UCLouvain

UNIVERSITÉ DE NAMUR

Economics School of Louvain - ESL
Economics School of Namur - ESN

The contribution of Foreign Direct Investment to China's growth

An analysis of China's economic trajectory

Author: Vandendorpel Cyril
Thesis Director: Trimarchi Lorenzo
Thesis Reader: Gonzague Vannoorenberghe
Academic Year 2021-2022
Master in Economics, Professional focus– 120 credits

Université catholique de Louvain - Economics School of Louvain - Place Montesquieu 3, 1348 Louvain-La-Neuve
Université de Namur – Economics School of Namur – Rempart de la Vierge 8, 5000 Namur

Acknowledgments

I would like to thank my thesis supervisor, L. Trimarchi (ESL professor), for his advice, the time spent together and the sharing of his expertise on a daily basis. Thanks to his trust and knowledge that he was able to share, I was able to fully accomplish myself in the writing of the thesis.

I would also like to thank G. Vannoorenberghe (ESL professor) for taking the time to read my thesis.

Finally, special thanks go to L. Leherte (UNamur professor) and Q. Richard (ESL PhD student) for their careful reading of my thesis.

Table des matières

1 Introduction

1.1 Overview

For decades, the US and Europe were the two main engines of economic growth. China has managed to become the second-largest economy in the world and it hopes to become the largest by 2030, overtaking the US (McMahon, 2018). It has transformed itself into a global economic superpower in recent decades and a major exporter of goods by value (see Figure 3). It has also invested in infrastructure and overseas expansion at a rapid pace as part of its "Belt and Road" initiative. The Road Belt Initiative is China's expansionist project to invest in overseas transportation infrastructure[1]. China hopes to export more overseas[2] (Chatzky and McBride, 2020).

Also, the nation has moved from a low-income country to an upper-middle-income country[3], according to the World Bank (2021). In 2016, China's poverty rate was 24 percent, down 3.2 percent from 2015 (Freije et al., 2019). Its development heavily relies on cheap labor and resource-intensive manufacturing (World Bank, 2021). China's development trajectory is interesting to study, as it proves that a country can take control of its destiny (Guennoun, 2019).

Gross domestic product (GDP) growth is slowing over the years. The average growth rate over the period 2000-2009 was 17% while over the period 2010 to 2019 it was 11%. In 2020, the growth rate dropped drastically to only 3% (Appendix A). It is mainly due to macroprudential policy[4] tightening and to the current covid epidemic (World Bank, 2021). In addition, the establishment of a market economy is unprecedented in China. Recent market institutions make the legal framework ambiguous, especially for foreign companies wishing to invest in China (Blustein, 2019).

The decline in growth presents a challenge for China, i.e., moving from a low-end manufacturing sector to a high-end sector (with high technology and production efficiency and a service economy) to enhance development. Acemoglu et al. (2006) explain this phenomenon as the reaching of the "technological frontier" (Appendix C). The technological frontier corresponds to a situation where an economy can no longer use physical capital i.e., infrastructure, machinery, etc. and the imitation of foreign technology to grow. Once the "technology frontier" is achieved, the country must focus on developing its human capital and its level of innovation to promote growth (Acemoglu, Aghion, and Zilibotti, 2006). We will discuss the technology frontier in more detail in Chapter 2.

---

[1] Chatzky, A. (2020, January 28). China's Massive Belt and Road Initiative. Council on Foreign Relations. Retrieved February 12, 2022, from https://www.cfr.org/backgrounder/chinas-massive-belt-and-road-initiative

[2] China is considered as the factory of the world because it produces a lot of cheap and less qualified labor-intensive goods. In recent years the country has diversified its production considerably into more complex and capital-intensive goods (Hanson, 2021)

[3] The World Bank (2021). China Overview. https://www.worldbank.org/en/country/china/overview#1

[4] Macroprudential measures improve the resilience of the economy to potential systemic risks and aim to ensure financial stability (ECB website, https://www.ecb.europa.eu/pub/financial-stability/macroprudential-measures/html/index.en.html)

Thanks to its impressive economic development and its many challenges such as its still high poverty rate and slowing growth, China is at the center of the economic debate on growth and development (McMahon, 2018).

1.2 Foreign Direct Investment in China

Inward foreign direct investment (inward FDI) has been an important part of the Chinese economy since the 1980s (Enright, 2016). FDI is an investment made abroad by companies operating in different countries. These types of companies are called multinationals (Feenstra, 2004). For example, an inward FDI for China corresponds to the situation where the US firm Intel invests in China. We consider this to be an outward FDI flow for the United States (Feenstra and Taylor, 2012). FDI occurs when a foreign firm acquires and owns 10% or more of a firm in another country. In some circumstances, this can be as high as 15%, depending on the country. This includes the case where a firm owns 100% because it opens a subsidiary in a foreign country (Feenstra and Taylor, 2012).

During the Maoist period 1949 to 1976, the Chinese Communist Party adhered to the policy of self-sufficiency. Foreign direct investment did not exist, except for a very tiny number of foreign companies such as Royal Dutch Shell[5] (Garnaut, Song and Fang, 2018).

However, two main elements will change China's strategy. The first is that in the process of liberalizing its economy, China decides to open its borders to foreign investors (Blustein, 2019). The country hopes to accelerate its economic growth by bringing in foreign capital (Appendix B). FDI can increase the amount of physical capital and thus production[6] (Solow, 1956). Multinationals have been quick to find low-cost production in China, but with mixed consequences for labor conditions and carbon dioxide emissions[7] (UNCTAD, 2021).

The second element is the development of global value chains. Global value chains correspond to a situation where production is divided into activities and tasks performed in different countries. Companies hope to minimize production costs. Before the 1990s, international trade was complex. Telephone calls and exports were expensive. In the following decades, video conferencing calls developed and became free, shipping became cheaper. Modern computers connected the world better than ever. Advanced technologies related to logistics, transportation, and communications have enabled the development of global value chains. China has benefited from these technologies by offering foreign and local firms the production of labor-intensive and cheap components (OCDE, 2017). The development of a strict legal

[5] Shell Compagnies. (2004, August). Shell History in China. Shell. Retrieved March 8, 2022, from https://www.shell.com.cn/en_cn/about-us/who-we-are/shell-history-in-china.html

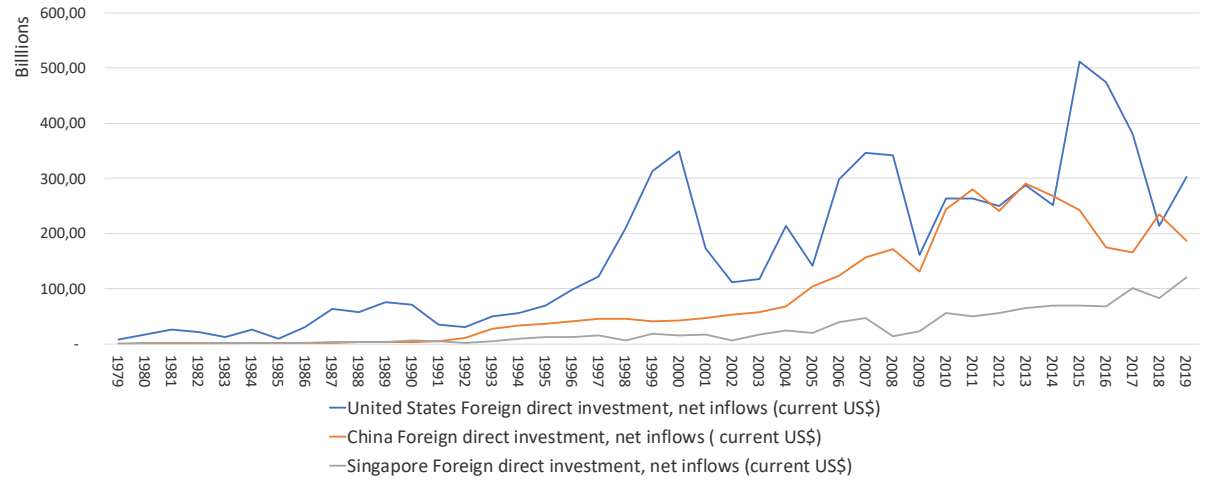
[6] In the Solow-Swan economic model (Appendix B), the Cobb-Douglas production function explains how and with what intensity inputs influence output, Y. Here is an example where A is total factor productivity, K is physical capital, L is labor, and H is human capital: $Y = AK^{\alpha}(LH)^{\beta}$ (Solow, 1956)

[7] Nicita, A., & Razo, C. (2021b, June 27). China: The rise of a trade titan. UNCTAD. Retrieved January 15, 2022, from https://unctad.org/news/china-rise-trade-titan

framework and the lowering of trade barriers through the adhesion of the World Trade Organization[8] (WTO) in 2001 reinforced this phenomenon (UNCTAD, 2021).

The Chinese economy is now the second-largest FDI destination in the world. In fact, the country received USD 187 billion in inflows in 2019 compared to USD 302 billion for the United States. FDI in China increased by 298 percent between 1990 and 2019 (see Figure 1). Chinese FDI has remained at a level close to that of the US despite the financial crisis and the trade war with the US that led to tariffs implementation on Chinese products (Blustein, 2019). Indeed, in 2018, Chinese FDI was 235 billion USD compared to 214 for the US (see Figure 1). This result is impressive, as generally, FDI in developing countries decreased sharply by 8% between 2019 and 2020. This increase for inward FDI is the consequence of a long liberalization process since the 1980s[4] (UNCTAD, 2021).

Figure 1: foreign direct investment of the top 3 recipients in USD value for the period 1979 to 2019



Note: The graph describes the evolution of FDI in Singapore, China and the US over the period of liberalization of the Chinese economy (1979 - 2019). FDI inflows are relatively low for all countries before the 1990s. This is due to the lack of technology to develop a global value chain. From the 90s onwards, all countries have seen their FDI increase. China's liberalization policies are expected to make it the second-largest FDI-receiving economy by 2019. Data come from World Bank

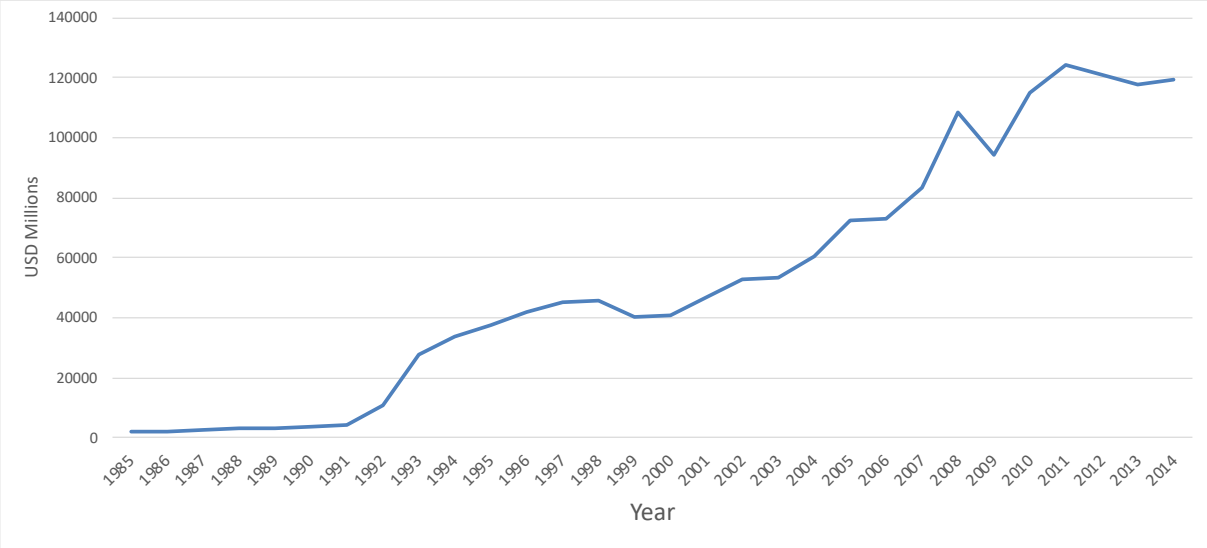
1.3 Importance of FDI in China's total investment

Figure 2 describes the value of FDI entering China relative to total investment in China for the period 1985 to 2013. From the figure 2, three main periods are distinguished. The first began during the liberalization period in China, i.e., in 1981, when the FDI were small. It was difficult for the country to attract FDI due to the low level of infrastructure and strict rules for setting up businesses in China. The second period, which started in 1993, is when FDI were high because the above-mentioned problems were finding solutions. It also coincides with a strong

[8] The World Trade Organization is an intergovernmental organization that regulates and facilitates international trade. Governments use the organization to establish, revise, and enforce the rules that govern international trade (WTO site, https://www.wto.org/english/thewto_e/whatis_e/whatis_e.htm).

increase in China's GDP[9] (Appendix A). This suggests that during this period, FDI was mainly involved in the country's growth. Finally, the importance of FDI seems to be decreasing since the 2000s in relative terms as local investments were taking the lion's share.

Figure 2 FDI Utilized Value (Current Million USD) into China, 1979 to 2014

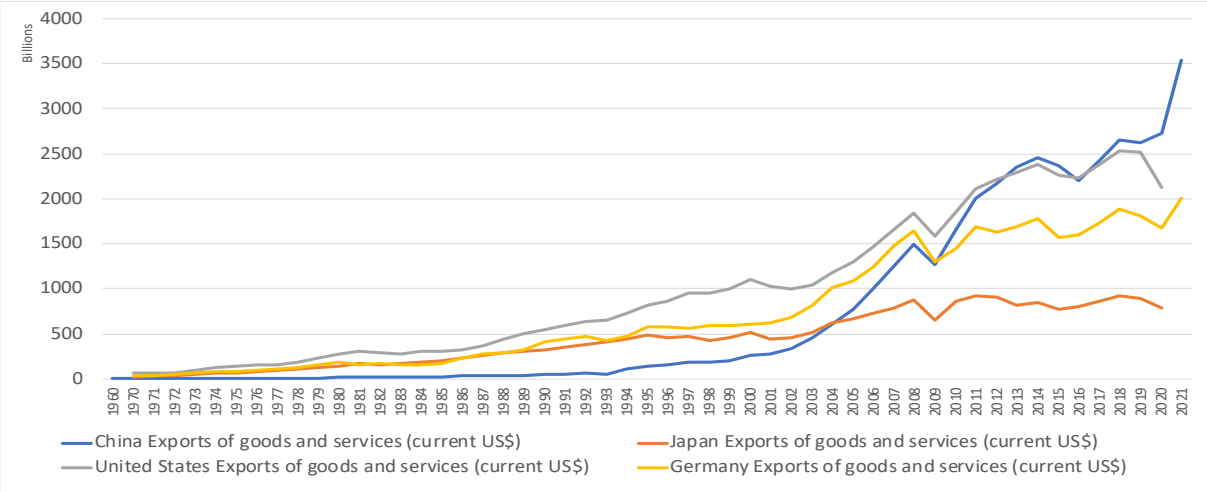


Note: All values are recorded in dollars of the year of entry, i.e., they have not been adjusted for inflation. Data come from CEIC and China Statistical Yearbook 2014 data bases.

1.4 China's exports

China's accession to the WTO in 2001 has enabled global value chains to tap the country's potential as a manufacturing powerhouse. This has allowed China to significantly increase its exports to the rest of the world as shown in figure 2 (Blustein, 2019).

Figure 3: Evolution of exports of the main exporting countries in value for the period 1970 to 2019



Note: China's exports are growing drastically over the period from 1970 to 2020. China is indeed the largest exporter of goods in the world. Data come from Trade Maps ITC.

[9] The Zhang and Song findings (2001) support that increased levels of FDI positively affect manufacturing export performance and thus growth (Appendix D).

China has become a major supplier of certain products, including initially low-skilled items such as textiles and clothing and later sophisticated products such as office and telecommunications equipment. There is a clear trend and willingness to diversify over time into capital-intensive activities, technology and innovation, etc. Nevertheless, China still has a comparative advantage in the production of labor-intensive goods (Hanson, 2020). That is, the country has an advantage over other countries in the production of labor-intensive goods. These exports and thus indirectly its economic growth depend on these types of goods.

Table 1 describes the top 10 products exported by China over the period 2016-2020 in which it has a comparative advantage. These are mainly labor-intensive goods. In 2020, merchandise exports will account for 14.70 percent of total world exports. This makes China the largest international exporter of manufactured goods (UNCTAD, 2021). Through the calculation of China's "Unit Labor Cost" and "China's Relative Unit Labor Cost" relative to the U.S. for the industrial sector, we can see that China's labor is extremely competitive with the rest of the world (Appendix H).

Table 1: List of major products in which China has a comparative advantage (current USD)

N°	Product	Average exports
1	Electrical machinery, apparatus and equipment and parts thereof; recording devices or …	640 316 651,2
2	Machinery, mechanical appliances and apparatus, nuclear reactors, boilers; parts of these …	402 982 231,8
3	Furniture; medical-surgical furniture; bedding and similar items; lighting fixtures …	96 925 565,0
4	Garments and clothing accessories, knitted or crocheted	70 841 725,8
5	Garments and clothing accessories, other than knitted or crocheted	69 389 266,2
6	Articles of iron or steel	63 315 620,4
7	Toys, games, entertainment or sports items; their parts and accessories	58 214 414,6
8	Footwear, gaiters and similar articles; parts of these objects	45 859 161,0
9	Other made-up textile articles; assortments; thrift store and rags	36 717 041,0
10	Articles of leather; articles of saddlery or saddlery; travel items, handbags …	27 827 668,6

Note: The table uses the Balassa index in the determination of comparative advantage on data from Trade Map ITC.

1.5 Research question

According to classical economic theory, the endowment of production factors (labor or capital for instance) is responsible for the increase in exports when trade is liberalized (Leamer, 1995). For example, the Heckscher-Ohlin model (HO model) makes it explicit that the country specializes in producing the good requiring the abundant factor of production i.e., the good intensive in abundant factor of production in the country (Appendix K) (Krugman et al., 2018). In the case of China, its cheap and inexhaustible labor would be the main reason for its economic growth. However, there are two notions that challenge the fact that this argument is the only explanation for the drastic increase of Chinese exports.

The first element that contradicts HO's simple theory is that there is also evidence that the exports growth of labor-intensive goods coincides with the entry of high-productivity foreign firms into labor-intensive sectors (Appendix D) (Zhang and Song, 2001), displacing domestic firms into capital-intensive sectors (Claro, 2009).

Secondly, foreign companies are China's main exporters. For example, in 1993, foreign firms constituted less than 28 percent of total exports, and in 2006, they accounted for nearly 58 percent of total exports (Enright, 2016). The presence of foreign-invested firms has enabled China to become a global superpower.

Foreign companies appear to have played a dominant role in China's growth. The present work looks at the influence of FDI in its growth by focusing on the period 1980 onwards. The work spotlights on its exports of labor-intensive goods, especially those in the manufacturing sector. This paper aims to explain China's competitive advantage in labor-intensive goods through a comprehensive analysis of its exports and FDI inflows.

The first research question raised is: Does China have a comparative advantage in labor-intensive products or has it moved to physical or human capital-intensive products? This allows us to understand where China is in its growth process and whether the implications made explicit in the work will be applicable for a long time or not.

Given the coincidence between FDI inflows and the rise of Chinese exports in international trade, we will focus on the extent to which FDI inflows have helped China in its growth process. Thus, the following research question is: To what scope has FDI contributed to China's economic trajectory over the period 1979 to the present?

The chapters include a range of recent literature and economic models to understand the evolution of China's FDI and its potential link with the country's growth. They focus on a comparative advantage analysis to explain capital flows to China. The economic models used only expand on the intuitions of comparative advantage models and FDI flows. The work focuses on the responsibility of FDI in the country's growth. Certainly, other elements explain the nation's economic trajectory. Like the undervaluation of the yen against the dollar that boosted exports, shadow banking[10], etc. However, we do not address them to spotlight on the role of FDI.

There are two main types of FDI. First, Horizontal FDI, which involves the acquisition of new facilities in a foreign country to produce similar goods. The company duplicates its business activities in its home country in different states. Generally, they are motivated by the desire to enter a foreign market without facing trade barriers or to benefit from the expertise of the foreign market. In the case of China, foreign companies want to take advantage of its abundant and cheap labor force. But not only to sell in China. Many companies then export some of their output to other countries, making this investment a horizontal platform FDI. Second, Vertical FDI is an investment by a company in a foreign country to produce part of the firm's production process, i.e., within its supply chain. They may or may not belong to the same sector of activity (Ito, 2013).

Although international trade is more complex in the exercise of distinguishing between the two types of FDI, the work determines which of these types of FDI is explained in the models or examples. The work focuses mainly on horizontal investment (and its extension, horizontal platform FDI). To support some empirical findings, the work also includes vertical FDI.

[10] Tsai, Kellee (June 2015). "The Political Economy of State Capitalism and Shadow Banking in China," Issues & Studies, Vol. 51, No.2.

In the next chapter, we briefly recall how China reached its current situation. Chapter 3 explains whether China still has a comparative advantage in labor-intensive industries, and provides an analysis of the role of FDI in China's economic development.

1.6 Related literature

The reflection of China's economic trajectory has been the object of numerous studies, as the subject is so fascinating for economists. Indeed, it is impressive that China has been able to become the world's second-largest economy in such a short period of time. This section describes the literature related to China's economic growth and the analysis of FDI to this nation.

1.6.1 Classical theory of FDI

In terms of comparative advantage knowledge, Stephen Hymer is one of the first theorists to go against neoclassical beliefs that explain capital flows between countries. Before his publication "The International Operations of National Firms: A Study of Direct Foreign Investment" in 1960, the study of FDI was based on classical macroeconomic trade theory. FDI was justified only by product differentiation[11], absolute costs[12], and economies of scale[13].

Hymer was the first author to separate between portfolio investments motivated solely by interest rates and direct investments. The latter involve more control over decision-making. He explains that firms invest in certain countries for specific sectors. Foreign firms hope to have growth prospects in the market where the FDI is made. Finally, it distinguishes the willingness of foreign firms to engage in FDI to outsource[14] or internalize.

The neoclassical theory is not obsolete, however. According to recent articles by Eaton and Kortum (2002) and Hanson (2012), emerging countries practice extreme specialization to secure a place in international trade. High-income countries exploit components manufactured by less advanced economies and turn them into finished products with better technology and a more skilled employee. Previously, mainly gravity models[15] were useful in analyzing trade when trade occurred only between developed countries (Eaton and Kortum 2002 and Hanson 2012).

[11] Product differentiation corresponds to a situation where the product of each firm is different.
[12] An absolute advantage exists when a producer can provide a good or service in greater quantity for the same cost, or the same quantity at a lower cost, than its competitors.
[13] It is when a firm divides its fixed costs over more goods produced.
[14] Obtain (goods or a service) by contract from an outside supplier (Oxford languages dictionary)
[15] The gravity model explains bilateral trade flows on the basis of economic size and distance between two economies.

1.6.2 China's comparative advantage

Regarding China's growth, Ceglowski and Golubse (2012) focus on the increase of comparative advantage in cheap labor and abundant labor force and specifically in manufacturing. They tried to understand whether China had a comparative advantage in manufacturing labor over the period 1998-2009. They measured unit labor costs over this period. They then compared China's unit labor cost to that of the United States by calculating the relative unit labor cost index. In a recent paper, Hanson (2020) also described the evolution of wages and productivity. Hanson's article confirms that comparative advantage is still present in China, despite a downward trend over time.

In our work, we highlight China's comparative advantage in low-labor cost intensive production via an analysis of China's exports. We calculate the Balassa (1965) index over a more recent period to demonstrate China's comparative advantage in manufacturing. The index measures the degree of specialization of a country's export products. If the Balassa index for a product is greater than 1, it means that the country has an advantage in producing the product. We see that China does not yet seem to have broken its dependence on exports of labor-intensive goods and has not achieved its plan to specialize in more complex sectors[16].

1.6.3 China's Growth

Acemoglu, Aghion, and Zilibotti (2006) construct an economic growth model to explain technological convergence and the reaching of the technological frontier[17] of a developing country (Appendix C). It is based on studies by Barro and Sala-i-Martin (1997), Aghion and Howitt (1992, 1998), Zeira (1998), Howitt (2000), and especially Howitt and Mayer (2002), who study how some countries converge while others may stagnate toward a level of income below the global technology frontier.

According to Acemoglu, Aghion, and Zilibotti (2006), countries in the early stages of development invest by relying on existing firms and managers to maximize investment, but sacrifice the selection of those managers. As countries approach the global technology frontier, economies shift to an innovation-based strategy with shorter-term relationships, younger firms, less investment, and better selection of firms and managers.

Developing countries can use policies that enable investment. these subsidies consist of investment subsidies or limits on product market competition. They are beneficial in the short run. However, they are dangerous in the long run if the economy remains trapped in the investment-based strategy and fails to converge to the global technological frontier. Economies must then resort to innovation to sustain their development.

We apply this model to the case of China to understand China's economic trajectory based on the writings of Song, Storesletten, and Zilibotti (2011). The authors consider the role of

[16] Cooper, B. (2021, July 16). China's 14th Five-Year Plan (2021–2025) Report. Hill+Knowlton Strategies. Retrieved April 16, 2022, from https://www.hkstrategies.com/en/chinas-14th-five-year-plan-2021-2025-report/

[17] Technological frontier corresponds to a situation where a country can no longer grow through accumulation and investment in physical capital (Acemoglu et al. 2006)

resource reallocation on growth. In the case of China, resource allocation means the redistribution of resources (such as labor, capital, etc.) between private and public enterprises. This can potentially improve efficiency by reallocating resources from less productive to more productive sectors.

1.6.4 Foreign direct investment in China

The Acemoglu, Aghion, and Zilibotti model (2006) ignores the role of FDI in China's economic growth. Factor endowments (cheap labor) and their reallocation are not the only reasons for China's rising manufacturing exports and, indirectly, the nation's rapid economic growth. We observe that between 1980 and 2000, FDI flows to China increased in parallel with the country's exports. Thus, it is certain that the inflow of foreign capital (FDI) has contributed to China's expansion through changes in its comparative advantage in manufacturing. Although we find that China may not have reached the technology frontier yet (see Chapter 2), our work focuses on the first period of growth, i.e., before the technological frontier was attained.

Actually, experts have been able to demonstrate the link between FDI and the country's economic growth (Fan, Shi He, and Kwan, 2019). The authors constructed a meta-regression using a unique dataset from 41 studies on the productivity spillovers of foreign direct investment in China. They found that horizontal[18] /upstream/downstream[19] spillover effects adjusted for publication bias[20] are consistently positive and economically significant. Interestingly, their findings show that China enjoys more horizontal and backward spillover effects than the world average.

Similar work has been done by Samborskyi, Isaia, Hnatenkob, Parkhomenkoa, Rubezhanskac, and Yershovad (2020). They build an economic and mathematical modeling of the FDI consequences on economic growth and its interaction with domestic direct investment. The authors report a classification of the factors that determine the FDI inflow in developed and developing countries. Despite the fact that FDI brings positive growth to the economy, its effect may be decreased by the external impact of foreign direct investment (capital repatriation). The authors modified the model with FDI as accumulated foreign capital reserves. An analytical expression is obtained to relate the economic growth rate to the repatriation based on the complement and substitution effects of foreign direct investment.

The studies by Fan et al. (2019) and Samborskyi et al. (2020) consist mostly of econometric analyses. They evaluate measurable data to predict the value of one variable based on the value of another variable (Kenton, 2020). We would like to understand the mechanisms of China's economic trajectory. Our objective is to explain how FDI liberalization endogenously introduces Ricardian features[21] into an endowment-based model, thereby enhancing China's comparative advantage in labor-intensive products. To understand the evolution of the

[18] Horizontal spillovers occur when domestic firms benefit from foreign firms operating in the same industry via channels such as demonstration effects and labor movement or direct competition.

[19] Vertical spillovers occur when domestic firms benefit from foreign firms operating in upstream and downstream industry such as distributors and/or suppliers

[20] In published academic research, publication bias is the act of publishing only those results that present a significant conclusion consistent with previous research findings.

[21] having a comparative advantage in the production of a particular good(s) (Appendix D)

relationship between China's comparative advantage and FDI in manufacturing over time, we consider the analytic models that combine the different assumptions and conclusions of the models created earlier (Claro, 2009 and Findley, 1978).

Our analysis will consider the distribution between domestic and foreign firms in China's exports. According to the quantitative study by Brandt and Lim (2020), foreign firms account for the majority of China's total exports. They are mainly responsible for exports in the machinery, transportation, plastics and rubber, and food sectors. Chinese firms, on the other hand, dominate the textile, metals, and chemicals sectors. State Owned enterprises (SOEs) have lower productivity but no financial constraints. They keep wages very high even without innovation or technological change. The export share of SOEs has declined in relative terms for most of the period (Brandt and Lim, 2020). In addition, China is willing to export more to low- and middle-income countries, as advocated by Akamatsu's (1937) flying geese paradigm.

In the present work, we spotlight on the FDI role on the nation's economic growth thanks to analytic models, a point less developed by scholars. It helps to understand (i) how FDI is helping China to develop, (ii) to perceive the recent slowdown in Chinese growth, and (iii) grasp why China is reviving the Foreign Investment Law (FIL) in 2019. The entrance into force of China's new FIL on January 1, 2020, now brings significant opportunities for foreign investors (PwC, 2020). It aims to facilitate the admission of FDI in China to sustain its economic growth (Liu, 2020).

1.6.5 The interest of firms to practice FDI in China

Both China and the FDI firms benefit from FDI. Zhang (2001) attempts to evaluate the impact of location characteristics and government policies on FDI flows over the period 1987-1998. A model of FDI determinants is specified and assessed using cross-sectional and scope data. Estimates indicate that China's market size, liberalized FDI regime, and improved infrastructure are attractive to multinationals. The regional distribution of FDI in China is largely influenced by FDI incentives and historical-cultural ties to foreign investors, as well as other location factors.

In our work, we will discuss the perspective of foreign firms' willingness to enter China using the Grossman, Helpman, and Szeidl model (2003). We will show that foreign multinationals actually want to benefit from low variable costs[22] and avoid foreign exchange costs (Helpman, 2006).

1.6.6 State tools to ensure the inflow of FDI

Finally, the Claro model tells us that a country can improve FDI inflows and thus its economic growth. We will relate this to the case of the Chinese government, which has gradually introduced FDI into the manufacturing sector through FDI incentive policies. Economists Nunn (2006), Acemoglu, Antràs, Helpman (2006) and Costinot (2005) have highlighted this phenomenon. Cross-country differences in the legal systems and institutions that shape

[22] Variable costs are costs that vary with the quantity of the good produced by a firm. They correspond to the aggregation of marginal costs over all units produced. They must be distinguished from fixed costs, which do not change according to the quantity produced. Variable costs and fixed costs make up the total cost (Feenstra, 2004)

contract enforcement have the potential to influence comparative cost patterns across countries. Ricardian comparative advantage, as reflected in cross-sectoral variation in productivity levels, may result from institutional variation across countries when the relative need for contract-dependent inputs varies across sectors.

2 Historical context

The progressive opening up of the Chinese economy to foreign direct investment began in the late 1970s during the opening policies and reforms of Deng Xiaoping. Before that, during the Maoist period, FDI was not permitted. This opening allowed foreign capital, know-how, and technology to enter China, thus generating growth[23]. The country hoped that foreign companies would provide linkages to support China's exports and overseas investments (Zhou et al., 2001).

In this chapter 2, we will understand why China did not use FDI until the late 1970s. While other countries were already practicing the use of FDI to generate economic growth.

We will detail the different decisions and reforms of the Maoist period (1949-1976) as well as the opening period under Deng Xiaoping (1979-present) that allowed China to develop.

This chapter will also aim to contextualize China's growth since the 20th century. So, two models of economic development will be compared: the Zilibotti, Aghion and Acemoglu model (2006), and the flying geese paradigm of Akamatsu's (1937).

2.1 The People's Republic of China

2.1.1 The Maoist period (1949 - 1976)

FDI to China contributed greatly to the nation's economic growth[24] (Solow, 1956 and Zhou et al., 2001). Nevertheless, FDI was not always allowed in China during most of the 20th century. Indeed, during the Maoist era, i.e., between 1949 and 1976 when the state was under a communist dictatorship, capital flows from abroad were prohibited. The government believed that China could grow on its own without using any of the practice of FDI as it was the case in liberalized countries (Enright, 2016).

The Maoist period and its communist regime found their origins in the late 19th and early 20th centuries. During this period, China was deeply marked by a series of conflicts[25]. Notably, the Chinese Civil War between the Chinese Communist Party (CCP) and the Kuomintang, a

[23] In a simple Cobb Douglas function, $Y = AK^{\alpha} L^{\beta}$, when FDI increases, it also increases the physical capital represented by K. It then generates output growth, Y. Both technology and knowledge increase A.

[24] Not only does FDI directly promote economic growth by itself, but it also does so indirectly through its interaction terms. The interaction of FDI with human capital has a significant positive effect on economic growth in developing countries, while the interaction of FDI with the technology gap has a significant negative impact.

[25] The Opium Wars lasted from 1839 to 1860. The British and Americans sold opium to Chinese smugglers while opium was prohibited in China. This created a conflict between China and these nations (Wolfgang Keller Carol H. Shiue, 2021).

nationalist party led by Chiang Kai-shek who took power the following year (Cucchisi, 2002) in 1927.

The Kuomintang promoted nationalism and democracy; economically, it supported the livelihood of the people; ideologically, it adhered to the theory of social cooperation and saw livelihood as the center of social progress (Cucchisi, 2002).
The Chinese Communist Party is Marxist. It emerged from the workers' protest movements and the birth of the USSR[26] in Russia. Politically, it defends international communism and seeks to establish a dictatorship of the proletariat; economically, it is communist; ideologically, it is materialist and believes in the class struggle (Cucchisi, 2002).

The CCP succeeded in gaining the upper hand over the Kuomintang by deploying a huge manifestation: the Long March (1934-1935). It was a journey gathering followers of communism headed by the CCP to escape the Kuomintang party. Mao used this gathering to assert himself as the leader of the Chinese communists (Yang, 2007).

The march ended in 1935. Mao and his allies defeated the Kuomintang nationalists, as well as the Japanese invaders during the Sino-Japanese War[27] (1937-1945). Mao and the CCP members founded the People's Republic of China in 1949 and he led it as president (Cucchisi, 2002). The Nationalist Party (Kuomintang) took refuge on the island of Taiwan, perpetuating the Republic of China (Hood, 1996).

Mao considered that his country was able to prosper isolated from the capitalist industrial powers of the time. He imposed communist collectivism and a one-party dictatorship on the population, following closely the Soviet model at first[28]. It consisted of pooling resources to improve only certain sectors, such as agriculture and industry, thus preventing the development of a competitive economy (Kaiser et al., 2006). Consequently, during this period, there was no competition in the Chinese market and the whole economy was planned. The government was organizing an economic program with its goals and means for several years to come (Enright, 2016).

Foreign direct investment was not allowed, except for a few outside firms. For example, joint ventures[29] with Soviet enterprises, such as the Sino-Soviet Zhongchang Railway, were operating in China. Nevertheless, there were not enough of them to have a significant influence on local productivity (Enright, 2016). Chinese communist leaders did not want foreign companies to compromise the existence of the CCP[5].

But China was poor and its expansion stagnated under Mao's regime. China's GDP remained constant between 1952 and 1979 instead of increasing like the U.S. GDP. The U.S. GDP per

[26] The USSR is a former federal republic in E Europe and central and N Asia: the revolution of 1917 achieved the overthrow of the Russian monarchy and the Soviet Union (the USSR) was established in 1922 as a Communist state (Collins).
[27] The two parties first joined forces to fight the Japanese who were invading China. The CPP took advantage of the opportunity to overtake the party (Jennifer Lynn Cucchisi, 2002).
[28] At that time, there were two great political and economic systems in conflict: communism and capitalism. The CCP chose the former to run the country.
[29] A joint venture is a business entity created by two or more parties, usually characterized by shared ownership, shared returns and risks, and shared governance.

capita attained 29 949 in 2011$ in 1979 (Maddison Project Database, 2020) while the China's GDP per capita only reached 1 859 in 2011$ (Wu, 2014).

The communist period also stopped the country's development, as the measures and reforms were violent and ineffective for various reasons:

- Communist reforms involved transferring land from landowners to the general population, but followed in protests from former landowners and deaths (Strauss and Southerl, 2020).

- The CCP implemented the "Great Leap Forward" policy. It was supposed to catch up to the level of steel production in England, but it was a huge failure and resulted in a famine of disastrous proportions (Strauss and Southerl, 2020).

During this period, the agricultural sector was still largely responsible for the country's economic growth. The Chinese government-imposed production quotas and paid farmers a fixed wage. But they were not paid more for the potential surplus produced. This did not generate any motivation to produce more or more efficiently. Production therefore remained extremely low compared to what was done in other countries (Appendix F). (Cheng, 1971).

Following the mismanagement of the country, Mao was ousted from power and in 1960 was replaced by Liu Shaoqi. Liu Shaoqi adopted a more moderate and realistic program in which he led the economic recovery of the country with Deng Xiaoping and others. In 1962, they effectively implemented the free market[30] (Cheng, 1971).

This was a move towards a more liberalized economy that would allow foreign investment (FDI). However, Mao considered this policy to be nonsense and decided to return to power by introducing the "Cultural revolution" in 1966. The objective was to attack the middle elites by relying on the youth (Robinson, 1968).

Liu Shaoqi was eliminated. An era of chaos followed, before the situation stabilized and Mao regained his position as president (Robinson, 1968). Until 1976, Mao ruled the country and perpetuated an externally isolated communist economy with no utilization of FDI.

Despite the limited effects of isolated reforms, we will see in section 2.2.1 on the growth model of Zilibotti, Aghion and Acemoglu (2006) that the anti-competitive measures imposed during the communist period contributed to the country's future growth even without the use of FDI (Zilibotti, 2017). According to China's official statistics (Appendix F), these measures seem to have worked[31] (only if we regard industrial development). Industrial exploitation increased by an average of 18 percent per year between 1952 and 1957 and reached 66 percent and 39 percent in 1958 and 1959, respectively (Cheng, 1971).

[30] An economic system in which prices are determined by unrestricted competition between privately owned businesses (Oxford language dictionary).

[31] Data from China should always be taken with caution. The Chinese government tends to overestimate its growth

2.1.2 The opening of the Deng Xiaoping reform (1979 - today).

In September 1976, Deng Xiaoping became the head of the CCP after the death of Mao Zedong[32]. He was effectively considered the leader of the reformists[33]. The new president of the People's Republic of China decided to abandon the previous communist system. He introduced various liberal reforms with greater openness to the world. This opening to the world implied the possibility of foreign firms to set up in China (FDI).

Deng and his allies considered "Cultural Revolution" as a period of political instability causing an economic recession and negatively affecting the population. In fact, by the end of the 1970s, the nation was in ruins, the public services and the judicial system were underdeveloped. The Maoist policies of achieving wealth comparable to the industrial powers of the time had never been realized (Garnaut et al., 2018).

To remedy this, Deng and his allies set up the "Boluan Fanzheng" project[34]. This system gradually dismantled the Maoist policies associated with the "Cultural Revolution", rehabilitated millions of victims persecuted during the Revolution, launched various socio-political reforms, and systematically put the country in order.

In 1978, other changes were brought such as the privatization of sectors and the introduction of more flexible and loose quotas in agriculture (Garnaut, 2018).

This program lasted until the early 1980s, after which the CCP's main motivation shifted from "class struggle" to "economic construction" and "modernization." In 1982, the government put into action the historic "Reform and Opening" plan that aimed to liberalize its economy and focus its expansion on cheap labor (Garnaut, 2018). It corresponds to a set of measures, mainly in the agricultural and industrial sectors. We analyze these measures in the next two subsections.

China wanted to emulate the growth examples of Japan, Singapore, and South Korea, which had been achieved decades earlier. These countries had based their evolution on the manufacturing sector in the early years of their development (Zilibotti, 2017). Moreover, the former prime minister of Singapore had sat on an informal council of Deng to help China follow this method (Vogel, 2011).

However, state intervention remains present through the introduction of a proactive industrial policy. This aims to improve certain sectors and industries through government subsidies. These measures also ensure that resources and factors of production are allocated to more productive activities (Zilibotti, 2017).

[32] It happened at the 3th plenary session of the 11th Central Committee of the Chinese Communist Party

[33] Reformists correspond to those who wish to break away from communism. the following politicians have clearly estimated that communism is no longer viable for growth

[34] literally meaning "eliminating chaos and returning to normal”

2.1.2.1 The agricultural sector

As explained earlier, the agricultural sector was still important for China during the Maoist period, as it was the most relevant engine of growth at that time (Cheng, 1971). Nevertheless, it was not able to generate a production surplus that would allow the development of the industrial sector during the Maoist period.

Thus, Deng and his allies introduced the "household responsibility system" in 1983. This contractual system included in "Reform and Opening", gave farmers the right to use, manage, exploit, and exchange their land for a defined period (Garnaut, 2018).

This urban and rural land reform was a success, generating huge economic benefits (Garnaut, 2018).

There was still a production quota set by the state, but much lower and the surplus was sold at a higher market price. Thus, farmers were incentivized to produce more (Garnaut, 2018).

This system comprehensively characterized the socialist market economy[35] that the CCP tried to promote after 1979. It aimed at the elimination of government barriers on the way to personal initiative, and the restoration of private property rights. It allowed more freedom to agents without the state disappearing completely from decision-making and control of the market (Garnaut, 2018).

The intervention of the government is more discreet than before. It is characterized by the establishment of quotas (lower than before), experimentation everywhere, including in regulations and in law, at the local level, while maintaining a minimal social safety net. Then, interesting projects would be encouraged and tested at the provincial level before being adopted at the national level (Garnaut, 2018).

2.1.2.2 The industrial sector and international relations

As part of its economic liberalization, the Chinese state enacted the "Joint Venture Law Using Chinese and Foreign Investment" in 1979. For the first time, the country allowed foreign investors to enter the Chinese domestic market, but in partnership with a Chinese firm (Kaiser et al., 1996). The low labor cost and the size of the market joined to their profit maximizing strategy motivated foreign companies to take the step (Blustein, 2019).

China had also decided to clarify and relax the legal framework and conditions for foreign investment in China. The goal was to open the Chinese market to foreigners to benefit from positive spillover effects while protecting its local market and industry. In the 1970s and 1980s, the rules required FDI to source from certain Chinese suppliers, and enacted restrictions on internal immigration. Thus, some large players had to renumerate for infrastructure in China

[35] This corresponds to the economic system and model of economic development employed in the People's Republic of China. The system is a market economy with the predominance of public ownership and state-owned enterprises. It was used for the first tie in 1993 during the 4th National Congress of CCP (Vogel, 2011).

if they wanted to enter. Large telecommunication companies had to pay for cable installation before selling their products in China[36] (Blustein, 1994).

The country has set up special economic zones (SEZs) to bring in multinationals[37]. In SEZs, China can attract and retain investors. In SEZs, foreign companies enjoy a special regime i.e., no or low taxes, low tariffs, free repatriation of investments and profits etc.[38](Huasheng, 1991). SEZs contradict Ricardo's economic theory (Appendix E), which assumes a static version of international trade. According to Ricardo's model, each country specializes in the manufacture of a few products. SEZs allow China to diversify its production considerably, even if it remains based on cheap labor (Garnaut, 2018). Subsequently, foreign companies wishing to specialize in the production of cheap labor-intensive goods move to central China. And the former SEZs are converting to more sophisticated and higher value-added products, including financial services (Garnaut, 2018).

In the late 1980s, China was not yet a major global power. It mostly had relationships with advanced countries in North America, Western Europe, and East Asia, especially, companies in coastal areas. At that time, most of China's exports came from foreign companies (Brandt and Lim, 2020).

Limited FDI entry prevents China from becoming a global power by numerous regulations in the 1980s and 1990s despite previous efforts. In addition to the measures explained earlier, foreign companies had to deal with licensing, stricter hygiene rules than those applied to Chinese companies, an oligopoly for the distribution of goods in China, or the construction of sophisticated facilities in China (Blustein, 2019). Also, the requirement to set up with a Chinese partner made intellectual property virtually impossible. Foreign firms were forced to share their knowledge with Chinese joint ventures (Zhang, 2001).

In the 1990s, the regime under Deng Xiaoping realized that the level of FDI reached at that time was insufficient for China's development. A tour of major countries was organized in 1992 to promote foreign investment in China and explain to world leaders the value of investing in China (Enright, 2016). Other measures were employed. For example, in 1995, Chinese government also incorporated the "Catalogue" to remove any uncertainty about which sectors the Chinese government would or would not encourage. It is an investment guide that determines the categories of restricted and unrestricted FDI, from least desired to most desired (encouraged, neutral, restricted and prohibited). It is still used today. Thanks to the "Catalog", foreign companies know in advance whether it’s worthwhile to start an introduction process in the Chinese market (Enright, 2016).

[36] Blustein, P. (1994, 30 janvier). CRACKING CHINA'S MARKET: PROFITS, OR PERIL? Washington Post. Consulté le 5 décembre 2021 à l'adresse https://www.washingtonpost.com/archive/business/1994/01/30/cracking-chinas-market-profits-or-peril/a4d67ac2-c6ee-4608-82e2-b0361a7ff2d0/

[37] a company operating in several countries.

[38] Among the first four SEZs created in China, the one in Shenzhen is particularly interesting. Shenzhen has grown from a small village with a few thousand inhabitants to a metropolis of 10 million people in only 35 years. (Huasheng, 1991).

These measures have generated a large inflow of FDI into China and have greatly contributed to the country's economic development. In 1990, the share of foreign direct investment in China's GDP was 0.97 percent. In 1994, it accounted for nearly 6 percent of China's GDP[39].

Under Deng Xiaoping, the reallocation of resources at the 15th Chinese Communist Party Congress (1997) created open competition between the private and public sectors. This has encouraged the reallocation of labor and capital from state-owned enterprises to private firms, since private enterprises are more productive than SOEs. (Managi and Kaneko, 2006). The reallocation of resources increased productivity[40]. For example, between 1998 and 2005, 70 percent of the rise in total factor productivity was attributed to the allocation of resources between the state and the private sector (Brandt et al. 2020).

China sought to further its development by trying to join the world's leading trade organization. In November 1995, China applied to enter the World Trade Organization (WTO). The WTO advances economic globalization through rules that members must follow. These include low tariffs and the principle of reciprocity. The principle of reciprocity is a mutual change in trade policy between member countries. Reciprocity implies that countries cannot make concessions (regarding tariffs, quotas, etc.) to other countries with which the contracting parties have trade treaties (Bagwell and Staiger, 2004).

The United States, the main player in negotiating WTO membership, was quite reluctant. China was still a communist country with few opportunity for freedom of expression contrary to the democratic vision of the United States. So, they asked for an extension of measures to liberalize the Chinese economy through trade. Measures that benefited foreign companies included:

- the lowering of tariffs[41]
- allowing foreign companies to participate in capital and decision making of co-owned subsidiaries [42]
- removing the ban on foreign firms using non-Chinese inputs[43]
- not forcing technology transfer (USTR, 1999, "White House Documents Summarizing China's WTO Commitments," Press Release 99-34, April 8).

The United States and some WTO members wanted to democratize Chinese society (also with the objective of spreading the capitalist system and undermining the communist economic

[39] International Monetary Fund, International Financial Statistics, and Balance of Payments Databases, 2021
[40] Resource allocation is problematic because the resources of a society are finite, while the needs of an economy are generally unlimited, and because a given resource may have many alternative uses. Within the limits of existing technology, the goal of any economizing organization is to allocate resources in such a way as to obtain the maximum possible yield from a given combination of resources.
[41] Tariffs on industrial goods would be reduced from an average 24.6 percent to 9.44 percent, with most of the cuts implemented by 2003. For some items of particular interest to US industry, tariffs would be even lower - the duty on soda ash, for example, would be 5.5 percent. In the auto sector, China would cut its existing tariffs on vehicles from 80-100 percent to 25 percent, and for auto parts, the tariff would be an average 10 percent.
[42] China's telecommunications services sector, from which foreign involvement had long been restricted, would be opened up, with foreign firms allowed to invest up to the 49 percent level in most services and a majority stake in a few.
[43] Restrictions on foreign companies' distribution and trading rights would be eliminated over three years.

system). At the same time, the U.S. hoped to benefit from the greater penetration and predictability of the Chinese market for foreign companies. China was planning a rapid expansion, which left it no choice but to accept the measures imposed by the WTO (Blustein, 2019).

The reduction of tariffs, protection of private property, and improved market access conducted to a significant spike in foreign direct investment in China after WTO accession. This also led to an increase in China's GDP. China's GDP grew by 67.4 percent in just 5 years (Figure 1).

However, the rules affecting foreign investors have not evolved since China's entry into the WTO. We have observed a few regulatory revisions: changing the sector contained in the "Catalogue"; simplifying and easing the procedure for setting up one's business in China (Blustein, 2019).

2.2 Modeling of the China's economic expansion

In the following two sections, we shed light on China's economic expansion via the economic models of Zilibotti, Aghion and Acemoglu (2006) and Akamatsu (1937). These theoretical models illustrate the mechanisms that generated growth in an undeveloped country[44]. They can be easily related to the case of China and thus adequately explains the economic trajectory of the country. Both models depict China's development for the period 1949 i.e., when the country hasn't yet started its industrialization to the present.

For each theory presented below, we briefly explain the model. Then, we relate the concrete case of China to the economic theory, while paying particular attention to the role that FDI can play in the model.

2.2.1 Zilibotti, Aghion and Acemoglu (2006)

The economists Zilibotti, Aghion, and Acemoglu (2006) have created an exogenous model[45] of economic development that includes firms, productive and non-productive entrepreneurs, and the government. It aims at maximizing the development of the country[46]. It looks for the equilibrium[47] depending on whether we are far or close to the technological frontier. The technological frontier corresponds to a situation where a country can no longer grow through accumulation and investment in physical capital (Appendix C). Their model confirms the insights of Gerschenkon (1962) who predicts that "non-competitive" arrangements generate investment in advanced technologies and thus lead to economic growth in the early stages of expansion. "Non-competitive" arrangements can be:

[44] There is no precise definition of an undeveloped or developing country. Overall, China is a sovereign state with a less developed industrial base and a lower human development index than other countries (OECD, 2021).
[45] Economic model is a theoretical construct representing economic processes by a set of variables and a set of logical and/or quantitative relationships between them. The economic model is a simplified, often mathematical, framework designed to illustrate complex processes.
[46] the goal is to let the agent maximize his utility function by maximizing the country's growth.
[47] The equilibrium is the absence of external influences the values of economic variables will not change in the model.

Long-term relationships between companies and banks. It disadvantages incoming firms that can't take advantage of the banks' credit. Firms wishing to enter the market do not acquire the necessary financial resources and the free market cannot take place.

The presence of large companies in the market and state intervention. If the state supports large multinationals with large market shares, the market remains anticompetitive.

State intervention is important to ensure the sustainability of bank-firm arrangements and to subsidize large firms, even if this means being in an anti-competitive economic environment or one characterized by market rigidities[48] (Gerschenkon, 1962). The model constructed by Zilibotti, Aghion and Acemoglu (2006) decomposes the growth of an undeveloped country into two distinct parts. The first is fueled by massive investment in technology and imitation of existing foreign technology. The second is the use of innovation to grow.

Investment-led growth

The economy is in equilibrium with rigid arrangements[49] between agents (firms, productive and non-productive entrepreneur) when the country is at an undeveloped stage according to the model of Zilibotti, Aghion and Acemoglu (2006). At this stage, the growth strategy is based on investment, as it guarantees the adoption and imitation of technology[20] (from more advanced countries). The long-term relationship between entrepreneurs and financiers guarantees investment.

At this phase of non-development, the selection of entrepreneurs (the fact they are productive or not) and firms in the economy is not crucial (Zilibotti, Aghion and Acemoglu, 2006). At the non-development stage, rigid arrangements and anti-competitive measures lead to the creation of monopolies, large companies with large market shares. The role of the state is essential in managing the "appropriability effect". More investment leads to higher productivity and output[50], but monopolies appropriate only part of these gains while bearing the full costs of investment. Thus, the state can push large firms to innovate by subsidizing them in a monopolistic and rigid environment. In this case, we say that the state manages the "appropriability effect" (Zilibotti, Aghion, and Acemoglu, 2006).

In the early years of development, the country is characterized by rigid arrangements and a non-competitive market (monopoly) because of the state subsidy to large firms and relations to the bank-firms (Zilibotti, Aghion, and Acemoglu, 2006). If the state subsidizes large

[48] this is the situation where the market is not allowed to operate on its own and where a market equilibrium is not found or is not the most efficient.

[49] Rigid arrangements correspond to firms that hire skilled or unskilled entrepreneurs over time. However, they disappear when the economy tends toward the production frontier, since firms must hire the most productive (Acemogu et al., 2006).

[50] The stock of capital per worker: All else equal an economy with more physical capital can produce more than an economy with less physical capital. Because savings and investment add to the stock of capital, more investment in capital leads to more economic growth.

companies, it helps them to grow in the market and their monopoly situation continues to be (Zilibotti, Aghion, and Acemoglu, 2006).

Innovation-based growth

After investing heavily, the country must shift to an innovation-based expansion strategy if it hopes to continue growing and achieve a level of wealth comparable to that of the most advanced economies (Zilibotti, Aghion and Acemoglu, 2006). One of the main innovation benefits is its contribution to economic growth. Innovation can lead to higher productivity, i.e., more output with the same inputs (Zilibotti, Aghion and Acemoglu, 2006).

Indeed, as one approaches the technological frontier, rigid arrangements disappear in equilibrium in the Zilibotti, Aghion and Acemoglu (2006) model. The "rent effect" offsets the "appropriability effect". “Rent effect” protects insider firms and entrepreneurs from more productive firms that wish to enter the market. Without new productive entrepreneurs, innovation is impossible. When approaching the technological frontier, equilibrium implies more competitive measures for the market to avoid “rent effect” and generate growth through innovation (Zilibotti, Aghion and Acemoglu, 2006).

At this point, technological imitation is no longer possible to grow. The country must hire qualified and productive entrepreneurs to increase growth through innovation. The lack of selection of entrepreneurs is costly, as the country must innovate (Zilibotti, Aghion, and Acemoglu, 2006).

2.2.1.1 The case of China

The Maoist period

Despite China's slow growth during the Maoist period (1949-1976), some thinkers (e.g., Cheremukhin, Golosov, Guriev, Tsyvinski) point to the definite role of the reforms of this period on the country's development.

The economic policy of the "Great Leap" launched by Mao Zedong and its deployment from 1958 to 1960 would have allowed China to progress through investment as advocated by Zilibotti, Aghion and Acemoglu (2006). The "Great Leap" aimed to boost production in record time through collectivization of agriculture, expansion of industrial infrastructure, and implementation of large public works projects (Strauss and Southerl, 2020).

These arrangements correspond to the "non-competitive" arrangements of Gerschenkon[51] (1962). Zilibotti, Aghion, and Acemoglu (2006) explain that these measures ensure the growth of the nation via investment in technology adoption and imitation. The average annual increase in GDP was 5.7% between the Great Leap Forward policy and the introduction of economic reforms (1966-1975) (Cheng, 1971).

[51] in the sense that they only favor large companies and guarantee an uncompetitive economy.

Nevertheless, its implementation remained chaotic due to the rampant inefficiencies of socialist planning and the country's isolation from the rest of the world. It is estimated to have contributed to a famine that killed about 30 million people (Li and Yang, 2005; Meng, Qian, and Yared, 2015). China's progress has fallen far short of its potential.

The Deng Xiaoping period

The Chinese government tried to liberalize the economy without democratizing it. The Chinese economy was transforming into a market economy with lighter state intervention that ensured investment and technology adoption in specific regions and industries, and promoted the export sector (Zilibotti, 2017).

In 1986, the liberalization of its economy involved the introduction of foreign investment for the first time in the constitution with Article 18 of the PRC Constitution. The goal was to modernize the industry, science, and technology sectors (Chen, 2011). The opening up to foreign companies was an attempt to invest and adopt technologies. It represented an end to the anti-competitive measures observed during the Mao era. The influx of foreign capital allowed for the upgrading of local infrastructure and machinery to improve Chinese production. FDI also involves a direct increase of capital in the economy and thus perfects infrastructure, worker wages[52], and capital owners (Feenstra and Taylor, 2012). FDI is also a way to copy technology from advanced foreign countries. Through the catalog, the government can choose which areas can be developed and thus which more advanced technologies should be imitated (Zilibotti, 2017). This directly refers to the first stage of growth process according to Acemoglu, Aghion, and Zilibotti (2006).

Between 1998 and 2005, there was an increase in total factor productivity. Improvement in technology due to FDI explained thirty percent of this increase (Brandt et al., 2012). In the manufacturing sector, the productivity growth rate is high between 1998 and 2007 (Brandt et al. 2012). China's GDP grew by more than 70 percent in the 1980s (Brandt and Lim, 2020). Major reforms and agreement were consistent with the Zilibotti, Aghion, and Acemoglu (2006) model is the important "meritocratic selection." Indeed, managers can move up the hierarchy according to their performance. Some studies show that provincial leaders' chances of promotion to higher government or party positions depend on their ability to achieve high economic growth in their province[53] (see Maskin, Qian, and Xu 2000; Bo, 2002; Li and Zhou, 2005). Also, we will see later in chapter 3 that FDI generates an increase in innovation and productivity through the transfer of knowledge, skills, etc. (See section 3.2.1)

These implications correspond to the second stage of development where rigid arrangements disappear and the selection of the most productive entrepreneurs becomes important in the Zilibotti, Aghion, and Acemoglu (2006) model (Zilibotti, 2017). Anti-competitive arrangements

[52] In the Specific-Factor model, an increase in FDI is characterized by an increase in capital in the model. This leads to an increase in the marginal productivity of workers in the manufacturing sector because they have more machines to produce. The wage therefore also increases because it is the product of marginal productivity and price (Appendix M)

[53] Some believe that Xi Jinping, Current President of the People's Republic of China since 2013, would have risen through the ranks in this way because of a very high growth rate (14 percent per year) in Zhejiang province during his time as its leader in the early 2000s.

dissipate over time. Long-term relationships between firms and banks and large firms and government intervention disappear (Zilibotti, 2017).

2.2.2 Kaname Akamatsu's wild goose theory (1937)

2.2.2.1 The theory

Akamastu's wild goose theory is a model of economic development that explains the growing economic trajectory of a poor, agricultural country through a process of industrialization. It has its origins in the industrial development of textiles in Japan during the Meiji era (1868 - 1912) (Kasahara, 2004). The general principle is that a developed country focuses on the production of certain goods. The developed country gives the production of other goods to other countries, which in turn export and develop as well (Kasahara, 2004).

There are different stages in the wild goose theory.First, the country concerned engages in an industrialization process on a low-tech product. The industrialization process should not require too much investment. Then, the country becomes an exporter of this low-tech product. The sale of this product on the international market generates revenues that cover the costs of the industrialization process. Finally, the surplus revenues allow the country to invest in higher value-added and more complex products[54]. To do this, the production of low-tech goods must be abandoned. Thus, their production is given to other countries that can apply the same growth model (Kasahara, 2004).

2.2.2.2 The case of China

Before the liberalization of its economy, China was essentially agricultural and its industry was little developed (Garnaut et al., 2018). The flying goose process was possible in China because of FDI (via SEZs) and the International Monetary Fund (IMF), which gave financial incentives to communist countries to industrialize. The early influx of foreign capital allowed China to develop its manufacturing sector in relatively easy-to-produce goods. The first firms to set up shop were manufacturers of shoes, clothing, etc. (Keppenne, 2021).

China manufactured goods that were easy to produce and traded them with more advanced countries (Kasahara, 2004). The Chinese authorities ensured the protection of domestic industries while developing the introduction of FDI into the country, for example through the use of the "catalog" (Keppenne, 2021).

FDI successfully shifted production from labor-intensive and relatively low-tech goods to technological products such as television or computer (Blustein, 2019). This "opening up policy" led to the creation of more than 220,000 foreign-owned firms between 1979 and the end of 1994. 300 billion U.S. dollars are contracted in investments. China became the largest recipient of FDI among developing countries (Kaiser et al., 2006).

[54] The value-added product corresponds to a good that generates more wealth in value in the net profit of the company or the GDP of a country.

According to Akamatsu's theory, China's next step would be to converge production to more complex goods, requiring more human capital, etc. (Kasahara, 2004). Nevertheless, the following section explains that China has not yet achieved. China still has a comparative advantage in easy goods to produce, labor intensive goods suggesting that it has not yet finished its growth process[55].

Comparative advantage in Manufacturing

In this section, we demonstrate China's comparative advantage through the calculation of the Balassa indicator (Appendix G). The estimator is the RCA value[56]. The RCA of a product is a measure of China's export specialization, which in turn indicates the strength of Chinese production of that product (Balassa, 1965). This index corresponds to a top-down method[57] which looks at the structure of the economy, by studying data on production, consumption and international trade flows. The idea is that if the data show that China exports a relatively large number of manufactured goods, it can be concluded that the country has a comparative advantage in manufacturing. The reason for the comparative advantage is not explored in this case; all that matters is that the comparative advantage is "revealed" by examining the data (Sabatier, 1986).

By applying an RCA formula from Balassa (1965) to the thousands of product categories for which data are available, export opportunities are "revealed" using this formula. In theory, by applying the RCA formula > 1, one could identify all products in which China has a comparative advantage. One could also rank products according to their RCA value. Below, the formula is illustrated with exports (Balassa, 1989).

$$RCA_{ij} = 100 \frac{\frac{X_{ij}}{X_{wj}}}{\frac{X_{it}}{X_{wt}}}$$

i is the country of origin and *j* is the country of destination. *w* is the world. finally, *X* is the abbreviation for export

To be sure of the validity of the RCA, the following selection criteria may filter out some positive export opportunities. We subtract imports from exports of goods in which China has a comparative advantage[58] (Balassa, 1989). Table 5 ranks the products for which China has

[55] Keppenne, B. (2021). La Chine, l'irrésistible ascension d'une hyper-puissance économique ? [Conference session]. La Chine, l'irrésistible ascension d'une hyper-puissance économique ?, Brussels , Belgium. https://www.youtube.com/watch?v=50BLbJENlfY

[56] By applying an RCA formula to the thousands of product categories for which data are available, export opportunities are "revealed" using the Balassa RCA formula. In theory, applying the RCA formula > 1 could identify all products in which China has a comparative advantage. Products could also be ranked according to their RCA value. Below, the formula is illustrated with exports (Balassa, 1965).

[57] In the opposite, the "bottom-up" method: it focuses on national economic conditions (climate, raw materials...). In this perspective, the starting point is an analysis of the product: if the climate for growing rice is better in China than in Belgium, China has an advantage in rice production (Sabatier, 1986).

[58] To be sure of the validity of the RCA, imports from countries where there is a comparative advantage must be taken into account. It is rather strange to say that a country has a comparative advantage in a product that it must import more than it can export. Therefore, it is suggested here that adding the following selection criteria

the largest RCA expressed in normalized terms, NRCA[59], to simplify the analysis for the period 2016 to 2020. The data are from Trade Maps ITC

As predicted by most scholarly articles, Table 2 shows that China has a comparative advantage in the production of cheap labor-intensive goods and manufacturing (Brandt et al., 2020; Enright, 2016). Among the goods in which China has an advantage are e.g., silk sector products, mechanics, wood and paint, and plastics.

We also find that some Human- and capital-intensive or costly labor-intensive products emerge. Such as Chapter VI products - chemicals, pharmaceuticals, etc. They are few in number and do not call into question our previous results. Moreover, we will explain later in the chapter why we observe such results and why this is normal (Claro, 2009).

may filter out some positive export opportunities. We subtract imports from exports of goods in which China has a comparative advantage (Balassa, 1989).

[59] NRCA = (RCA-1)/(RCA+1) In the case of the normalized RCA, the closer its value is to 1, the more specialized the country is in the good (Balassa, 1989)

Table 2: Top 20 goods for which China has a Balassa-like comparative advantage for the period 2016 to 2020.

N°	SH6	Descr. Section	Chapter	Libellé produit	NRCA
1	30625	1 - live animals.	I - animals, meat, etc.	Langoustines [Nephrops norvegicus], whether or not smoked or shelled, live, fresh, chilled, ...	0,99545164
2	600534	50 - silk.	XI - textiles	Warp knit fabrics, including those made on galloon machines, of a width ...	0,98186681
3	846900	84 - nuclear reactors, boilers, machinery and mechanical appliances; parts thereof.	XVI - mechanical appliances & electronics	Typewriters and text processing machines (excluding automatic machines ...	0,97867616
4	281210	28 - Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes.	VI - chemicals, pharmaceuticals, etc.	Chlorides and oxychlorides	0,9758593
5	401194	39 - plastics and articles thereof.	VII - plastics & rubber	New pneumatic rubber tires of a kind used for engineering vehicles and machines ...	0,96364665
6	290490	28 - Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes.	VI - chemicals, pharmaceuticals, etc.	Sulphonated, nitrated or nitrosated derivatives of hydrocarbons, whether or not halogenated (excluding derivatives ...	0,9629769
7	600532	50 - silk.	XI - textiles	Warp knit fabrics, including those made on galloon machines, of a width ...	0,96044554
8	600531	50 - silk.	XI - textiles	Warp knit fabrics, including those made on galloon machines gallooning machines, of a width ...	0,95885082
9	441232	44 - wood and articles of wood; wood charcoal.	IX - wood works & plaiting	Plywood consisting exclusively of sheets of wood, each of which is a sheet c	0,95023374
10	600533	50 - silk.	XI - textiles	Warp knit fabrics, including those made on galloon machines on gallooning machines, of a width ...	0,9408542
11	401193	39 - plastics and articles thereof.	VII - plastics & rubber	New pneumatic rubber tires of a kind used for for engineering vehicles and machines ...	0,94012874
12	441900	44 - wood and articles of wood; wood charcoal.	IX - wood works & plaiting	Wooden articles for the table or the kitchen (excluding furniture, objects ...	0,93992186
13	291470	28 - Inorganic chemicals; organic or inorganic compounds of precious metals, of rare-earth metals, of radioactive elements or of isotopes.	VI - chemicals, pharmaceuticals, etc.	Halogenated, sulfonated, nitrated or nitrosated derivatives of ketones or quinones (excluding ...	0,92127231
14	30390	1 - live animals.	I - animals, meat, etc.	Livers and roes of fish, frozen	0,92027745
15	690790	68 - articles of stone, plaster, cement, asbestos, mica or similar materials.	XIII - articles of stone, cement, glass, etc.	Tiles and slabs for paving and covering, of ceramic material, not glazed or enamelled; tiles, ...	0,91911634
16	401163	39 - plastics and articles thereof.	VII - plastics & rubber	New pneumatic tires, rubber, studded of a kind used for ...	0,91874531
17	852851	84 - nuclear reactors, boilers, machinery and mechanical appliances; parts thereof.	XVI - mechanical appliances & electronics	Monitors of a kind solely or principally intended for automatic processing machinery...	0,91873541
18	940381	94 - furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated name-plates and the like; prefabricated buildings.	XX - furniture, lighting & toys	Furniture of bamboo or rattan (excl. seats and furniture for medicine, dentistry ...	0,8862671
19	30789	1 - live animals.	I - animals, meat, etc.	Abalone [Haliotis spp.] their shells, smoked, frozen, dried, salted ...	0,87179588
20	690890	68 - articles of stone, plaster, cement, asbestos, mica or similar materials.	XIII - articles of stone, cement, glass, etc.	Tiles and slabs for paving or covering, ceramic, glazed or enamelled; cubes, ...	0,86941654

Source: Own calculation (Appendix H), Data come from Trade Maps ITC.

2.3 Conclusion of the section

Since the liberalization of its economy in 1979, China has decided to use a gradual approach to FDI entry. Prior to that, the state was closed to the outside world and no companies could engage in it. Zilibotti believes that this isolation and concentration of resources in key sectors allowed China to evolve and prepare for the ferocity of international trade. He bases his conclusions on the Acemoglu, Aghion, and Zilibotti (2006) model of development. Nevertheless, China must act if it wants to soar its GDP faster.

The country decided to reallocate resources and factors of production between the private and public sectors. Competition between the two sides intensified in parallel and generated an increase in productivity and development. This is one of the recommendations of the Acemoglu, Aghion and Zilibotti model for growth in the early years of development.

These simplistic development models suggest that FDI may have played a key role in China's growth and exports. We will view in more detail in the next chapter how this is possible.

Overall, we can see that FDI allows China to imitate the processes and technologies of more advanced countries. They have permitted China to develop its economy based on simple and complex goods. China has been quick to understand this by adopting measures to encourage FDI flows and reduce tariff barriers.

The point we have been emphasizing is the gradual admission of FDI. First there were the joint ventures, then the special economic zones, then the catalog, and finally the entry into the WTO. This gradual approach was intended to protect the Chinese economy from foreign countries. Indeed, liberalizing its economy too quickly would have led to the massive arrival of more productive and more advanced companies. They would offer higher wages than local people, monopolizing the local labor force and production potential. This may seem excessive, but for a long time China was impervious to foreign investors. The country remained for decades in a planned economy isolated from international markets, international technology, know-how and international competition. The Chinese economy had become moribund and unproductive (Deng, 1991). The majority of enterprises were controlled by the state. The gradual approach allowed for a relatively smooth transition from a controlled economy without foreign investors to a more market-oriented economy that includes foreign investors as well as the domestic private economy (Lichtenstein, 2000).

Recently, China is attempting to move into the second phase of development by developing its economy through innovation and human capital. The 2008 stimulus package[60] and the fact that innovation is being imposed by the government suggest that the country is still mostly in the first phase (i.e., investment-led growth before the technological frontier). The stimulus package has delayed China's entry into its second phase of development. This has slowed China's overall productivity growth. Also, the dependence of its exports on easily produced and very labor-intensive goods tends to confirm that China's growth is not complete.

[60] Barboza, D. (2008, November 10). China unveils $586 billion stimulus plan. The New York Times. Retrieved March 14, 2022, from https://www.nytimes.com/2008/11/10/world/asia/10iht-10china.17673270.html

In the next chapter, we will try to understand the relationship discussed in this chapter between FDI inflows and the country's growth via the country's exports. We will focus on the manufacturing sector

3 The study of FDI to China and its role in determining comparative advantage

The following chapter explains the evolution of FDI in China. Its potential link to China's growth by focusing on the labor-intensive sector, manufacturing. This work considers the specificities of modern international trade. Indeed, global trade and sourcing strategies are becoming more complex. For example, firms are investing in low-cost countries to create export hubs from which they can serve other countries around the world (Helpman, 2006). Recently, both Tesla and BMW are producing and selling models in China and exporting them to Europe and Asia[61] (Kharpal, 2022). Through this chapter, we will try to explain the following implications:

- First, Manufacturing is a key sector for China's economic growth and the attractiveness of foreign investors[62](Zhang, 2001).

- Second, China and foreign companies all have an incentive to practice FDI. The country hopes that local firms will benefit from the advanced productivity and technology levels of foreign firms[63] (Zhou et al., 2001). Also, foreign companies are encouraged to engage in FDI in China to offset trade costs[64] (Grossman, Helpman, and Szeig, 2006).

- Third, FDI has greatly contributed to the country's growth through its supply of cheap labor[65](Claro, 2009).

- Finally, we analyze the role of the state in comparative advantage. Chinese authorities can improve China's comparative advantage in manufacturing by implementing FDI incentive policies (Helpman, 2006).

[61] Kharpal, A. (2022). BMW opens $2.2 billion EV plant in China as it ramps up challenge to Tesla, domestic players. CNBC. https://www.cnbc.com/2022/06/24/bmw-opens-third-ev-plant-in-china-as-it-ramps-up-challenge-to-tesla.html

[62] We studied the country's exports to justify its comparative advantage in manufacturing via the Balassa index. We observe that the majority of FDI in China is in the manufacturing sector.

[63] In Melitz's simple and comprehensive model, foreign firms that locate in China must have certain characteristics that make them attractive to China. A small fraction of firms engage in FDI, and these firms are larger and more productive than exporting firms.

[64] According to the Grossman, Helpman, and Szeig (2006) model, FDI occurs when trade costs are significant.

[65] Claro's (2009) model based on comparative advantage is used to highlight the specialization of Chinese firms in capital-intensive industries observed in recent years. This model also explains the investment of foreign firms in labor-intensive activities in China (FDI).

3.1 Manufacturing in China

In this section, we will demonstrate China's comparative advantage in the manufacturing sector to guide our research in the following sections. We will discuss FDI flows to China by number and value.

3.1.1 Importance of FDI in manufacturing

Table 3 describes the number of foreign enterprises and FDI in value that entered China for the year 2019. The information is taken from the "Chinese Statistical Yearbook 2020" database, which is a large-scale repository of statistical information reflecting the economic and social development of the People's Republic of China. The quasi-systematic use of these data specialists motivates the use of this (e.g., Hanson, 2020; Hale and Long, 2011). The manufacturing sector receives the most investment from abroad with 25% of FDI in China in 2019.

According to economic theory, FDI may provide information about what a country can be good at producing (Hausmann and Rodrik, 2003). Waldkirch showed that investors tend to produce goods in a country that has a comparative advantage in that good when international trade is possible (Waldkirch, 2011). In Chapter 2, we demonstrated China's comparative advantage in manufacturing for simple to produce goods. This is consistent with the fact that China receives a great deal of capital in the manufacturing sector providing a Chinese comparative advantage in this sector. In the China's case, multinationals want to benefit from abundant low skilled and cheap workers (Sabatier, 1986).

Table 3: FDI in China, 2019, by invested industry

Sector	Number of FIEs (unit)	ealized FDI value (USD 10 00(	% of all industry
Agriculture, Forestry, Animal Husbandry and Fishery	495	56 183	0,40673%
Mining	31	219 044	1,58573%
Manufacturing	5 396	3 537 022	25,60562%
Production and Supply of Electricity, Heat, Gas and water	295	352 398	2,55112%
Construction	557	121 551	0,87995%
Wholesale and Retail Trades	13 837	904 982	6,55145%
Transport, Storage and Post	591	453 316	3,28170%
Hotels and Catering Services	835	97 180	0,70352%
Information Transmission, software and Information technolog	4 295	1 468 232	10,62899%
Financial Intermediation	865	713 206	5,16312%
Real Estate	1 050	2 347 188	16,99203%
Leasing and Business Services	5 777	2 207 283	15,97922%
Scientific Research and Technical Services	5 183	1 116 831	8,08509%
Management of Water Consenvancy and environment and Publ	143	52 242	0,37820%
Service to Households, Repair and Other Services	361	54 218	0,39250%
Education	258	22 248	0,16106%
Health and Social Service	111	27 186	0,19681%
Culture, Sports and Entertainment	804	62 986	0,45598%
Public management and Social otganizations	4	166	0,00120%
Total	40888	13813462	100%

Source: Chinese Statistical Yearbook 2020

3.1.2 Conclusion of subsection

China is indeed the world's factory, the largest manufacturer. Its low labor costs, technically skilled workforce (Appendix H), and good infrastructure have attracted many manufacturing industries in recent decades (UNCTAD, 2021). Manufacturing accounted for 42.6% of GDP in 2014. The sector employs about 30% of personnel in China and has allowed China to remain the leader in terms of gross industrial production value[66] (World Bank, n.d.).

These results are not surprising. The country first opened up capital flows into manufacturing at the start of its liberalization process in 1979. The liberalization of foreign investment is gradual and revisited in the five-year plan[67]. That is, additional sectors are liberalized for foreign investment over time [68] (Garnaut et al., 2018).

This gradual approach is necessary because the Chinese economy was for many years isolated from the concepts of capitalism, competition, marketing... The infrastructure, legal institutions and agents were not yet ready for the massive influx of foreign capital. China was afraid that its domestic market would be plundered by foreign companies. So Chinese policymakers were able to choose the initial sectors that would contribute to the country's continued progress and comparative advantage (Enright, 2017).

China favored the development of the manufacturing sector in the early years of its development and economists[69] consider the positive effect of FDI via the transmission of expertise, technology, and capital (Zhou et al., 2001). So, we will analyze the evolution of FDI in China and its potential link to the country's growth by focusing on the labor-intensive sector, the manufacturing sector.

3.2 The mutual benefit of FDI

FDI is possible if China and the multinationals have both an interest in it. We will see in the next two sections what drives them to practice FDI. The first section explains that China hopes to benefit from the transfer of technology and knowledge from multinationals. The second section will determine that multinational firms want to benefit from low trade costs.

[66] On China's more developed east coast, there has been an increasing emphasis on advanced manufacturing, while low-cost, labor-intensive manufacturing is increasingly located inland (Yehoue, 2009).

[67] The Five-Year Plans are a series of social and economic development initiatives issued by the Chinese Communist Party since 1953 in the People's Republic of China. Since 1949, the CCP has shaped the Chinese economy through the plenums of its Central Committee and national congresses (https://www.economist.com/the-economist-explains/2021/03/04/what-is-chinas-five-year-plan).

[68] Sectors are distributed in the Chinese Investment Catalogue, which lists the most and least desired sectors in China (Van Ostende, 2020).

[69] Today, this sector is still the country's main engine of growth despite the desire to diversify its economy (Mullen, 2020). + real estate sector

3.2.1 China's point of view

Positive spillovers

In this section, we focus on China's view of the willingness to promote FDI in its territory. The country hopes to benefit from the positive effect of FDI on local firms. Feenstra and Taylor (2012) explain that increasing the level of local productivity is possible if there are positive spillovers[70] from FDI on regional firms, which improves the level of productivity in China.

Zhou et al. (2001). distinguish two types of FDI impacts: indirect and direct effects:

> Direct transfers are through the introduction of capital, new processing practices, new products, and new management skills. Direct effects also include R&D centers established by multinationals (Zhou et al., 2001).
>
> Indirect effects are technology transfers that do not emanate directly from the will of foreign firms (Blomström et al., 1994). These benefits include backward and forward linkages, demonstration and competition effects, and migration of skilled workers (Zhou et al., 2001).

Both effects happen when foreign firms impact productivity in local industries from which they source (forward FDI) or procure (backward FDI) (the World Bank, n.d.).

China would benefit from these positive spin-offs by allowing multinationals to enter China. It hopes that the foreign firms would bring to its local enterprise skills that are not available in China, new competency, … (Enright, 2017)

Foreign firms could also set up research and development (R&D) centers in the host country. The installation of R&D in the host country contributed to the creation of a local capacity to generate knowledge, due to the partially public nature of these activities. (Braconier et al., 2001). For example, the PepsiCo Group opened an innovation center in Shanghai in 2012. It is the largest research and development facility outside North America. It enables innovation in products, packaging, and equipment for China and all Asia[71] (PepsiCo, 2018).

Also, foreign companies had better marketing skills. Indeed, the Chinese economy has long been immune to market economics and foreign competition. The need to establish effective marketing systems came later when multinationals started to expand their business in China. Foreign companies had a marketing advantage, which allowed them to sell more. Chinese enterprise had a lot to learn in this area (Zhou et al., 2001).

[70] FDI spillovers measure the impact of the presence of foreign firms on productivity in industries from which domestic firms source (forward FDI) or procure (backward FDI) (the World Bank, n.d.)

[71] PepsiCo, Inc. (2018, June 30). PepsiCo Opens Food and Beverage R&D Center in Shanghai to Drive Innovation and Growth Across Asia. PR Newswire. Retrieved May 25, 2022, from https://www.prnewswire.com/news-releases/pepsico-opens-food-and-beverage-rd-center-in-shanghai-to-drive-innovation-and-growth-across-asia-179055861.html

Documentation of an increase in productivity via the entry of FDI into China has been empirically confirmed through a study by Zhao et al. (2010). The authors examine FDI in China for the period 2001 to 2006 and try to fill the gap in empirical evidence on this subject (the link between productivity and FDI). They analyze separately cases of FDI in labor- and capital-intensive enterprises. It uses linear regression to determine the potential direct and indirect impact of FDI on the rate of productivity growth (Zhao and Zhang, 2010).

The following models explain that only productive firms invest abroad, confirming the previous intuitions

The Helpman, Melitz, and Yeaple model (2004).

Positive spillover effects are only possible if foreign enterprises are more productive than their Chinese counterparts. Melitz's simple and extensive model assumes that foreign firms practicing FDI located in a foreign country are always more productive. The model analyzes the case of horizontal FDI. That is, a country tries to conquer the Chinese market. For this, it has different strategies (Helpman et al., 2004).

The Melitz model (2003) uses economies of scale, differentiated products, heterogeneous preferences, and firm heterogeneity[72] to explain intra-industry trade[73]. It signifies that firms vary in their level of productivity. Some can produce more with the same number of inputs[74]. The model also assumes preferences are heterogeneous between and within countries. Each company produces a different "variety" of a good and consumers "like variety".

Production experiences increasing returns to scale i.e., firms pay a fixed cost of production and have constant marginal costs. (Helmpan et al., 2004). Firms have the choice to export part of their production, not to export, or to use FDI i.e., building an assembly plant abroad, (Helpman et al., 2004). The use of FDI saves variable costs but increases fixed costs[75]. The firm is facing a trade-off between proximity and concentration. That is to say, by practicing FDI, the firm implements a strategy of proximity and renounces the concentration of production (Brainard, 1997). All firms try to maximize their profit in this economy. Figure 4 describes the different profit functions for each form of the firm organization according to the assumptions of Melitz's model (Appendix I). They can grow their profit depending on the level of productivity (Helpman et al., 2004).

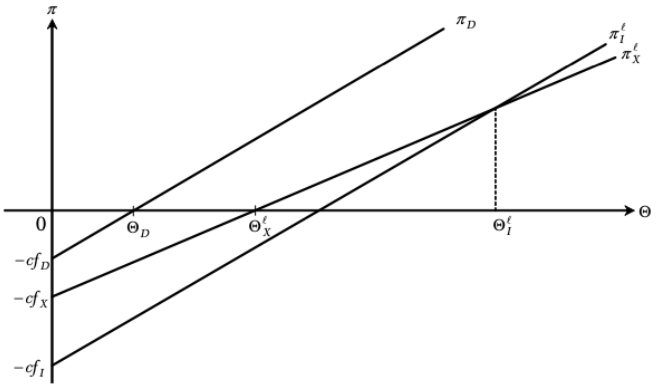
[72] Unlike the Krugman model where firms are homogeneous

[73] When exports and imports from the same country are mainly between products belonging to the same industry

[74] Inputs are the resources needed to produce a good or service for a firm. They generally correspond to the factors of production such as labor and/or capital (i.e., capital goods)

[75] Fixed costs are production costs that do not depend on the level of goods or services produced by the company. They tend to be recurring, such as interest or rent paid each month (Krugman et al., 2012).

Figure 4: Multinationals, Exporting, and Non-exporting Firms



Note: The figure describes the profit of each type of firm, π, as a function of its productivity level, Θ. The figure above describes this arbitration for the case where $c^\ell = c$, = B^ℓ (i.e., the level of demand is the same in both countries), and $f_I > \tau^{\varepsilon-1} f_X > f_D$ (i.e., the fixed cost of FDI practice is the highest while the fixed cost of home production is the lowest). Under these conditions $\Theta_I > \Theta_X > \Theta_D$. It follows that the most productive firms, with $\Theta > \Theta_I$, serve the foreign market via subsidiaries; less productive firms, with $\Theta_X < \Theta < \Theta_I$, serve the foreign market via exports; and even lower productivity firms, with $\Theta_D < \Theta < \Theta_X$, serve only the domestic market.
Source: Helpman et al., 2004

The model explains that only the most productive firms can compensate for the higher fixed costs of using FDI. It follows that the most productive firms satisfy the foreign market via subsidiaries; less productive firms serve the foreign market through exports; and even less productive firms serve only the domestic market (Helpman et al., 2004). Foreign firms face higher entry (fixed) costs than local firms in the same industry. This is mainly due to market ignorance and higher wages for foreign workers than for local residents. To overcome these costs, foreign firms that set up subsidiaries in China are necessarily more productive than local firms (Zhou et al., 2001).

Thus, when they practice FDI, they can benefit from lower variable costs in the production process generating more profit. If domestic firms are more productive and sell more than their Chinese counterparts, they are able to achieve economies of scale more easily. This intensifies the intuition of the model (Helpman et al., 2004). This approach of economies of scale also occurs in research and development. R&D costs can be spread over a larger number of subsidiaries around the world. All of these elements make foreign firms more productive and thus able to transfer new products or processes and new technologies (Zhou et al., 2001).

Thus, this model verifies the following intuition: by opening its borders to foreign firms, China only brings in productive firms that will provide the necessary and useful productivity for its economic growth strategy.

Multinationals are more productive than local exporters, and exporters are more productive than companies that operate only in the domestic market. Consequently, there is a Pareto distribution of productivities within the sector (Yeaple et al., 2004). Since the most productive firms produce more, this sorting scheme also implies that multinationals are larger than

exporters and that exporters are larger than firms that serve only the domestic market. Only productive multinationals use FDI. By entering China, they become larger than local firms and sell more. This, therefore, leads to a comparative advantage in the sector in which these multinationals operate (Yeaple et al., 2004). Previously, we explained that according to Walkirch (2011), FDI takes place in sectors where China has a comparative advantage (see section 3.1.1). In this case, China has a comparative advantage through FDI.

The link between FDI and comparative advantage will be analyzed in-depth later in the chapter. This chapter has focused on horizontal FDI. Using Melitz's in-depth model, we will analyze the case of firms that engage in vertical FDI in the following section. In addition, this analysis will help us understand China's future role in international trade.

Melitz's in-depth model

International trade is much more complex than the model developed above. Other economists have incorporated the coexistence of more organizational forms into the Melitz model (Antraz and Helpman, 2004; Helpman and Szeigl, 2006). This is the case of Antraz and Helpman's model (2006) (Appendix J). It is an extension of Meltiz's model that assumes two inputs: the headquarters and the components. These intermediate inputs are combined via a Cobb-Douglas production function (Appendix B) to produce either the brand of the differentiated product or another intermediate input of the type used to assemble the differentiated product. This second model focuses on vertical FDI. That is, the foreign country can produce in China an input useful for the production of the final good.

The final goods producers are located in the North[76] where they also produce the head office services. The head office can only be produced in the North. In contrast, the components are produced by outside firms (suppliers) in both countries. Variable costs are lower in the South (the labor is cheaper) (Antràs and Helpman, 2004). China is in the northern hemisphere. In the considered model, the southern countries refer to the developing countries. In this explanation, China which is developing is considered as a southern country.

The different forms of production structure are as follows:

- Integrated[77] firms that produce inputs in the North (do not participate in foreign trade in inputs).
- Integrated firms that produce inputs in the South (participate in FDI and intra-firm trade).
- Disintegrated firms that outsource to the North (do not participate in foreign trade in inputs).
- Disintegrated firms that outsource to the South (import inputs at arm's length).

[76] it is a supposition that refers to the fact that the developed countries would be in the northern hemisphere (Europe and USA) while the less developed, in the south (Africa, South America).
[77] Integrated means that the supplier is employed and is part of the firm of the final good. While disintegrated, the supplier is independent

The model incorporates contractual frictions between the supplier and the producer of the final good. The producer of the final good and the supplier cannot negotiate the exchange of their surplus production between themselves in advance. The producer of the final good chooses the number of headquarters to produce and the distributor of the intermediate component chooses the components.

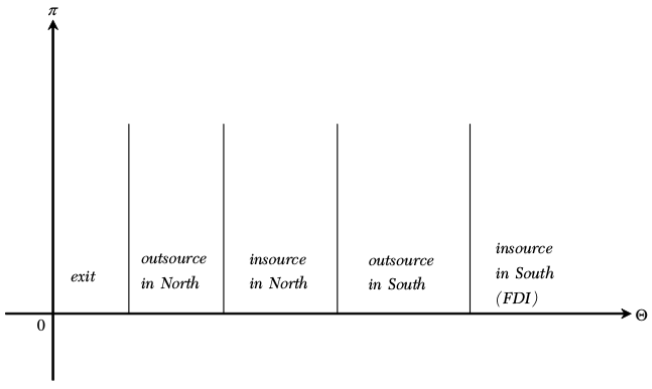
The producer of the final good chooses from a wide range of distributors which components to produce. Thus, when the supplier market is in equilibrium, the zero-profit condition applies and the total net revenue is equal to the opportunity cost of the distributors.

The model is a further development of the Melitz model in that it adds more types of production structures that have their own specificities. The fixed cost of Southern integration is higher than that of any of the other structures. This is due to the higher cost of entry into an unknown country and the ownership of its own supplier.

The profit generated by the producer of headquarter-intensive sector of the final good is higher in the case of Southern integration (vertical FDI) compared to the profits generated by the other forms of organization (Northern integration and outsourcing) if the firm is sufficiently productive. Figure 5 shows the profit maximization for each level of productivity. Only highly productive firms can maximize their profit by engaging in FDI. The Firms are sufficiently productive and prefer to practice vertical FDI rather than outsourcing. They want to benefit from lower variable costs even if they have to pay a higher fixed cost of entry. This is also because it gives the producer of the final good residual control rights that allow him ex-post to use the inputs produced by the supplier, thus strengthening his bargaining position.

The final goods producer can go after the supplier's plant manager and take a certain amount of produced inputs when the negotiation is unsuccessful. In particular, the final goods producer only gets the residual rights. Therefore, the producer gets a higher fraction of the revenues in case of integration.

Figure 5: Sorting Pattern in a Headquarter-Intensive Sector



Note: The use of Antraz and Helpman's (2004) model allows us to take into account firms' preferences regarding the organization of their economic structure. Firms in the component-intensive sector prefer to outsource, while those in the headquarters-intensive sector prefer to internalize abroad if they are productive, as this allows them to achieve higher profit levels. Melitz's theory states that firms must be highly productive if they want to internalize abroad and thus engage in FDI.

The conditions for generating a positive profit in the case of firms practicing foreign integration (FDI) are more stringent than those practicing northern integration and southern and northern outsourcing. Firms that want to internalize abroad must be sufficiently productive to cope with higher fixed costs and benefit from low variable costs (Antràs and Helpman, 2004) confirming the intuition of the Melitz's model (Helpman, 2006).

The use of the value chain concept of the Antraz and Helpman (2006) model allows us to get closer to the Chinese case. Many specialists have demonstrated the importance of global value chains in China's economic trajectory (OCDE, 2017). In our model, China corresponds to the Southern country with lower variable costs. China has benefited from this technological improvement in the ’80s enabling the establishment of a global value chain by offering foreign and local firms the production of labor-intensive and cheap components (OECD, 2017).

The case of Coca-Cola

The American brand of drink, Coca-Cola entered the Chinese market in December 1979. The example of Coca-Cola refers directly to a horizontal investment since the brand wants to conquer the Chinese market. Its establishment in China was difficult for three main reasons. Firstly, it taught itself for free to its suppliers how to improve the quality of glass manufacturing, which was not available on the Chinese market. This refers to the problems discussed earlier in the paper regarding the lack of FDI inflows due to the lack of infrastructure in China in 80’s and 90’s (see section 1.3). Coca-Cola hoped to benefit from a final product of better quality and adapted to the brand's standards. The suppliers in question were then able to take advantage of this knowledge to export their products elsewhere (also through the partnership with the famous cola brand) (Enright, 2016).

A Peking University study concluded that "*Coca-Cola passed on 'competitive business practices' to 'a new generation of Chinese entrepreneurs' through its domestic distribution network, supporting another 50,000 wholesale and retail jobs*" (Peking University, Tsinghua University, and University of South Carolina, 2000).

The second problem was that the price of the drink was too high for Chinese consumers. The Beijing branch of Coca-Cola launched sales promotion campaigns in all shopping malls to boost sales. Particularly, when they bought a bottle of Coke, consumers received a balloon or a pair of chopsticks. This campaign attracted public attention and was the first such campaign by a foreign company after the start of reform and opening up. This may seem ridiculous to us today, but marketing skills were virtually non-existent in China, as explained earlier (Xin, 2019).

The third problem was the strict standards and regulations that hindered access to the Chinese market. Coca-Cola has used advertisements depicting the easy and carefree lifestyle of Western society. More and more people became interested in the Western leisure culture represented by Coca-Cola. The brand has secured greater market penetration for itself and other Western companies[78] (Xin, 2019).

[78] Xin, L. (2019, March 4). China and Coca-Cola: A Common Development Trajectory. China Today. http://www.chinatoday.com.cn/ctenglish/2018/et/201903/t20190304_800158961.html

Conclusion of subsection

This section allows us to understand the incentives to bring capital flows into its market in order to improve the productivity of local firms in the relevant sector and China's overall productivity.

We find that only productive firms have the resources to engage in horizontal and vertical FDI (Antraz and Helpman, 2004). It seems to be in line with the predictions of Zhao et al. (2010), that is, foreign firms will be able to transmit productivity to local firms.

In the case of Coca Cola, the productivity gap between American and Chinese companies is clearly visible.

Chinese competitors lacked the marketing expertise of Coca-Cola, while Chinese companies lacked the technical skills to provide quality raw materials.

It allows us to understand the extent to which trade and capital flows can change. If the government reduces the fixed costs of integration within the government, this will increase horizontal FDI for productive firms.

An improvement in the South's competitive advantage, whether due to lower relative wages in the South or lower protection in the North, increases offshoring in all sectors; and in capital-intensive sectors, outsourcing of components to foreign suppliers increases proportionally more than purchases of intermediate inputs from foreign affiliates (Antraz and Helpamn, 2004).

The next section highlights the perspective of foreign firms interested in investing in China. It describes the reasons why multinationals would be interested in investing in China.

3.2.2 Multinational point of view

One of the main reasons for investing in China is the desire to be physically closer to the Chinese market. Foreign companies can get rid of trade barriers and reduce logistics and transportation costs. They can attain the huge Chinese market, but also reach out to the surrounding markets to benefit from free trade agreements between their initial country, China, and Asia in a more general way[79]. These investments are called export platforms (Tintelnot, 2016).

Foreign companies want to manufacture part of the production process in China in the hope of being more efficient and profitable. This strategy is known as a vertical investment[12]

[79] For instance, ASEAN which includes Singapore, Pakistan, New Zealand, Chile, Peru, Costa Rica, Iceland, Switzerland, Maldives, Mauritius, Georgia, Korea, Australia, Cambodia, Hong Kong, and Macao (https://www.trade.gov/country-commercial-guides/china-trade-agreements).

(Source). For instance, Volvo is headquartered in Sweden but produces and assembles cars in China to reduce expenses[80] (Volvo website).

Physical proximity and vertical investment are considered in the Grossman, Helpman, and Szeigl model (2006) based on the Model of Melitz. The model incorporates the two FDI of Yeaple (2003). It explains that firms hope to overtake exchange costs. When exchange costs become too high, foreign firms want to produce in the local economy and use FDI. Grossman et al. regard the complexity of vertical FDI. In fact, the model considers the company's choice to place its headquarters, the manufacture of intermediate products, and the assembly of finished products in three different types of countries: the home North country, other North and country the South country.

The production function of the GHS model is a concave production function with constant output. The output function uses intermediate inputs[56] and assembly to produce the final good. The primary input costs *c* per unit is lower in the South country (advantage of the Southern country). We would place the entire production in the South if the fixed costs of production of intermediate and assembly did not exist.

No fixed cost is supported by a company that positions the two activities in the Northern country where it has its headquarters. But such an enterprise must bear a fixed cost *g* if it locates the production of intermediaries in another country and a fixed cost *f* if it locates the assembly in another country.

The choice of the company to locate (North or South) will depend on the parameters previously explained and on the demand function[81]. The choice of regions or to set up its activities is illustrated this way: {*S*, *H*}. *S* refers to the manufacture of intermediate inputs in the southern country and *H* corresponds to the assembly done in the country domiciled. Table 4 below describes the possible combinations of trade organizations.

Table 4: Fixed and per unit variable costs

Production *m*	Assembly *a*	Fixed cost	Per-unit variable cost
H	H	0	c(1,1)/q
H	S	*f*	c(1,w)/q
S	H	*g*	c(w,1)/q
S	S	*f* +*g*	c(w,w)/q

Note: the last column is the variable cost of production per unit in the location for a firm with productivity θ. Workers' wages are 1 in the North for both activities and w in the South. w is less than 1.

Line 1: Line 1 of Table 4 depicts total production at home. In this situation, the home firm exports a part of the production to the South. This strategy provides for a low fixed cost, as it

[80] Volvo. (2017, May 30). First China-built Volvo S90 sedans arrive in Europe via ground-breaking rail link. Volvo Cars Global Media Newsroom. Retrieved March 25, 2022, from https://www.media.volvocars.com/global/en-gb/media/pressreleases/208624/first-china-built-volvo-s90-sedans-arrive-in-europe-via-ground-breaking-rail-link4

[81] $Ap(j)^{-\varepsilon}$ is the demand for firm j's brand. *p* is the price, *A* is a measure of the demand level, and $\varepsilon \equiv 1/(1-\alpha)$ is the demand elasticity

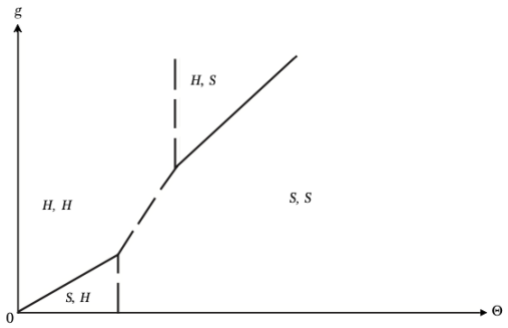
avoids the additional costs associated with FDI. But the variable cost per unit is high, as factor prices are higher than in the South.

Lines 2 and 3: Lines 2 and 3 describe "partial globalization" strategies. Either the intermediate products are produced in the country Domicile and assembled in the South (second line) or the other way around (third line). The line 2 corresponds to "Vertical IDE. The firm exports intermediate products from its factory of origin then exports finished products from *S* to consumers.

Line 3: Line 3 is an intra-firm integration. The last row represents a comprehensive globalization strategy. All production activities are carried out in the South at low wages. In this case, fixed costs are the highest, variable costs are the lowest, and the home market exports to the South. With this strategy, there is no trade of intermediate goods.

The different organizational strategies have been implemented in Melitz's profit functions as a result of their individual specificities. Figure 6 summarizes all the choices of firms maximizing their profit according to the cost of inputs *g* and the productivity of the firm, Θ, without trade costs. For a given production cost of assembly *f*, there are four organizational possibilities for a firm that will depend on *g* and the productivity of the firm.

Figure 6: Optimal Integration Strategies



In the GHS model, firms manufacture “assembly” and “intermediaries input” in the North if they are low productivity and, in the South, if they are high productivity. At most, there are vertical IDEs (region {S, H}) and complex integration (region {S, S}) but horizontal FDI has no economic justification.

Horizontal FDI becomes a viable option when iceberg transport costs[82] are incorporated into a modified version of the model i.e., trade in final goods is costly:

If there are no transport costs for final goods, the organizational structure of firms in international trade is the same as when there are no transport costs. That is, firms essentially carry out both activities in the same country. When transport costs are higher, firms produce intermediate products in the Northern country and assemble them in the other Northern country and at home. The most productive firms can do this in all three countries at the same

[82] The iceberg transport cost model is a commonly used, simple economic model of transportation costs. It relates transport costs linearly with distance, and pays these costs by extracting from the arriving volume

time. If transport costs are very high, firms that produce the intermediate product in the South will choose to assemble it near their home market, the North. For intermediate transport costs, assembly in the South provides unit cost savings. The choice of assembly in the South, i.e., its savings, can only offset transport costs if the unit cost of the intermediary is also low.

The complementarity effect corresponds to the fact that the variation in the cost of FDI in intermediates changes the composition of FDI in the assembly. When the fixed cost of FDI in components decreases, the fraction of firms that assemble in the South increases at the expense of the fraction that assembles in several Northern locations. In other words, the Northern market is cheaper to serve from Southern assembly lines if and only if the intermediate inputs are also produced in the South.

Thus, some firms prefer to produce both activities directly in the South and then serve the Northern market to minimize costs and maximize profits. In this case, they engage in FDI to the greatest extent possible. This confirms our initial intuition; firms tend to engage in FDI to circumvent transport costs. If the fixed cost of FDI in components decreases, the fraction of firms that assemble in the South increases at the expense of the fraction that assembles in several Northern locations.

This model leads to the following conclusion taking into account the complexity of international trade (vertical, horizontal FDI): exchange rate costs defend the practice of FDI. Without exchange costs, FDI on the horizon has no economic justification (Grossman, Helpman, and Szeidl, 2006).

3.3 Comparative advantage

More than 200 years after David Ricardo published "The Principles of Political Economy and Taxation," the study of comparative advantage is still at the center of concern (see Nunn, 2007; Hanson, 2020 to name just a few recent examples).

We have analyzed that China has a comparative advantage in the manufacturing sector through the evaluation of its exports and FDI. According to the Melitz's model (Helpman, 2006), firms that enter the Chinese market can only be productive. Therefore, they are expected to transmit positive spillovers and increased the productivity of Chinese firms according to the investigations of Zhou et al. (2001). This helps them to produce more or at a lower cost and improve their exports and comparative advantage.

In this section, we try to understand the sources of China's expansion in a more macroeconomic way through the study of the country's comparative advantage in terms of FDI. We will look at two models that explain in more detail the origins of China's comparative advantage and its growth development: the Krugman and Helpman Heckscher Ohlin (1985) and the Claro model (2009).

3.3.1 Krugman and Helpman Heckscher Ohlin model

The analysis by Krugman and Helpman (1985) is based on the Melitz model with two countries and two factors of production. The consumption preferences of the countries have a CES form[83] and the production function is of the Cobb-Douglas type[84]. When variable exchange costs and fixed iceberg export costs are added to the model, there is market segmentation across countries.

The most productive firms will be able to maximize their profits by engaging in FDI, which reduces variable production costs. When foreign firms move abroad in the form of FDI, they grow the productivity of the host market. They are therefore more important than less productive local firms. They soar productivity in all countries and industries (see the Melitz model). This means that trade rises average productivity worldwide.

However, it is important to note that in each country FDI increases average productivity proportionately more in the comparatively favored industry, i.e., the sector that is relatively input-intensive[85]. Also, trade expansions firm size, and relatively more in sectors with comparative advantage. Finally, trade increases the rate of gross job destruction and gross job creation, which leads to turnover. But net job creation increases in comparatively advantaged sectors and decreases in other sectors. These are very interesting predictions that will undoubtedly influence the empirical analysis (Helpman and Krugman 1985).

If Krugman and Helpman's (1985) theory is correct, then China's economic growth would be due to the presence of an abundant production factor, i.e., cheap workers. Nevertheless, we have already explained that the rise in its development coincides perfectly with the increase in FDI within it. This suggests that FDI is also responsible for the country's economic growth. Let us analyze in-depth its implications in the next section.

3.3.2 Claro's model (2009)

The share of foreign-invested firms in China's total exports is the largest. According to Brandt and Lim's empirical calculations, they accounted for nearly 60% of China's exports. This share fell to 50% in 2013 but is still very high (Brandt and Lim 2020).

Also, it is noted that foreign firms account for almost 50% of China's manufacturing sector over the period 1997 to 2004 (Enright, 2016). This pushes domestic firms into capital-intensive sectors[86] (Claro, 2009). These implications indicate that factor endowments are surely not the only reasons for China's rising manufacturing exports and indirectly for its rapid economic

[83] $U = \sum_j x_j^{\frac{\theta-1}{\theta}}$ with θ>1. x is the quantity consumed

[84] In a simple Cobb Douglas function, $Y = AK^{\alpha} L^{\beta}$, when FDI increases, it also increases the physical capital represented by K. It then generates output growth, Y. Both technology and knowledge increase A.

[85] Sector for which the country is relatively well endowed

[86] This in line with classical economic theory via Ho and Rybcynscki's theory clearly explains this process. Trade liberalization increases exports of goods that use the abundant factor, namely labor, intensively in the case of China (R. Root, 1984).

growth. Certainly, the inflow of foreign capital (FDI) has contributed to China's expansion through the development of its comparative advantage in manufacturing.

The following section illustrated via an endowment-based model to what extent FDI can improve China's competitive edge in manufacturing. To carry out the explanation, we analyze China's trade structure with that which the country would have if it were isolated from FDI (Claro, 2009). According to Claro model (2009), foreign companies are more productive than local ones and they are attracted by low wages. Foreign firms invest in labor-intensive sectors. A fixed cost of foreign investment sets a minimum scale that foreign firms must reach for FDI to take place. It is possible to see the disappearance of non-productive national firms (due to for the factors of production). This lowers the rent-to-wage ratio and shifts domestic production to capital-intensive products (Appendix L). Claro's model corresponds to horizontal investments. The parent company moves its capital to China and benefits from the cheap local labor. It then produces the same good but in China. Claro also specifies that firms can also export production internationally referring to a horizontal FDI platform.

The model

The economist Sebastian Claro (2009) theorized China's economic growth by integrating the entry of foreign capital. To do this, he considers two countries: China, which is a technologically backward country, and a large foreign country that can be assimilated to the rest of the technologically advanced countries. The two countries can produce two goods: one capital-intensive and the other labor-intensive via a Cobb Douglas production function.

When international trade is possible, countries have an incentive to produce the factor-intensive good that they possess in abundance. This refers directly to HO's simple model of economic growth (Krugman et al., 2018).

The interest of Claro's work lies in the fact that a country can transfer capital to the other country. Thus, the foreign country can export physical capital (while keeping its higher local productivity) to China to benefit from its cheap and abundant labor. Of course, foreign firms can only access local labor. Foreign capital is not reserved for them. This allows less productive Chinese companies to survive. Less productive Chinese firms have easy access to the credit market. This seems to be consistent with low-productivity SOEs having better access to the credit market, or with firms whose industry is restricted to FDI (Zhao, 2001).

The fact that it is the technologically advanced country that sends its capital to China coincides with the oldest economic theories. Findlay (1978) creates a dynamic model that ensures that countries that are too technologically backward must converge to an equilibrium that ensures better technological productivity via technology transfer from foreign capital. This equilibrium respects and combines the assumptions of "relative backwardness" and "contagion".

> According to A. Gerschenkron (1962) and Thorstein Veble (1915), the greater the relative difference in development levels between a developing country and the already industrialized country, the faster the rate at which the lagging country can catch up.

> Technical innovation is most effectively copied when there is personal contact between those who already know the innovation and those who eventually adopt it. So foreign capital is sent to China, the meeting of multinationals and local Chinese companies ensures technology transfer. Arrow (1971) uses the metaphor of the spread of a disease.

To determine in which sector the two countries specialize as a result of FDI, Claro constructs the "minimum labor requirement of foreign firms" and the "residual supply of domestic labor."

> The foreign firm's minimum labor requirement describes how the foreign firm's domestic employment changes with domestic wages. When domestic wages are very low, the foreign firm has an incentive to use labor-intensive production technology. This means that it hires many workers and is large in size. Then, when domestic wages rise, the foreign firm has an incentive to use a capital-intensive production technique and shrinks. When the domestic wage increases, it increases the scale of production needed to offset the fixed cost. The foreign firm must produce more and hire workers (as a reminder, this is the minimum level of hiring in the foreign country and thus, of production).
>
> The residual supply of domestic labor describes the residual domestic labor available to foreign firms that transfer their capital to China based on the domestic wage. In fact, the residual domestic labor supply for foreign production is the difference between the total labor supply (assumed to be completely inelastic) and the employment of domestic firms. The labor available to foreign producers at any wage level increases with the number of total workers and decreases with the relative abundance of capital. The larger the country or the more abundant the labor force, the higher the residual employment level.

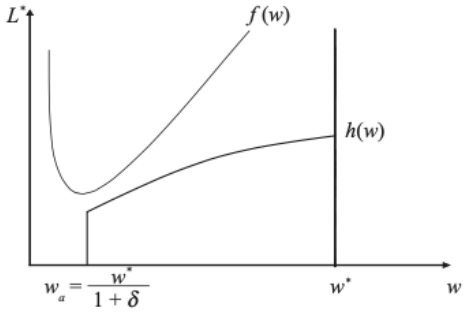
An equilibrium with FDI can be attained if we combine the residual labor supply with the minimum labor demand of foreign producers. There are two possible solutions, depending on whether the conditions for positive FDI are satisfied. w is assumed to be lower than the foreign country wage thus giving the incentive to practice FDI.

Solution A, there is no FDI integration and the domestic wage rate is offered by local firms and lower than wage abroad. The foreigner cannot reach the scale to compensate for the fixed cost (figure 7, left). It can be due to:

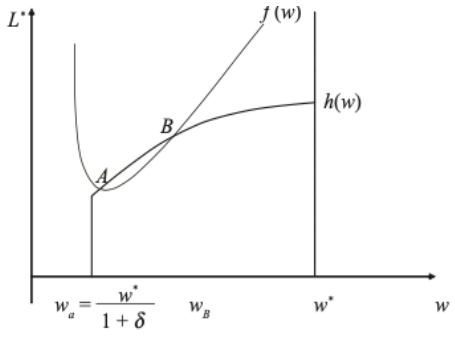
- the fixed cost of foreign investment is too high
- the national economy is small and/or too rich in capital
- the technological disadvantage of the national country is low, the local economy is too small or too intensive in domestic capital

Figure 7: Domestic Labor Market Equilibrium after FDI Liberalization

Solution A



Solution B



This scenario may explain why FDI never flowed into China in abundance until the 1990s. Uncertainty about China's legal and regulatory regime, as well as its relatively backward infrastructure and economy, limited foreign investment in the early years after economic opening. This is reflected in claro's model by an excessively high fixed cost. Indeed, we found in Figure 2: FDI Flows in China that between 1985 and 1992, the average number of FDI projects was 5,540, compared with 36,480 for the period 1992-2005 (in value terms, 6,120 versus 88,077 million USD) (Enright, 2017).

Point A is an unstable equilibrium. Wages offered by foreign firms and FDI are low. This situation is unstable since the slightest increase in wages tilts towards equilibrium B. Foreign firms are ready to expand to infinity, which leads domestic wages to w_B. So only point B is sustainable (figure 7, right). At point B, large amount of FDI enter because the northern offered salaries are higher. Thus, domestic firms specialize in the production of capital-intensive goods. All domestic capital is used in the production of capital-intensive goods in response to the increase in w/r.

As the foreign investment situation has become clearer, incentives have been put in place, new areas have been opened and investment has begun to take off in China. It would then have switched to point B by decreasing the fixed costs of FDI. Indeed, in 1990, FDI was equivalent to USD 3,487 million. They climbed to $40,715 million in 2000, $114,734 million in 2010 and $119,562 million in 2014[87] (Enright, 2017).

Claro's model helps to understand the role of FDI in advancing China's specialization in manufacturing and indirectly in China's development. At the same time, it explains the presence of foreign firms in the manufacturing market and Chinese firms in capital-intensive sectors (see Balassa advantage in section 3.1.2).

When the conditions for FDI are right, foreign firms penetrate the home country in the labor-intensive sector. They are motivated by the cheap labor but the fixed costs of FDI force them to produce a minimum output to be on the edge of profit generation (price is equal to marginal cost). FDI can provide higher wage levels than local firms. Thus, the entry of FDI raises the relative price of wages *w/r* and makes local firms uncompetitive. They move into the capital-

[87] China Statistical Yearbook (2020)

intensive sector. The less productive Chinese firms are still able to survive in this sector because of their privileged access to the capital market.

Incoming firms are in the manufacturing sector are highly productive, they trigger Ricardian features in China for the manufacturing sector. Ricardian features arise endogenously in response to international factor price differences and FDI liberalization. This mechanism can illustrate many characteristics of China's economy, like the sectoral bias of FIEs' market share, the high share of foreign firms in China's exports, and the low return to capital in productivity-backward domestic firms. This explains why China has a progressive approach to FDI. It fears that foreign firms will become too important and that the country will lose its sovereignty.

Interestingly, this effect is more likely and stronger in countries with a comparative advantage (prior to FDI liberalization) in labor-intensive goods. This is consistent with evidence for China that access to high-productivity foreign firms has pushed domestic firms into capital-intensive sectors. This is indeed what has been observed in the analysis of China's exports in determining the country's comparative advantage. Table 3: FDI in China, 2019, by invested industry shows that the majority of China's exports and comparative advantage are in manufacturing goods. However, we have also detected an advantage in capital-intensive sectors, more complex to create such as Chapter VI products - chemicals, pharmaceuticals, etc. (see Balassa advantage in section 3.1.2).

Several experts have considered whether FDI has been able to benefit China positively by passing on knowledge, technology and capital. These studies are continuing to be relevant since FDI is still banned in many industries. Some industries that may pose a threat to the political and economic environment are still closed to FDI. The latter are distributed in the Chinese investments catalog which lists the sectors desired in China. The objectives of foreign investment liberalization are revised in the five-year plans. Thus, China's approach to FDI liberalization is progressive. Over time more sectors are liberalized to investment.

3.4 Role of the state in the attraction of FDI and guide in comparative advantage.

Claro's model (2009) highlighted the role of fixed entry costs of FDI in labor-intensive goods can have on China's comparative advantage. It corresponds to the additional expenses that a foreign company has to bear on a new market (for example lack of knowledge of the market, installation of infrastructures, specific rules concerning FDI, etc.). According to the Claro's model, lowering fixed entry costs can ease foreign market access requirements in the profit generation process. A too high fixed cost needs a large scale of production to compensate for this cost (Claro, 2009).

We have emphasized that the Chinese government was strongly involved in the country's growth and the development of China's comparative advantage (via the "Joint Ventures Using Chinese and Foreign Investment Act" or the "Catalog" recently) (Kaiser et al., 2006). The following section will further explore the connection between the state and its participation in comparative advantage in manufacturing. We will see that governments can attract foreign investment and indirectly influence the evolution of the country's export specialization (Harding et al., 2019).

3.4.1 FDI promotion tools

The economists Harding, Javorcik, and Maggioni (2019) confirmed the link between the entry of sufficiently productive firms and the change in the host country's trade specialization. Thus, they find a statistically significant relationship between FDI promotion activities and exports of products (comparative advantage) belonging to the sectors targeted by national investment promotion agencies. It is possible for two reasons.

> First, they can transfer expertise, product information and production-related know-how to their foreign affiliates (Poelhekke, 2017). Multinationals can also reduce the costs of innovation and product upgrading of local suppliers (Zhao and Zhang, 2010). The domestic firms become more productive and it triggers comparative advantage.
>
> Second, the most productive compagnies that enter China take an important market share in the sector encouraged by FDI (manufacturing in the case of China). This generates a Pareto distribution in the sense that foreign firms are numerous next to domestic ones.

The study raises another important point. Government can select the sectors motivated by FDI thus indirectly, it can choose its comparative advantage (Harding et al., 2019). Moreover, attracting external resources such as technology and production process skills through the introduction of FDI is a faster and cheaper strategy to affect export specialization[88]. The worst thing that can happen is that no FDI arrives. These policies improve product quality or deepen capital (Harding et al., 2019).

In 80's, China declared that the automotive industry must be a pillar sector and must meet global quality criteria. Foreign firms can return from this sector provided they share their know-how and knowledge through the use of joint ventures (Thun 2006).

In the 80s, the nation was far from the technological frontier. For the automotive sector, the quality of the Chinese vehicles didn't correspond to the standard of Western countries. They were based on Soviet models from previous decades. China became in 2015, the first country manufactured the most cars[89], with the majority of vehicles being produced by Sino-foreign joint ventures.

The Volkswagen group took the opportunity to build the Volkswagen Santana, a low-cost automobile. The company's intention was to produce a low-cost car with cheap labor. Initially, the Santana was built in China as a small-scale test car by the Shanghai Tractor Automobile Corporation (STAC), the predecessor of SAIC Motor, since 1982. Volkswagen signed a contract with STAC, along with the China National Automotive Industry Corporation (CNAIC) and the Bank of China to form the Shanghai Volkswagen Automotive joint venture in October 1984.

[88] Others measures to promote FDI such as Human capital accumulation, improved regulatory systems, and the development of financial institutions are more costly (Marianni, 2020).

[89] Peters, K. (2021, August 27). Top 10: car producing countries, worldwide and EU. ACEA - European Automobile Manufacturers' Association. Retrieved March 25, 2022, from https://www.acea.auto/figure/top-10-car-producing-countries-worldwide-and-eu/

In 1995, the Santana sedan became a national product. Nearly 90% of the car's components were produced in China. Dazhong Automobile Company not only raised the level of Shanghai's automobile industry by 30 years, but also gave a great impetus to the technological transformation and renovation of many supporting and interest enterprises, such as machine-building, electrical, chemical, metallurgical, meter and instrument enterprises. Its technological effect has been extended to 126 enterprises and units nationwide (Deng, 1991).

This example shows that the Chinese government has helped FDI to build infrastructure and this has contributed to the development of productivity in manufacturing in China.

The Chinese state has greatly developed the quality of legal and contractual institutions, which has facilitated the establishment of foreign companies in China (Fang, 2017).

Specifically, in 1999, China enacted the "Contract Law of the People's Republic of China" at the 9th National People's Congress.

This law is promulgated with the purpose of protecting the legitimate rights and interests of the parties to contracts, maintaining the socio-economic order, and promoting socialist modernization.

This ensures China's attractiveness to foreign multinationals seeking to generate profits (Nunn, 2007; Acemoglu, Antràs, and Helpman, 2006).

4 Conclusion

This section provides a general conclusion of the literature on the role of FDI in the rise of China’s comparative advantage and growth. China’s economic trajectory from 1980 to the present is informed by a multitude of classical economic theories. Classical theory has much to offer in explaining China’s complex development. The need to model the involvement of firms in foreign activities has been crucial in the change in global trade observed in recent decades (Hanson, 2020).

The first key point is the description of China’s comparative advantage in manufacturing. The work confirms this advantage by testing exports in the manufacturing sector via an application of the Balassa index based on Ricardian economic theory. According to the growth models of Akamatsu (1937) and Acemoglu, Aghion and Zilibotti (2006), the development of this industry is a strategy to join the most advanced nations as soon as possible. China still seems to be very dependent on the manufacturing sector despite the many structural changes observed in recent years. In fact, the country is trying to move towards an economy specialized in more complex disciplines. Various elements explain why China seems to be stuck, for example, the high level of debt and, the insistent growth plans to unlock investment in infrastructure (Zilibotti, 2017).

China has gradually opened its market to foreign capital flows since the process of liberalizing its economy in the late 1970s. China has not been affected by the market economy, capitalism, and the considerable marketing techniques used in our Western society. China literally started from zero in terms of FDI liberalization (Fang and Song, 2018). Over the course of 50 years,

China's leaders have made a smooth transition from a controlled economy to a market economy with foreign investment[90]. The labor-intensive manufacturing industry was the first accessible to foreign investors (Fang and Song, 2018). The gradual approach to capital inflows allowed China to experiment with the consequences and implications of FDI on its economy. It could help where improvements needed to be made in this limited opening to FDI before adapting them in the broader opening to FDI (Enright, 2017).

Foreign companies have invested in China because of the abundance of cheap, low-skilled labor. Manufacturing is one of the main sectors that can enjoy this advantage (Hanson, 2020). Nevertheless, other elements had to be employed to push multinationals to engage in China. The historical series shows that after an initial decade (the 1980s), China's investment and exports remained very low. After an initial restructuring of the legal framework and the establishment of SEZs, foreign firms were eager to take advantage of China's very low manufacturing costs and productivity levels. A key moment was China's accession to the WTO, a negotiation that lasted several years, but which, in the end, put China in the spotlight.

Capturing the impact of FDI on China's growth is therefore a complex study. It is not a monolithic fact, but rather a complicated development linked to difficult decision-making and a complex perception of the country from abroad. The study should require examining the phenomenon in a global context, including culture, politics, etc. In particular, one of the main contributions to the settlement of foreign investors has been the provision of infrastructure: highways, ports, communication, etc. Of course, it is impossible to link all these elements in this work. But we must draw attention to the fact that our approach—FDI—is a reductive view of the situation.

The impact of FDI is the second key point of this work. Our analysis is done through theoretical models that explain in an analytical way the numerous econometric works. In particular, Claro's model in the context of a traditional endowment-based theory of trade helps to explain the impact of FDI (Claro, 2009). FDI liberalization would bring Ricardian components to the economy, generating a comparative advantage for the host. Since foreign firms are more technologically advanced than local firms, they are able to offer more attractive wages in the labor-intensive sector. They then monopolize part of the production in this sector. Local firms can maintain their privileged access to credit by specializing in the capital-intensive sector (Claro, 2009).

The third important point is Melitz's (2003) model and its derivatives that explain the motivation of China and foreign firms to use FDI. The models provide new insights into the structure of trade and FDI patterns, both within and across industries. Classical economic theory explains that individual firms have incentives to use FDI (Antràs and Helpman, 2004). Foreign firms play a key role in Chinese trade. They help China by giving it a comparative advantage in the manufacturing sector. They generate physical capital inflows and employment that are useful for output growth. They provide modernization of Chinese industries and enterprises, development of suppliers and distributors, investment in R&D and technology development, linkages and spillovers, improvement of business practices and

[90] Obviously, we are still far from a market economy like ours. In the historical introduction, it is well pointed out that China is still in a transition process in this respect. In particular, the working conditions are not good etc.

standards etc. China's development would not be of such magnitude without the intervention of FDI (Zhou et al., 2001).

The main motivations of foreign companies are the possibility to take advantage of export platforms and to conquer a new market. The location of this "giant factory" along the coastal area of the China Sea suggests that the strategy of multinationals was to use their FDI as a platform for re-export (horizontal platform FDI). Another illustration is Coca-Cola, which represents a horizontal FDI strategy that is a global company deciding to gain the Chinese domestic market at a time when it has a sufficient standard of living. The example shows the types of barriers such as lack of culture, valuation of the asset, etc. It is likely that this type of motivation will grow over time as the standard of living increases in China. It is possible that this will be the subject of a different study in ten or fifteen years when China reaches its technological frontier. These two incentives (the motivation of both parties) create a virtuous circle. Firms want to invest in China, so they will do everything to encourage China to receive FDI by ensuring technology transfer, etc.

In general, the diversities of heterogeneity explain the organization of international trade:

> In Meltiz's model, the productivity gap between firms elucidates the different choices of production and distribution organization (Melitz, 2003).
>
> In Claro's model, foreign firms have a productivity advantage over domestic firms, so that FDI liberalization encourages foreign investment flows in a low-wage economy (Claro, 2009).

Theoretical models allow us to dissect and capture the mechanisms of international trade. The functioning of trade remains complex. The use of these models simplifies the understanding. These models only guide economic thinking with simple mathematics. Empirical analyses are needed to confirm the intuitions made explicit. Theoretical models indicate what additional data should be collected to improve the empirical analysis. As this is still a very active area of research, we can expect to see much more theoretical and empirical work on these topics.

The next few paragraphs highlight that the future evolution of China's trade, capital flows, and growth are uncertain.

China has become a global economic superpower in recent decades. Not only is it the world's second largest economy and largest exporter by value, but it has also invested in infrastructure and overseas development at a breakneck pace as part of its Belt and Road initiative (Chatzky and McBride, 2020).

Beijing's development trajectory is interesting to study because it demonstrates that a country can take control of its own destiny. Some developing countries would like to adapt this model. However, it is unclear[91] whether it is applicable to other developing countries (Guennoun, 2019). Many African developing countries are partnering with China by borrowing capital from it. It is clear that they have an interest in doing so, as China offers more flexible credit terms

[91] Apart from low wages, developing countries do not have the same demographics, infrastructure, etc.

than Western countries. At the same time, they also hope to learn from Chinese development and benefit from its expertise. Many foreign direct investments are made in Africa from China. Nevertheless, China limits the transmission of its knowledge to locals in Africa making the process of imitating Chinese development impossible (Renard, 2011).

Moreover, countries risk losing some of their sovereignty when the repayment period is not respected. Indeed, the Chinese authorities include security clauses that take the form of confiscation of ports, roads, enterprises if the country does not pay its debt on time. This is what happened to Sri Lanka, which was unable to repay the debt to China used to build a port. As an alternative, China asked to take control of the port for 90 years. China then became sovereign over a territory located on one of the busiest shipping routes in the world (Wang, 2022).

Regarding China's economic growth, it should be noted that its expansion seems to slow down considerably in recent years. The coronavirus crisis (Liu and Oeking, 2020), the bursting of China's real estate bubble (Rajah and Leng, 2022), and financial market concerns about the country's massive debt load (Lee, 2022) are putting a damper on China's future economic development. It would be interesting to estimate the extent to which these elements will disrupt China's growth. The same is true for FDI, which will be in free fall by 2022. Political and regulatory problems are extremely prevalent in China. Many investors are exacerbated by Xi Jinping's strict Covid policies and his stance on Russia's war in Ukraine (Kynge, 2022). Multinationals such as Nike and Swedish fashion retailer H&M were among the brands targeted for boycott by Chinese consumers last year after making comments about forced labor in Xinjiang (Friedman and Paton, 2021).

According to the Rodium Group and MERICS, Chinese investment in Europe is unlikely to rebound in 2021 and the trend is downward for FDI to China (Kratz, Zenglein, Sebastian, and Witzke, 2022).

Given what has happened in China in recent years, we can expect to see more work on this topic, with a wide range of analyses of whether the decline in growth is related to the decline in FDI, which direction China is going in terms of growth, etc.

5 Bibliography

- Acemoglu, D., Aghion, P., & Zilibotti, F. (2006). Distance to frontier, selection, and economic growth. *Journal of the European Economic association*, *4*(1), 37-74.
- Bagwell, K., & Staiger, R. W. (2004). *The economics of the world trading system*. MIT press.
- Balassa, B. (1965). Trade liberalisation and "revealed" comparative advantage. *The manchester school*, *33*(2), 99-123.
- Blomström, M., Kokko, A., & Zejan, M. (1994). Host country competition, labor skills, and technology transfer by multinationals. *Review of World Economics*, *130*(3), 521-533.
- Blustein, P. (2019). *Schism: China, America, and the fracturing of the global trading system*. CIGI.
- Braconier, H., Ekholm, K., & Knarvik, K. H. M. (2001). In search of FDI-transmitted R&D spillovers: A study based on Swedish data. *Review of World Economics*, *137*(4), 644-665.
- Brandt, L., & Lim, K. (2020). *Accounting for Chinese Exports*. University of Toronto, Department of Economics.
- Brandt, L., Litwack, J., Mileva, E., Wang, L., Zhang, Y., & Zhao, L. (2020). China's Productivity Slowdown and Future Growth Potential.
- Ceglowski, J., & Golub, S. S. (2012). Does China still have a labor cost advantage? *Global Economy Journal*, *12*(3), 1850270.
- Chen, S., & Ravallion, M. (2021). Reconciling the conflicting narratives on poverty in China. *Journal of Development Economics*, *153*, 102711.
- Cheng, C. (1971). *The Economy of Communist China, 1949–1969* (p. 89). University of Michigan Press.
- Cheremukhin, A., Golosov, M., Guriev, S., & Tsyvinski, A. (2015). The economy of People's Republic of China from 1953 (No. w21397). *National Bureau of Economic Research*.
- Claro, S. (2009). FDI liberalization as a source of comparative advantage in China. *Review of Development Economics*, *13*(4), 740-753.
- Cucchisi, J. L. (2002). The Causes and Effects of the Chinese Civil War, 1927-1949.
- Eaton, J., & Kortum, S. (2002). Technology, geography, and trade. Econometrica, 70(5), 1741-1779.
- Enright, M. J. (2016). *Developing China: The remarkable impact of foreign direct investment*. Routledge.
- Fan, G. (2017). *Le système économique chinois face à ses défis*. Editions Nuvis.
- Fan, H., He, S., & Kwan, Y. K. (2019). Foreign direct investment and productivity spillovers: is China different? Applied Economics Letters, 26(20), 1675-1682.
- Feenstra, R.C. (2004) Advanced International Trade: Theory and Evidence. Princeton University Press, Princeton.
- Findlay, R. (1978). Relative backwardness, direct foreign investment, and the transfer of technology: a simple dynamic model. The Quarterly Journal of Economics, 92(1), 1-16.
- Freije-Rodriguez, S., Hofman, B., & Johnston, L. A. (2019). China's Economic Reforms, Poverty Reduction, and the Role of the World Bank.
- Garnaut, R., Song, L., & Fang, C. (2018). *China's 40 years of reform and development: 1978–2018*. ANU Press.
- Gerschenkron, A. (1962). Economic Backwardness in Historical Perspective: A Book of Essays. Cambridge, Mass.: The Belknap Press of Harvard University Press.

- Grossman, G. M., Helpman, E., & Szeidl, A. (2006). Optimal integration strategies for the multinational firm. *Journal of international economics*, *70*(1), 216-238.
- Grossman, G., & Helpman, E. (1991). Innovation and growth in the global economy Cambridge. *Mass. and London*.
- Guennoun, I. (2019). Can African Countries Learn from the Chinese Development Model?
- Hanson, G. H. (2021). *Who Will Fill China's Shoes? The Global Evolution of Labor-Intensive Manufacturing* (No. w28313). National Bureau of Economic Research.
- Harding, T., Javorcik, B. S., & Maggioni, D. (2019). FDI Promotion and Comparative Advantage.
- Hausmann, R., & Rodrik, D. (2003). Economic development as self-discovery. *Journal of development Economics*, *72*(2), 603-633.
- Helpman, E. (2006). Trade, FDI, and the Organization of Firms. *Journal of economic literature*, *44*(3), 589-630.
- Helpman, E., Melitz, M. J., & Yeaple, S. R. (2004). Export versus FDI with heterogeneous firms. *American economic review*, *94*(1), 300-316.
- Hood, S. J. (1996). Political change in Taiwan: The rise of Kuomintang factions. *Asian Survey*, *36*(5), 468-482.
- Huasheng, S. (1991). Urban development in Shenzhen SEZ. *Habitat International*, *15*(3), 25-31.
- Ito, T. (2013). Export-platform foreign direct investment: Theory and evidence. *The World Economy*, *36*(5), 563-581.
- Kaiser, S., Kirby, D. A., & Fan, Y. (1996). Foreign direct investment in China: An examination of the literature. *Asia Pacific Business Review*, *2*(3), 44-65.
- Kasahara, S. (2004). The Flying Geese Paradigm: A critical study of its application to East Asian regional development.
- Kasahara, S. (2004). The Flying Geese Paradigm: A critical study of its application to East Asian regional development.
- Kratz, A., Zenglein, M. J., & Sebastian, G. (2021). Chinese FDI in Europe: 2020 update. *Mercator Institute for China Studies. Available at: https://merics. org/en/report/chinese-fdi-europe-2020-update.*
- Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2018). International trade: Theory and Policy (11th global ed.). *Harlow: Pearson*.
- Leamer, E. E. (1995). The Heckscher-Ohlin model in theory and practice.
- Li, X. (2021). The Durability of China's Lawmaking Process under Xi Jinping: A Tale of Two Foreign Investment Laws. *Issues & Studies*, *57*(01), 2150001.
- Lichtenstein, P. M. (2000). Competing perspectives on the liberalization of China's foreign trade and investment regime. *Journal of Economic Issues*, *34*(4), 873-889.
- Lin, J., Ping, Y., & Yong, D. (1999). Economic impact of the Coca-Cola system on China. *China Centre for Economic Research working paper series*, 12-23.
- Liu, M. (2017). The New Chinese Foreign Investment Law and Its Implication on Foreign Inestors. *Nw. J. Int'l L. & Bus.*, *38*, 285.
- Managi, S., & Kaneko, S. (2006). Economic growth and the environment in China: an empirical analysis of productivity. *International Journal of Global Environmental Issues*, *6*(1), 89-133.
- McMahon, D. (2018). China's Great Wall of Debt: Shadow Banks, Ghost Cities, Massive Loans and the End of the Chinese Miracle. Hachette UK.

- Mok, V., Dai, X., & Yeung, G. (2002). An internalization approach to joint ventures: Coca-Cola in China. *Asia Pacific Business Review*, *9*(1), 39-58.
- Nicita, A., & Razo, C. (2021). *China: The rise of a trade titan*. UNCTAD. https://unctad.org/news/china-rise-trade-titan
- Nunn, N. (2007). Relationship-specificity, incomplete contracts, and the pattern of trade. *The Quarterly Journal of Economics*, *122*(2), 569-600.
- OECD (2017). The Next Production Revolution: Implications for Governments and Business, *OECD Publishing, Paris*.
- PWC (2020) China welcomes investors with new foreign investment law.
- Renard, M. F. (2011). China's Trade and FDI in Africa. *China and Africa: An emerging partnership for development*, *25*, 1-38.
- Robert C. Feenstra and Alan M. Taylor (2014). International trade third edition. *Worth Publishers, In*
- Robinson, J. (1968). The Cultural Revolution in China. *International Affairs (Royal Institute of International Affairs 1944-)*, *44*(2), 214-227.
- Sabatier, P. A. (1986). Top-down and bottom-up approaches to implementation research: a critical analysis and suggested synthesis. *Journal of public policy*, *6*(1), 21-48.
- Samborskyi, O., Isai, O., Hnatenko, I., Parkhomenko, O., Rubezhanska, V., & Yershova, O. (2020). Modeling of foreign direct investment impact on economic growth in a free market. Accounting, 6(5), 705-712.
- Samuelson, P. A., & Solow, R. M. (1956). A complete capital model involving heterogeneous capital goods. *The Quarterly Journal of Economics*, *70*(4), 537-562.
- Solow, R. M. (1956). A contribution to the theory of economic growth. The quarterly journal of economics, 70(1), 65-94.
- Strauss, V., & Southerl, D. (1994). How Many Died? New Evidence Suggests Far Higher Numbers for the Victims of Mao Zedong's Era. *The Washington Post*, *17*.
- Tintelnot, F. (2017). Global production with export platforms. *The Quarterly Journal of Economics*, *132*(1), 157-209.
- Van Ostende, M. (2020). *Insights Into China's Industrial Policy Via The "Catalogue For Industry Restructuring."* Monarch Executive Institute. https://www.umonarch-mei.ch/insights-into-chinas-industrial-policy-via-the-catalogue-for-industry-restructuring/china/
- Vogel, E. F. (2011). *Deng Xiaoping and the transformation of China* (Vol. 10). Cambridge, MA: Belknap Press of Harvard University Press.
- Waldkirch, A. (2011). Comparative advantage FDI? A host country perspective. *Review of World Economics*, *147*(3), 485-505.
- Wei, S. J., Xie, Z., & Zhang, X. (2017). From" Made in China" to" Innovated in China": Necessity, prospect, and challenges. *Journal of Economic Perspectives*, *31*(1), 49-70.
- Wu, H. X. (2014, January). China's growth and productivity performance debate revisited. In The Conference Board Economics Working Papers (No. 14-01).
- Yang, D. L. (2007). Comment: China's Long March to Freedom. *Journal of Democracy*, *18*(3), 58-64.
- Zejan, M., Blomstrom, M., & Lipsey, R. E. (1994). *What Explains Developing Country Growth?* National Bureau of Economic Research.
- Zeng, S., & Zhou, Y. (2021). Foreign Direct Investment's Impact on China's Economic Growth, Technological Innovation and Pollution. *International Journal of Environmental Research and Public Health*, *18*(6), 2839.

- Zhang, K. H. (2001). What attracts foreign multinational corporations to China? *Contemporary Economic Policy*, *19*(3), 336-346.
- Zhao, Z., & Zhang, K. H. (2010). FDI and industrial productivity in China: Evidence from panel data in 2001–06. *Review of Development Economics*, *14*(3), 656-665.
- Zhu, J. (1994). Changing land policy and its impact on local growth: the experience of the Shenzhen Special Economic Zone, China, in the 1980s. *Urban Studies*, *31*(10), 1611-1623.
- Zilibotti, F. (2017). Growing and slowing down like China. *Journal of the European* Economic Association, 15(5), 943-988.