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# Foreign direct investment in Singapore: the case of Pharmaceutical & Biological Products sector

STANISŁAW BUDZEŃ

*Global Economic Interdependence Department, World Economy Research Institute, Warsaw School of Economics (SGH),*

*al. Niepodległości 162, 02-554 Warszawa, Poland*

*stan.budzen@gmail.com*

[orcid.org/0009-0001-7202-8059](https://orcid.org/0009-0001-7202-8059)

## Abstract

**Motivation:** The motivation for the study was the fact that despite of being a small country Singapore is one of the largest recipients of foreign direct investment (FDI) in the world. It is also the location of the largest multinational enterprises (MNEs) in the Pharmaceutical & Biological Products sector.

**Aim:** The objective of this article is to identify and assess the FDI scale and structure in Singapore in the years 1990–2022, with a focus on the Pharmaceuticals & Biological Products sector; and to show Singapore as an FDI location against the background of Asia and the world.

**Materials and methods:** The article uses secondary data from the World Investment Report published annually by the United Nations Conference on Trade and Development (UNCTAD) and statistics published by the Department of Statistics Singapore (DOS). The study uses statistical and economic analysis, comparison, analogies, synthesis, and the method of measuring and aggregating data.

**Results:** Singapore is one of the largest recipients of FDI not only in Asia, but also in the world. In 2022, Singapore's share of FDI inflows to Asia was 21.3%, and its share of global FDI inflows was 10.9%. From 1998 to 2007, FDI stock in the Pharmaceuticals & Biological Products sector accounted for a significant share of total FDI stock in Singapore and the manufacturing industry, reaching over 40% in 2007. Since then, the share of the analyzed sector has been seeing a downfall. At the end of 2022, the share of FDI in analyzed sector was 4.9% of the FDI in the manufacturing industry and 0.6% of the total FDI.

**Keywords:** *foreign direct investment; Singapore; multinational enterprises*

**JEL:** *F21; F23*

## 1. Introduction

The second half of the twentieth century and the two decades of the present century can be considered as a time of internationalization of enterprises as well as globalization of the world economy. One of the most critical factors that led to these processes was

capital flows in the form of foreign direct investments (FDI). FDI catalysed development processes in the economies receiving capital. One of the states that were able to create a suitable ecosystem for foreign investment and attract the largest multinational enterprises (MNEs) was Singapore, where modern economic history began with its independence

in 1965. Today, it is one of the world's most prosperous countries, with strong international trade and investment links. Singapore is one of the most advanced and wealthiest countries in Asia. This small city-state with a length measuring a marathon distance of 42 km is known as an Asian Tiger due to its rapid economic growth in the 20th century. The Lion City (Singapore's colloquial name) is the fourth largest financial center in the world, following London, New York and Tokyo, and is currently the largest transshipment port. Based on the strict policies, abundance of different prohibitions and whipping and death penalties, Singapore is also called the Fine City. However, such penalties and prohibitions are commonly accepted in a society that credits it to a low crime rate. Singapore used to import all raw materials and about 50% of its drinking water from the neighboring Malaysia. However, due to the acquisition of modern technology by Singapore, sides have changed, as Malaysia has now become the importer. The government of Singapore aims to make the country utterly independent of external water supplies by 2060 (PAIH, 2017).

## 2. Foreign direct investment and multinational enterprises: theoretical issues

Foreign direct investment is one of the ways international capital flows take place. This is a category of cross-border investments made by a resident of one economy (the direct investor) to establish a lasting interest in an entity (the direct investment enterprise) that is resident in an economy other than the direct investor's economy. The direct investor's motivation is a long-term strategic relationship with the direct investment enterprise to ensure a major influence on the business activity of a local affiliate. The abiding interest is proved when the direct investor owns at least 10% of the voting power of the direct investment enterprise (OECD, 2008). Besides the OECD benchmark definition indicated above, there are several slightly differing definitions in the literature. Authors of FDI definitions

point to: long-term interest in the branch/subsidiary in another country, three levels of transferred capital: financial capital, management experience and technical knowledge, and entrepreneurship and, in addition, control over the subsidiary (Dunning, 1979; Krugman & Obstfeld, 2002; Moosa, 2002; Weresa, 2002; Buckley, 2002; Ietto-Gillies, 2005; Dunning & Lundan, 2008).

The driving force in international capital flows in the form of FDI are MNEs. According to a commonly used and widely accepted definition in academic and business circle, "a multinational (or transnational) enterprise engages in foreign direct investment and owns, or in some way, controls value-added activities in more than one country" (Dunning & Lundan, 2008). Modern multinational enterprises have developed and grown in the decades following World War II. However, its lineage can be traced back to much earlier. For example, multinational enterprises served the Medici bank in fifteenth-century Florence (Ietto-Gillies, 2005). Some scholars go back even earlier and believe that the roots of today's MNEs are in the history of the colonial expansion of the ancient Phoenicians and Romans. According to Moore and David Lewis, "the businesses operated by the ancient Assyrian colonists constituted the first genuine multinational enterprises in recorded history" (Wilkins, 2005). Sixteenth- and seventeenth-century trading companies, i.e., the British and Dutch East India Trading Company, the Muscovy Company, the Hudson's Bay Company, and the Royal African Company, are considered the first MNEs (OECD, 2018; Carlos & Nicholas, 1988). Established in the seventeenth and eighteenth centuries, companies such as the African Company and the Hudson Bay Company are considered forerunners of modern MNEs. Governments chartered these companies to carry out trading business operations in colonies, which were the part of the country whose government had granted the charter, which is the main difference between such companies and the modern-day MNEs (Ietto-Gillies, 2005). Nowadays, multinational enterprises are an essential element of the global economy.

By undertaking FDI, MNEs have a significant impact on changing the competitiveness, not only of individual countries, but also of specific sectors of the economy. It is therefore important to identify the scale and structure of FDI in individual countries around the world.

### 3. Materials and methods

The objective of this article is to identify and assess the FDI scale and structure in Singapore in the years 1990–2022, with a focus on the pharmaceutical sector, and to show Singapore as an FDI location against the background of Asia and the world. The objective is addressed based on the collected and compiled information from various secondary sources, such as relevant scientific literature, the World Investment Report published annually by the United Nations Conference on Trade and Development (UNCTAD) and statistical data published by the Singapore Department of Statistics (DOS). The study uses statistical and economic analysis, comparison, analogies, synthesis, and the method of measuring and aggregating data.

### 4. Results

#### 4.1. FDI in Singapore

Since the 1960s, Singapore has evolved from the economy that was mainly associated with the production of consumer goods in labor-intensive industries to the economy associated with the production of high-value-added industries and the provision of comprehensive services. The country's investment policy has been focused on attracting FDI to industries with high-added value operating in clusters, including biomedical, logistics and research and development.

Nowadays, Singapore is one of the largest recipients of foreign direct investment in Asia.

In 2022, Singapore was the third largest recipient of foreign direct investment, after the United States and China.

Since 1990, FDI inflows to Singapore accounted for more than 10% of FDI inflows to Asia, except for the period of 2005–2009. In 2022, Singapore's share of FDI inflows to Asia was found to be 21.3%. It should also be noted that Singapore has a significant share in FDI inflows worldwide as it amounted to 10.9% at the end of 2022 (Table 1).

In 1990, Singapore's FDI inflows reached US\$5,575 million. The highest value of FDI inflows was recorded in 2022 at US\$141,211 million and it was higher by over 7% compared to the previous year (Chart 1).

FDI inward stock in Singapore has grown steadily since 1990. At the end of 2022, their value amounted to US\$2,368 billion and was higher by US\$198,858 million, compared to the value at the end of 2021. Singapore's inward FDI stock throughout the analyzed period increased by more 77 times (Chart 2).

At the end of 2022, there were 299.8 thousand enterprises in Singapore. Considering enterprise ownership, it should be noted that 79.9% were majority local-owned, while 20.1% were majority foreign-owned<sup>1</sup>. Since 2010, the number of enterprises with most of the foreign capital increased by 25.8 thousand, or 2.8%. In 2022, 3.63 million workers were employed in enterprises based in Singapore, out of which 32% worked in majority foreign-owned enterprises. Compared to 2010, employment at majority foreign-owned entities increased by 0.32 million. At the end of 2022, the nominal value added<sup>2</sup>, as generated by enterprises operating in Singapore, amounted to S\$591.7 billion. Of this amount, 68.6% accounted for foreign-owned enterprises (Statistics Singapore, 2023).

Based on the information shown above, it can be concluded that enterprises with foreign capital play a significant role in Singapore's economy.

<sup>1</sup> Majority local-owned enterprises refer to enterprises with at least 50% local equity. Majority foreign-owned enterprises refer to enterprises with less than 50% local equity.

<sup>2</sup> Value added of enterprises refers to Gross Value Added (GVA) less ownership of dwellings.

#### 4.2. Singapore pharmaceutical market and the FDI

The Pharmaceuticals & Biological Products sector is currently one of the most significant growth areas in Singapore. With the right policies, extensive and modern infrastructure, convenient location, and ongoing public investment in research & development (R&D), the country has fostered a highly desirable ecosystem of advantages for foreign investors from the pharmaceutical industry.

Singapore's government began its efforts to stimulate the growth of the pharmaceutical market in 2000 when the authorities created the Biomedical Sciences (BMS) initiative to bring together healthcare services, biomedicine, medical technology and pharmaceuticals into a single development hub and boost the growth of those sectors. With government-led investment in R&D and an increased inflow of foreign investments with the strong support of the policies of the BMS initiative, Singapore has become a place for cutting-edge drug research, along with production and distribution. Initial activities under the BMS initiative were refined, and subsequent efforts led to expansion of such activities. In the early 2000s, the government finalized the first part of the work to establish the Biopolis research center. This was a milestone in the creation of a world-class pharmaceutical development center in the world. The Biopolis Hub allowed for the intensification of all research activities performed by scientists and companies in one place, increasing the possibility of the production of more effective medicines (Realstaffing, 2021). Since the completion of the first phase of the Biopolis research center, the Singapore government has continuously revamped and updated its strategy to make the biomedical and technology ecosystem even more attractive. As part of this effort, five consecutive phases of the Biopolis expansion have been completed. The last phase was successfully finalized in the second decade of the 21st century, with the aim of making the infrastructure more attractive and increasing development opportunities for biotechnology startups (World Scientific Publishing, 2015).

The main factors that significantly increased Singapore's attractiveness as a biotech hub were access to modern and environmentally friendly research and office infrastructure, facilitation of rapid growth of know-how among R&D cadres within a platform for the free exchange of ideas and thoughts among scientists, and more lenient policies towards biotech companies' research and experimentation efforts.

As a result of the government's efforts outlined above, Singapore now produces four of the world's top ten most purchased prescription drugs. The pharmaceutical sector alone contributes 5% to Singapore's total GDP and provides jobs for more than 7,900 highly skilled workers. Currently, 30 major pharmaceutical companies have invested in Singapore, choosing to establish manufacturing and R&D units in the country due to its pharmaceutical-friendly policies and location, which remains unparalleled in the rest of Asia. The city-state is also one of the few countries in the world with more exports than imports from its pharmaceutical trade (Yee, 2023).

From 1998 to 2005, FDI stock in Singapore's Pharmaceuticals & Biological Products sector grew from S\$10 billion to S\$39 billion. A meaningful change in value occurred in 2014 when FDI stock in the Pharmaceutical Products & Biological Products sector reached S\$15 billion, surging to S\$30 billion in 2018. At the end of the analyzed period, FDI stock amounted to S\$16 billion (Chart 3).

From 1998 to 2007, FDI stock in the Pharmaceuticals & Biological Products sector accounted for a significant share of total FDI stock in Singapore and the Manufacturing industry, reaching over 40% in 2007. Since then, the share of the analyzed sector has been seeing a downfall. At the end of the analyzed period, the share of FDI in the Pharmaceuticals & Biological Products sector was 4.9% of the FDI in the Manufacturing industry and 0.6% of the total FDI in Singapore, as shown in chart 4. This was due to the increase in the dynamics of FDI inflows in other sectors of the economy, as Singapore's policies were geared towards attracting foreign investors and stimulate eco-

conomic development. Consequently, Singapore has become an attractive location for finance and technology companies from across the globe.

## 5. Conclusion

Singapore can be considered one of the fastest-growing countries in South-East Asia. The city-state acquired independence from the UK in 1965 and began its development from an economically low base. Today, it is a hub of innovation and development in Asia and enjoys a high standard of living with a broad spectrum of development possibilities offered for the city's residents. Despite its lack of natural resources and small size, Singapore has become a significant hub for foreign investment in the region due to appropriate government policies and efficient use of its geographical location. In 2022, Singapore was the third largest FDI recipient in the world behind the United States and China. Since the beginning of 1990, FDI inward stock in Singapore has increased more than 77 times. The number of majority foreign-owned enterprises in the country is also increasing every year, which is boosting employment in these entities. Singapore is an attractive destination for foreign investors in the pharmaceutical sector, as evidenced by the scale of investment.

Given the ever-increasing dynamics of FDI inflows to Singapore, it can be expected that the country's position on the international stage will be further strengthened.

Considering the findings presented in this article, several promising avenues for future research merit exploration. First, further studies should examine FDI in other sectors of the Singapore economy. Second, it would be interesting to compare the FDI inflow to the pharmaceutical industry in other highly developed Asian countries (e.g. Hong Kong), indicating the differences in the motives for choosing these countries.

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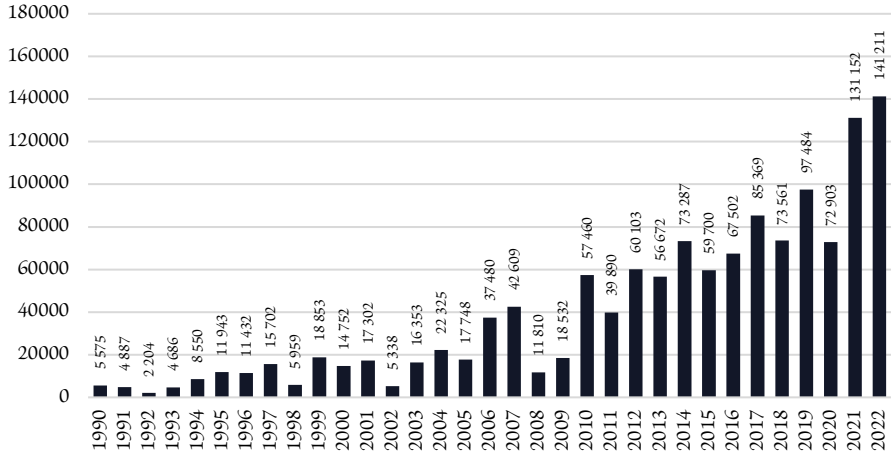
Appendix

**Table 1.**  
FDI inflows to Singapore compared to inflows in the word and Asia (in the years 1990–2022,US\$million, %)

	1990–1994	1995–1999	2000–2004	2005–2009
Singapore	25,902.7	63,888.5	76,069.9	128,179.1
Asia	202,405.5	482,999.2	648,322.2	1,580,610.3
World	1,001,662.1	2,978,344.8	3,968,235.2	6,998,012.8
Singapore share in Asia (%)	12.8	13.2	11.7	8.1
Singapore share in Word (%)	2.6	2.1	1.9	1.8
	2010–2014	2015–2019	2021	2022
Singapore	287,411.7	389,939.9	131,151.5	141,211.0
Asia	2,172,256.6	2,518,869.4	662,137.0	661,807.1
World	7,331,658.8	8,670,602.6	1,478,137.1	1,294,738.2
Singapore share in Asia (%)	13.2	15.5	19.8	21.3
Singapore share in Word (%)	3.9	4.5	8.9	10.9

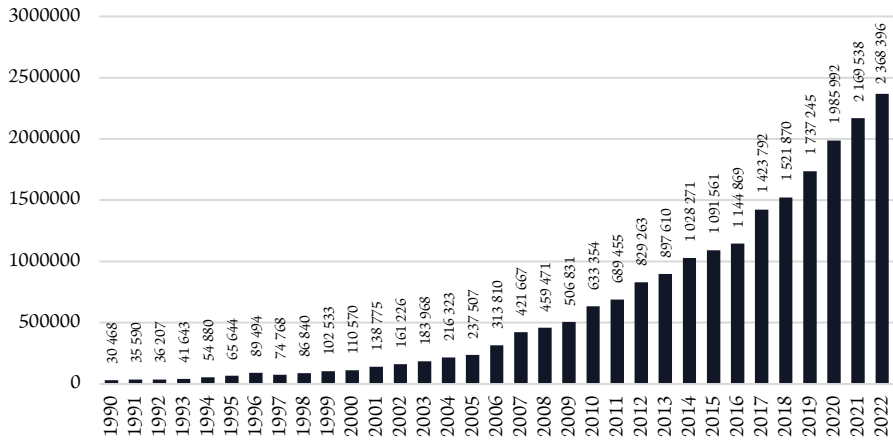
Source: Own preparation based on UNCTAD (2023).

**Chart 1.**  
Singapore FDI inflows (in the years 1990–2022, US\$million)



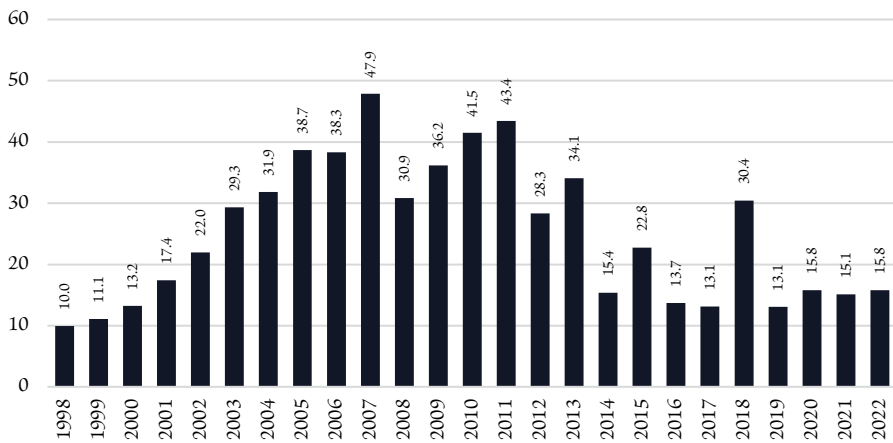
Source: Own preparation based on UNCTAD (2023).

Chart 2.  
Singapore FDI inward stock (in the years 1990–2022, US\$million)



Source: Own preparation based on UNCTAD (2023).

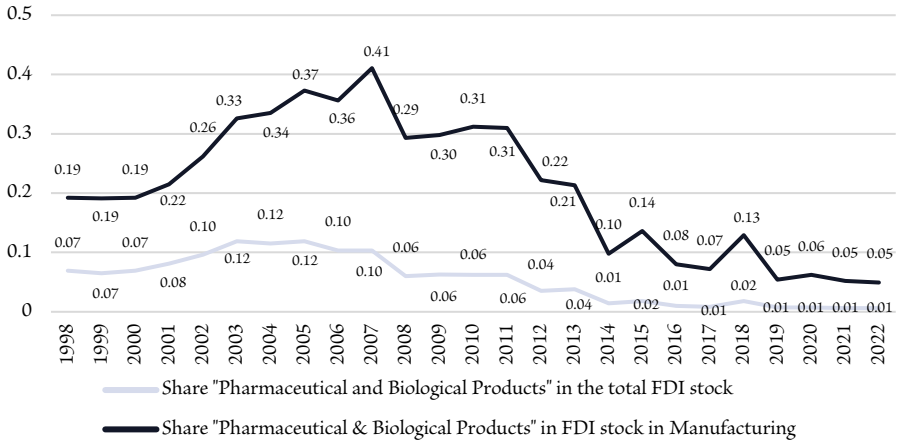
Chart 3.  
Singapore FDI stock in the Pharmaceutical & Biological Products sector (in the years 1998–2022, S\$billion)



Source: Own preparation based on Statistics Singapore (2023).



Chart 4.  
 Shares of the Pharmaceutical & Biological Products sector in the total FDI stock and in the FDI stock in the Manufacturing industry (in the years 1998–2022, %)



Source: Author's elaboration based on Statistics Singapore (2023).

