI in pharmaceutical sector, 1988 to 2014

<table>
<thead>
<tr>
<th>Province</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
<th>Province</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhejiang</td>
<td>5</td>
<td>21.7%</td>
<td>Jiangsu</td>
<td>2</td>
<td>8.7%</td>
</tr>
<tr>
<td>Jilin</td>
<td>1</td>
<td>4.4%</td>
<td>Guangdong</td>
<td>4</td>
<td>17.4%</td>
</tr>
<tr>
<td>Tianjin</td>
<td>4</td>
<td>17.4%</td>
<td>Hainan</td>
<td>1</td>
<td>4.4%</td>
</tr>
<tr>
<td>Hebei</td>
<td>1</td>
<td>4.4%</td>
<td>Beijing</td>
<td>1</td>
<td>4.4%</td>
</tr>
<tr>
<td>Shandong</td>
<td>2</td>
<td>8.7%</td>
<td>Sichuan</td>
<td>2</td>
<td>8.7%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>23</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source:  MoCom and authors calculations
Figure 1 shows the map of *Where to where*, of investments in the pharmaceutical sector from China to EU. Zhejiang- Germany, Tianjin – Netherlands are the most important pairs in terms of number of initiatives of investments.

**Figure 1** Map of ‘where to where’ of Chinese OFDI in EU in pharmaceutical sector (see online version for colours)

Source: Authors’ elaboration on MofCom database

As for activities performed in Europe, 69.6% of branches/subsidiaries of the Chinese investor is engaged in sales and services, 34.8% is in R&D and 13% is in production. This indicates that the firms’ motivation are primarily market-seeking, rather than strategic asset seeking. A good interest in R&D is reported, but it does not seem to be a key attraction factor for Chinese firms.

### 5.2 Chinese OFDI in EU in bio-tech sector

For the bio-tech sector, the dataset incorporates ten location choices by nine Chinese firms from 1988 (time of the first investment into Europe) to 2014. Over this period five EU countries were target destinations for Chinese firms.

As shown in Table 7, 40% of the sample firms invested in the UK. The next most important destination is Sweden. The concentration of investment in the UK might be due to the country’s strong research and development capability. The country’s bio-tech industry ranks number two in the world, following the USA. It also has advantages on mature capital market and IPR system. As a result, it became one of the largest European markets for bio-tech sector. The case of the Sweden is also related to the strength of the country in the bio-tech sector, with a large amount of colleges and research institutions. The innovation capability of bio-tech sector has been upgrading.

Also in this case, there is a concentration in investment sources on the Chinese side. Investing firms are based in ten provinces, and most firms are from Jiangsu and Hainan (Table 8). These two provinces both set a goal to give a priority to develop bio-tech industry. Hainan also has rich biological resources, which benefit the development of this industry.
Table 7  Country distribution of Chinese OFDI in bio-tech sector, 1988 to 2014

<table>
<thead>
<tr>
<th>Country</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
<th>Country</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>1</td>
<td>10%</td>
<td>Netherlands</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Germany</td>
<td>1</td>
<td>10%</td>
<td>United Kingdom</td>
<td>4</td>
<td>40%</td>
</tr>
<tr>
<td>Sweden</td>
<td>3</td>
<td>30%</td>
<td>Total</td>
<td>10</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: MofCom and authors calculations

Table 8  Source province distribution of Chinese OFDI in bio-tech sector, 1988 to 2014

<table>
<thead>
<tr>
<th>Province</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
<th>Province</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zhejiang</td>
<td>1</td>
<td>10%</td>
<td>Jiangsu</td>
<td>2</td>
<td>20%</td>
</tr>
<tr>
<td>Shandong</td>
<td>1</td>
<td>10%</td>
<td>Hebei</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Shanghai</td>
<td>1</td>
<td>10%</td>
<td>Guangdong</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td>Hainan</td>
<td>2</td>
<td>20%</td>
<td>Beijing</td>
<td>1</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total</td>
<td>10</td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: MofCom and authors calculations

Figure 2 shows the map of Where to where, of investments in the bio-tech sector from China to EU. Hainan – UK is the most important pair in terms of number of initiatives of investments.

Figure 2  Map of ‘where to where’ of Chinese OFDI in EU in bio-tech sector (see online version for colours)

Source: Authors’ elaboration on MofCom database

As for main reasons for investing in Europe, 80% of the firms in the bio-tech sector are engaged in sales and services, 50% in production and 30% are in R&D. Even if production is not the most popular motivation, it is indeed an interesting percentage, compared to other subsectors of HC.
5.3 Chinese OFDI in EU in HC and medical devices sector

The last subsector to be analysed belongs to HC and medical devices. The dataset incorporates 35 location choices by 30 Chinese firms from 1970 (time of the first investment into Europe) to 2014. Over this period, ten EU countries were target destinations for Chinese firms.

As shown in Table 9, more than 30% of the sample firms invested in the UK. Germany was the next most important destination for investors (with 20% of initiatives), followed by Netherlands. The concentration of investment in the UK could be motivated by the fact that it is a huge HC market, which is worth more than 10.5 billion dollars. With a solid foundation of medical training, the UK has advantages in HC and medical devices innovation and became one of the largest European markets for HC and medical devices sector.

Table 9 Country distribution of Chinese OFDI in HC and medical devices sector, 1970–2014

<table>
<thead>
<tr>
<th>Country</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
<th>Country</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belgium</td>
<td>2</td>
<td>5.7%</td>
<td>Croatia</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Finland</td>
<td>1</td>
<td>2.9%</td>
<td>Germany</td>
<td>7</td>
<td>20.0%</td>
</tr>
<tr>
<td>France</td>
<td>1</td>
<td>2.9%</td>
<td>Ireland</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>6</td>
<td>17.1%</td>
<td>Italy</td>
<td>4</td>
<td>11.4%</td>
</tr>
<tr>
<td>Sweden</td>
<td>1</td>
<td>2.9%</td>
<td>UK</td>
<td>11</td>
<td>31.4%</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: MofCom and authors calculations

As for the Chinese side, investing firms are based in ten provinces, but 20% of them are located in Jiangsu Province (see Table 10). Jiangsu is one of the most active areas of the HC and medical devices sector in China, as well as one of the most developed in terms of GDP and flows of investments abroad. The medical devices firms in Jiangsu take up about one fifth medical devices firms in China.

Table 10 Source province distribution of Chinese OFDI in HC and medical devices sector, 1970–2014

<table>
<thead>
<tr>
<th>Province</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
<th>Province</th>
<th>N. of Chinese outward FDI</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing</td>
<td>3</td>
<td>8.6%</td>
<td>Shandong</td>
<td>6</td>
<td>17.1%</td>
</tr>
<tr>
<td>Tianjin</td>
<td>1</td>
<td>2.9%</td>
<td>Zhejiang</td>
<td>5</td>
<td>14.3%</td>
</tr>
<tr>
<td>Henan</td>
<td>2</td>
<td>5.7%</td>
<td>Hunan</td>
<td>5</td>
<td>14.3%</td>
</tr>
<tr>
<td>Shanghai</td>
<td>3</td>
<td>8.6%</td>
<td>Guangdong</td>
<td>2</td>
<td>5.7%</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>7</td>
<td>20.0%</td>
<td>Chongqing</td>
<td>1</td>
<td>2.9%</td>
</tr>
<tr>
<td>Total</td>
<td>35</td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: MofCom and authors calculations

Figure 3 shows the map of Where to where, of investments in the HC and medical devices sector from China to EU. Jiangsu – UK and Hunan – UK are the most important pairs in terms of number of initiatives of investments.
In terms of activities performed by Chinese firms in Europe, 91.4% of the investment in the HC and medical devices sector is engaged in sales and services, 34.3% is in production and 31.4% is in R&D. This indicates that the firms’ motivations are primarily market-seeking, rather than strategic asset seeking. Anyway, there is a good percentage of cases where also production takes place.

5.4 Discussion and research propositions

Main findings of our analysis can be summarised as follows.

In general, the Chinese investing provinces are mainly located in the coastal areas. This spatial allocation reflects the unbalanced industrial development of China, as well as the different openness to international trade and investments of Chinese provinces (Poncet, 2005).

Chinese investments are also spatially concentrated in key European countries. There is a strong polarisation of ‘where to where’ localisations of Chinese investments: investments from more industrialised provinces tend to target leading EU countries, where they can find expertise and market.

There is a different situation in the three HC sectors, in terms of most attractive EU country and most active Chinese investing provinces. Characteristics of both home and host regions seem to play a critical role in explaining the path of Chinese OFDI in Europe.

While ‘secondary’ motivations vary over sector, there is a huge focus on Europe as an outlet market. This might reflect the fact that in all three subsectors, China has developed a good technological capacity and needs to strengthen the penetration capacity in Western markets. Production can be also a secondary motivation, especially for bio-technology.

Based on these preliminary findings and leveraging, we can derive the following propositions, to be developed and studied in deep, in an econometrical model as well as through direct/qualitative interviews.
1 Home region specific conditions related to institutional environment, including regulatory regional policies, can impact on decision to invest abroad of Chinese firms in HC sector.

2 Host country market size and endowment of technology/knowledge assets attract Chinese OFDI in the HC sectors in Europe.

3 Home and host characteristics of HC industry, such as the degree of competition, foreign presence, technological development within the industry can impact on the scope and location of Chinese investments in Europe, in the HC sector.

4 Motivations of location choice and motivation of global expansion can differ in subsector of the HC industry, based on sub-sector specificity (as technological development within the industry, industry competition, foreign presence) and specific institutional background (as specific policy support).

6 Conclusions

This paper can be considered a preliminary analysis of a more in-depth quantitative and qualitative analysis. It aims at understanding home and host country characteristics of Chinese investments in Europe in the HC sector as well as motivation of location choice. We explore the scale and extend of Chinese investments in three subsectors of the HC industry. Several implications can be derived from the study.

6.1 Implication for scholars

We provide a framework for future studies, which aim is to understand spatial localisation of Chinese firms. Industry specificity and regional-institutional level of analysis are the most relevant aspects of the framework.

We insist on the need to take into account the specificity of the sector, as a relevant perspective of analysis. This is unusual and missing in the quantitative studies on Chinese OFDI. In our theoretical framework, we provide new insights on how sectoral specificity can affect firms’ location choice, directly and indirectly, in the HC sectors (Pao and Tsai, 2011). Our preliminary findings call for specific studies to clarify the complex interrelation among location choice and country endowments, institutions, sectoral specificity.

On the other hand, there is the need to adopt a home regional level analysis, that is quite rare in the literature on Chinese OFDI (Sun et al., 2015). China is a huge country with regional disparity and heterogeneous regional environments (Meyer, 2008). Therefore, it’s necessary to take the variation of regional environments into account when considering Chinese firms’ behaviour and strategic choices in their internationalisation (Lv and Spigarelli, 2015).

6.2 Policy implications

Chinese firms in the HC sector are more and more attracted by European destinations. China has several reasons to engage with the EU, which include the European firms’ expertise and know-how in the pharmaceutical products and technologies. At the same
Chinese expansion in the international healthcare markets

time, several aspects can explain the European interest in strengthening a partnership with China in this sector. Europe has a comparative advantage in the field and has the opportunity to use this to gain bargaining power. China is a profitable market, both for the export of European HC goods and for opportunities offered to foreign investors. Moreover, helping China to implement its HC system could help Europe in supporting its industries providing a huge and demanding market (Freeman and Holslag, 2009).

This should be also considered in the ongoing negotiation of the EU-China Bilateral Investment Treaty where reciprocity, sustainability, and IP issues are still debated.

Another important, related, aspect is the need to tailor investment promotion policies or cooperation initiatives developed by EU countries. Rather than being broad and general, measures should target specific geographical locations of investors from China, to be more effective and selective. A better understanding of the variation in home context between different Chinese provinces could help EU countries to better target promotion efforts.

6.3 Limitations and future steps

As indicated at the beginning of our work, the paper is a preliminary study to develop a comprehensive analysis of Chinese investments in the European HC sector.

In subsequent analysis we need to try to differentiate between investments which are strictly commercial, where investing firms need to maximise returns, and those which have the broader capability to enlarge China’s capacity to deliver HC of a quality that is demanded by its entire population.

Also, we should control how the timing of the FDI has an impact on the Chinese parent’s company motivation.

Next step of research include the implementation of an empirical model, incorporating home country endowments, variables related to sectoral policies of host and home areas, as well as the interaction of country endowments and sectoral specificity. At firm level, the role of the ownership structure of the Chinese parents companies on the OFDI to EU would be an interesting data to ponder. Previous inward FDI network in home regions should be included as well (Hertenstein et al., 2015). Sectoral specificity should be considered also in the host countries, as it might affect final location choice.

Acknowledgements

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References


Chinese expansion in the international healthcare markets


Notes

1 The paper is the second research output of a wide research project, founded by the European Commission, aiming at analysing cooperation opportunities and potential synergies for Europe and China in the HC sector. The project title is China and Europe taking care of HC solutions – CHETCH. See www.chetch.eu. Using an interdisciplinary approach, researches in the project are focusing on policies and legal issues, medical practices, as well as on trade and FDI opportunities in the HC related businesses. We already provided a general overview of
the characteristics of the Chinese pharmaceutical market, of its main trends, as well as of main changes and expected evolution of the demand and of the supply in the industry. In Spigarelli and Wei (2014) we built a general picture of the industry and of main competitors.

3 http://www.gov.cn/zhengce/content/2015-03/30/content_9560.htm.
4 MoFC is the Ministry of Commerce of PR China. It releases statistics about officially approved investments (on official statistics on Chinese outward FDI, see Amighini et al., 2014).
5 Jiangsu is on the top list of Chinese provinces in terms of GDP per capita. Moreover, by the end of 2012, the outward FDI flows and stock of Jiangsu was 313.3 billion dollars and 783.2 billion dollars which ranked 4th and 5th in all China’s provinces, respectively (MoFC website).

Appendix

Table A The new Plan for HC sector: key targets for 2020

<table>
<thead>
<tr>
<th>Indice</th>
<th>Obiettivo 2020</th>
<th>Dato 2013</th>
<th>Indicatore</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beds per 1,000 resident persons</td>
<td>6</td>
<td>4.55</td>
<td>indicativo</td>
</tr>
<tr>
<td>1) of which in Hospitals</td>
<td>4.8</td>
<td>3.56</td>
<td>indicativo</td>
</tr>
<tr>
<td>a) public</td>
<td>3.3</td>
<td>3.04</td>
<td>indicativo</td>
</tr>
<tr>
<td>a1) provincial and national</td>
<td>0.45</td>
<td>0.39</td>
<td>indicativo</td>
</tr>
<tr>
<td>a2) city hospital</td>
<td>0.9</td>
<td>0.79</td>
<td>indicativo</td>
</tr>
<tr>
<td>a3) county hospital</td>
<td>1.8</td>
<td>1.26</td>
<td>indicativo</td>
</tr>
<tr>
<td>a4) other</td>
<td>0.15</td>
<td>0.60</td>
<td>indicativo</td>
</tr>
<tr>
<td>b) Non- pubblici</td>
<td>1.5</td>
<td>0.52</td>
<td>indicativo</td>
</tr>
<tr>
<td>2) of which in local district</td>
<td>1.2</td>
<td>0.99</td>
<td>indicativo</td>
</tr>
<tr>
<td>Medical doctors (assistants) per thousand people</td>
<td>2.5</td>
<td>2.06</td>
<td>indicativo</td>
</tr>
<tr>
<td>Nurses per thousand people</td>
<td>3.14</td>
<td>2.05</td>
<td>indicativo</td>
</tr>
<tr>
<td>Employees in the HC sector per thousand people</td>
<td>0.83</td>
<td>0.61</td>
<td>indicativo</td>
</tr>
<tr>
<td>General practitioner per 10,000 persons</td>
<td>2</td>
<td>1.07</td>
<td>obbligatorio</td>
</tr>
<tr>
<td>Ratio medical doctors/nurses medici</td>
<td>1:1.25</td>
<td>1:1</td>
<td>indicativo</td>
</tr>
<tr>
<td>Ratio beds/nurses (in city)</td>
<td>1:0.6</td>
<td>1:0.45</td>
<td>indicativo</td>
</tr>
<tr>
<td>Average number of beds per county</td>
<td>500</td>
<td>-</td>
<td>indicativo</td>
</tr>
<tr>
<td>Average number of beds per city</td>
<td>800</td>
<td>-</td>
<td>indicativo</td>
</tr>
<tr>
<td>Average number of beds per province</td>
<td>1,000</td>
<td>-</td>
<td>indicativo</td>
</tr>
</tbody>
</table>

Source http://www.gov.cn/zhengce/content/2015-03/30/content_9560.htm