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Kaj bi v mraku,
kaj bi v samoti!

TABLE OF CONTENTS

List of figures

List of graphs

List of tables

List of abbreviations

(UNCTAD) TRAINS	(United Nations Conference on Trade and Development) Trade Analysis Information System
CNY	Chiense Yuan
DSM	Decision-support Model
EU	European Union
EUR	Euro
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GDP	Gross Domestic Product
GNI	Gross National Income
GWh	Giga-watt hour
HS	Harmonised System
IDSB	Industrial Demand-Supply Balance
IMSeg	International market segmentation
IMSel	International market selection
IP	Intellectual Property
IPR	Intellectual property protection
ISIC	International Standard Industrial Classification
JPY	Japanese Yen
NTB	Non-tariff barriers
NTM	Non-tariff measure
OMOI	Overall Market Opportunity Index
OOP	Out-of-pocket
R&D	Research and development
RTA	Regional Trade Agreement
SPS	Sanitary and Phytosanitary
TBT	Technical Barrier to Trade
TRIPS	Agreement on Trade-Related Aspects of Intellectual Property Rights
UN COMTRADE	United Nations

UNCTAD	United Nations Conference on Trade and Development
UNIDO	United Nationals Industrial Development Organization
USD	American Dollar
VAT	Value-added Tax
WTO	World Trade Organization

1 INTRODUCTION

1.1 RESEARCH QUESTION AND AIM

The pharmaceutical industry is growing not only globally, but also in Slovenia. However, due to Slovenia's size, the market for pharmaceutical products is limited, leading Slovenian pharmaceutical companies to focus on exports (Vrtačnik, 2020). Pharmaceuticals are Slovenia's most important export, accounting for 20.72 percent of all exports in 2021 (Statistical Office of the Republic of Slovenia, 2023b). Furthermore, the pharmaceutical sector has been identified as a priority sector for export in Slovenia's national strategy to promote internationalization, along with Japan and China, which were identified as a market of opportunity and a priority market, respectively (Government of the republic of Slovenia, 2021). However, there exists a lack of research on Slovenian pharmaceutical exports, let alone Slovenian pharmaceutical exports to China and Japan, and there is yet a study to be made comparing the two markets. Since the two markets and the pharmaceutical industry are clearly priorities the Slovenian foreign trade policy, especially in terms of export diversification and internationalization of the Slovenian economy, this thesis aims to compare the two markets' attractiveness for exports of Slovenian pharmaceutical products. To this end, the research question that this thesis aims to answer is:

What are the opportunities and challenges for Slovenia in exporting pharmaceuticals to China and Japan?

1.2 RELEVANCE OF THE RQ

1.2.1 Identifying priority markets

In promoting export to foreign markets, governments and export promotion agencies have limited resources which have to be distributed in efforts of export market promotion. To this end, they have to filter through several potential markets and choose the most prospective ones, which will then become the focus of export promotion strategies for the national economy. In Slovenia, export promotion is overseen by SPIRIT, Slovenia Business Development Agency, which has annual budget of EUR 53.45 million in 2023 (SPIRIT, 2021, p. 15). Slovenia's government has already determined priority markets to be explored, with two of them being China and Japan. Priority markets were divided into 'priority markets' and 'markets of opportunity'. Priority markets are identified as the

main focus of the export promotion programme, while markets of opportunity are identified as those where Slovenia will try to diversify its exports to. Diversification to so-called markets of opportunity is identified as "of utmost importance, but the approach must be systematic and targeted at markets and sectors in which competitive advantages can be optimally exploited. This is especially important for small countries like Slovenia, which must allocate their resources efficiently and build on competitive advantages in central markets in the race with global giants" (Government of the Republic of Slovenia, 2021, p. 52). The selection of these markets was based on a two-stage approach that involves cross-matching the current volume of exports in the selected sectors and their future growth potential. Firstly, markets were evaluated according to the current volume of exports and year-on-year growth. Secondly, the selected markets were assessed based on potential growth and current business ties with the analysed countries, based on forecast GDP and import growth, geographical proximity and current business and political ties (Government of the Republic of Slovenia, 2021, pp. 51, 52). Within this classification, China was determined to be a priority market, while Japan was determined to be a market of opportunity (*ibid.*). Furthermore, priority sectors were selected based on a multi-level approach that included a series of quantitative and qualitative analyses, with the pharmaceutical sector being identified as one of the priorities (Government of the Republic of Slovenia, 2021, p. 49). The first step was the calculation of the gap in the added value of Slovenian exports by sector compared to the achieved added value of the exports of a group of reference countries. Secondly, the sectors with the biggest differences were evaluated in terms of their contribution to the pillars of the Slovenian economic strategy. Lastly, sectors were evaluated according to the current weight of the sector in the structure of the national economy and its potential for future growth according to relevant industry reports. The summation of the results produced a longer list of sectors, which was then aligned with key stakeholders (Government of the Republic of Slovenia, 2021, pp. 48, 49). The medicine and pharmacy sector were determined to be one of the priority sectors, with the areas of biopharmaceuticals and generics being identified as ones where "Slovenia has extraordinary advantages on a global scale" (Government of the Republic of Slovenia, 2021, p. 49).

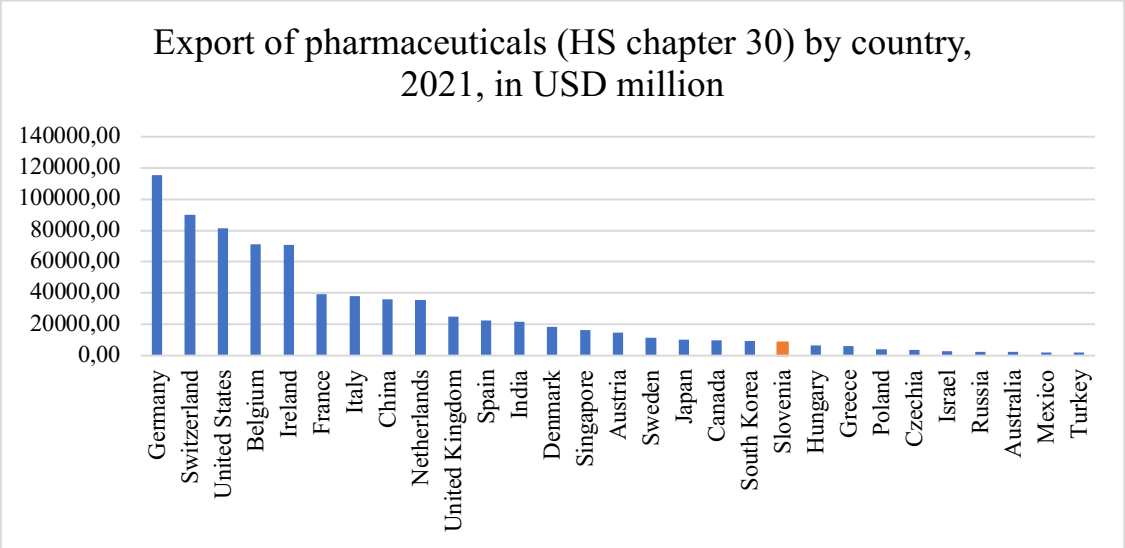
However, after the general identification of priority markets and priority sectors, the market-sector analysis should be concluded in order to compare the attractiveness of the potential markets. This thesis will compare the attractiveness of the pharmaceutical

markets in China and Japan for Slovenian exports since 1) pharmaceuticals are Slovenia's largest export, and since 2) exports of pharmaceuticals to Japan and China are increasing, but the two markets are still not on top of the priority markets for export of pharmaceuticals. They represent an opportunity for export promotion and warrant further research in order to determine their attractiveness.

1.2.2. The pharmaceutical industry in Slovenia

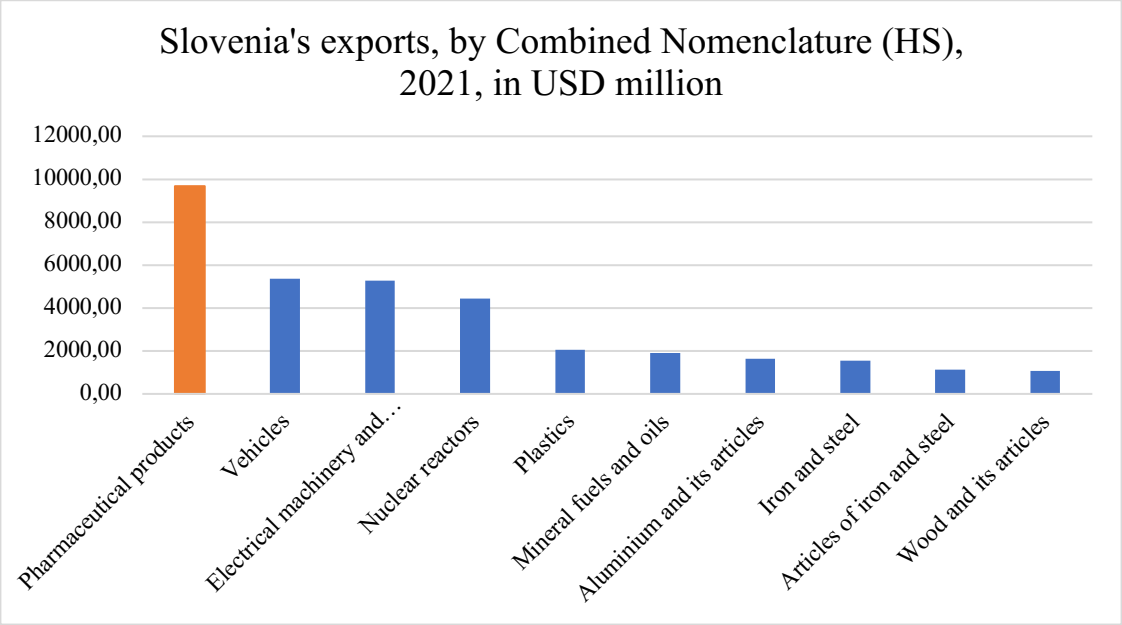
Slovenia is a relatively small country, with a population of 2 million and a GDP per capita of USD 29,200, similar to Estonia or Spain (The World Bank, n.d. d). Due to the limited domestic market, exports are particularly important for Slovenian pharmaceutical producers. Relative to its size, Slovenia exports a large amount of pharmaceuticals. In 2021, Slovenia exported USD 8.4 billion worth of pharmaceuticals, which account for 1.03 percent of all global pharmaceutical export. In comparison, the biggest exporter of pharmaceuticals in the world in Germany, which exported USD 115 billion in 2021, representing 14.3 percent of all global pharmaceutical export, approximately 15 times more than Slovenia exports (Observatory of Economic Complexity, n.d. a). Germany's GDP, however, is approximately 69 times that of Slovenia. In 2021, Germany's GDP amounted to roughly USD 4.2 trillion, while Slovenia's GDP amounted to roughly USD 61.5 billion (The World Bank, n.d. c). Pharmaceuticals export of Hungary in 2021 were the closest to Slovenia's exports, at 0.8 percent of all global pharmaceutical exports (Observatory of Economic Complexity, n.d. a). In comparison to Slovenia, Hungary has a population that is approximately five times bigger at 9.57 million, and a GDP of USD 182.3 billion, which is roughly three times the amount of Slovenia's GDP (The World Bank, n.d. c).

1.2.3 Slovenia's foreign trade and the pharmaceutical industry



Graph 1: Export of pharmaceuticals (HS chapter 30) by country, 2021, in USD million (Observatory of Economic Complexity, n.d. a).

Indeed, pharmaceutical products represent Slovenia's biggest export – in 2021, they accounted for 20.72 percent of all exports, with vehicles following at 11.47 percent of all exports (Statistical Office of the Republic of Slovenia, 2023b). More than 40 percent of all pharmaceuticals were exported to Switzerland, while 0.2 and 0.18 percent were exported to China and Japan, respectively (Observatory of Economic Complexity, n.d. b). In 2021, Japan was in 48th place by the amount of pharmaceuticals Slovenia exported to it, while China was in 55th place (Statistical Office of the Republic of Slovenia, 2023b).

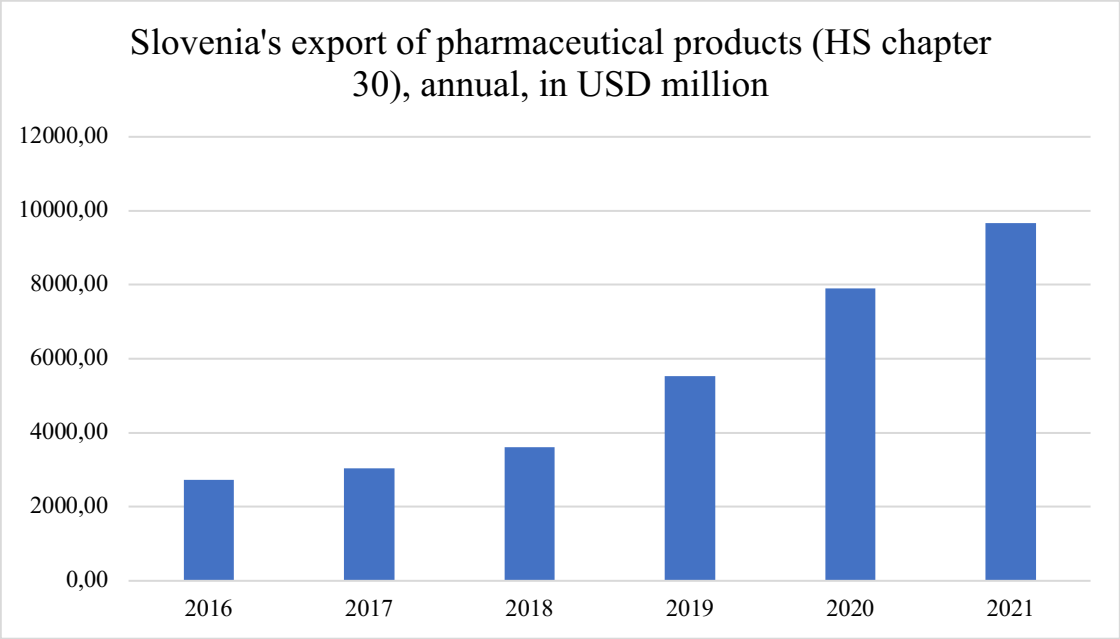


Graph 2: Slovenia's exports, by Combined Nomenclature (HS) Chapters, 2021, in USD million (Statistical Office of the Republic of Slovenia, 2023b).[1]

Slovenia's export of pharmaceuticals has been steadily increasing since 2016, reaching more than EUR 8 million in 2021. The importance of the pharmaceutical industry in Slovenia has also been growing domestically. In 2021, two of the ten companies with highest income in Slovenia were pharmaceutical companies – Lek, d. d. and Krka d. d., Novo mesto. Furthermore, employment in the pharmaceutical industry is increasing. In 2016, the pharmaceutical industry employed 8,400 persons in Slovenia, and the number rose steadily through the years – in 2021, the sector employed 11,600 persons, representing 1.3 percent of Slovenia's workforce, making it the 29th industry that employed the most workforce, out of 81 defined activities in the national survey (Statistical Office of the Republic of Slovenia, 2023e). Its value-added to the GDP, however, is stagnating in a way. While it increased to 2.9 percent in 2020, the value-added of the pharmaceutical industry in Slovenia to its GDP has stayed between 2.2 and 2.6 percent since 2016 (Statistical Office of the Republic of Slovenia, 2023d). A large

[1] For the sake of the legibility of the graph, the names of HS chapters have been shortened. The full HS chapter titles of products that are included in the graph are, in order of the value of exports: (30) Pharmaceutical products, (87) Vehicles other than railway or tramway rolling stock, and parts and accessories thereof, (85) Electrical machinery and equipment and parts thereof, sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles, (84) Nuclear reactors, boilers, machinery and mechanical appliances, parts thereof, (39) Plastics and articles thereof, (27) Mineral fuels, mineral oils and products of their distillation, bituminous substances, mineral waxes, (76) Aluminium and articles thereof, (72) Iron and steel, (73) Articles of iron or steel, (44) Wood and articles of wood, wood charcoal (Statistical Office of the Republic od Slovenia, 2023b).

part of the pharmaceutical products produced by Slovenian firms is intended for export, due to the relatively small size of the domestic market. Exports are particularly important for large pharmaceutical manufacturers in Slovenia, and unlike small and micro-enterprises, large producers are highly export-oriented – for Lek and Krka, two of the largest Slovenian pharmaceutical producers, exports represent as much as 95 percent of income (Sloexport, 2023a, 2023b).



Graph 3: Slovenia's export of pharmaceutical products (HS chapter 30), annual, in USD million (Statistical Office of the Republic of Slovenia, 2023b).

1.2.4 Export to Japan and China

Outside of Europe, Slovenia exports EUR 1.6 billion in goods and services to Asia, of which EUR 325 million to China and EUR 92.8 million to Japan. These two countries stand out compared to the rest of Asia (Government of the Republic of Slovenia, 2021, p. 36).

Exports of pharmaceutical to both China and Japan have grown exponentially in the past couple of years, corresponding to the Covid-19 pandemic, when global demand for pharmaceutical products increased (WTO, 2021, p. 2). From 2016 to 2018, exports of pharmaceuticals to China were rapidly decreasing, from EUR 2.3 million to EUR 1.2 million – almost 50 percent (Statistical Office of the Republic of Slovenia, 2023b). Exports to Japan, on the other hand, grew from EUR 6.8 million in 2016 to EUR 7.5

million in 2018 (Statistical Office of the Republic of Slovenia, 2023b). In 2019, exports of pharmaceuticals to both countries increased, by over EUR 4 million to China and by over EUR 2 million to Japan. In 2021, Slovenian exports of pharmaceuticals to Japan exceeded the export to China by approximately EUR 3 million worth. Slovenian exports of pharmaceuticals to China and Japan are dominated by drugs for retail sale,[2] drugs that contain penicillin and are not for retail sale,[3] and immunological products for retail sale (Statistical Office of the Republic of Slovenia, 2023c).[4]

Product	Exports to China (2021, USD thousand)	Exports to Japan (2021, USD thousand)
300490 Medicaments consisting of mixed or unmixed products for therapeutic or prophylactic purposes, put up in measured doses incl. those in the form of transdermal administration or in forms or packings for retail sale	8667.80	12403.86
300310 Medicaments containing penicillins or derivatives thereof with a penicillanic acid structure, or streptomycins or derivatives thereof, not in measured doses or put up for retail sale	912.42	0
300215 Immunological products, put up in measured doses or in forms or packings for retail sale	46.07	1103.80
300290 Human blood, animal blood prepared for therapeutic, prophylactic or diagnostic uses, toxins, cultures of micro-organisms and similar products (excl. yeasts and vaccines)	22.53	0
300510 Adhesive dressings and other articles having an adhesive layer, impregnated or covered with pharmaceutical substances or put up for retail	1.95	0

[2] HS code 3004.90: Medicaments (excluding goods of heading 30.02, 30.05 or 30.06) consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses (including those in the form of transdermal administration systems) or in forms or packings for retail sale (World Customs Organization, n.d.).
[3] HS code 3003.10: Medicaments (excluding goods of heading 30.02, 30.05 or 30.06) consisting of two or more constituents which have been mixed together for therapeutic or prophylactic uses, not put up in measured doses or in forms or packings for retail sale, containing penicillins or derivatives thereof, with a penicillanic acid structure, or streptomycins or their derivatives (World Customs Organization, n.d.).
[4] HS code 3002.15: Immunological products, put up in measured doses or in forms or packings for retail sale (World Customs Organization, n.d.).

sale for medical, surgical, dental or veterinary purposes		
Sum:	9650.77	13507.67

Table 1: Slovenia's exports of pharmaceuticals to China and Japan, divided by HS subchapter, 2021, in USD thousands (Statistical Office of the Republic of Slovenia, 2023c).

Lastly, both of the two largest pharmaceutical companies in Slovenia, Lek and Krka, have representative offices and companies in China. Krka owns 60 percent of Ningbo Krka Menovo Pharmaceutical Ltd,[5] and has a representative office in Shanghai. Krka expects that China will become of their key markets in the next five to ten years, and the company is preparing 10 more medicines for registration in China (Bertoncelj, 2021; Krka d. d., n.d.). Lek has been present in the Chinese market since 1984, and while it does not directly own any companies in China, its subsidiary, Sandoz,[6] does. Sandoz has four locations in China – in Beijing, Zhongshan, Wuhan, and Guangzhou (Sandoz, n.d.).

Year	**Exports (in USD millions)**					
	China			**Japan**		
	Total exports to China	Exports of pharmaceuticals to China	Pharmaceuticals as % of total exports to China	Total exports to Japan	Exports of pharmaceuticals to Japan	Pharmaceuticals as % of total exports to Japan
2016	300.68	2.56	0.85 %	126.16	7.48	5.93 %
2017	359.09	1.90	0.53 %	140.39	8,06	5.74 %
2018	360-22	1.40	0.39 %	130.99	9.04	6.90 %
2019	297.48	5.96	2.00 %	88.56	11.23	12.68 %
2020	318.47	11.51	3.61 %	91.88	10.11	11.01 %
2021	399.97	9.65	2.41 %	94.78	13.51	14.25 %

Table 2: Pharmaceuticals as part of Slovenia's total exports to China and Japan (Statistical Office of the Republic of Slovenia, 2023b).

1.3 THESIS OUTLINE AND METHOD

In Chapter 2, a literature review is conducted which provides and overview of approaches to international market selection and specifics of exporting in the pharmaceutical industry. In Chapter 3, an analytical framework is exposed based on the finding of the literature review. In Chapter 4, indicators of the analytical framework are analysed for each of the two potential exporting markets – China and Japan – respectively. They are then

[5] The remaining 40 percent is owned by Ningbo Menovo, Krka's partner in China of over 17 years (Bertoncelj, 2021).
[6] Sandoz, Lek's subsidiary, specializes in the production of generics (Lek, n.d.).

comparatively discussed in Chapter 5, along with limitations of the study and recommendations for further research. Chapter 6 contains the conclusions of the thesis.

Two key elements in the decision of selecting an export market have been found to be present throughout all models: market attractiveness and the competitive position of the exporting country. Market attractiveness encompasses a wide assortment of conceptualizations of its meaning, leading to various studies utilizing different factors and criteria in order to assess it. As an external factor, exporting firms and countries have no control over market attractiveness, rather, their success is determined by the conditions of the market. Thus, they resort to analysing the situation in different markets, in order to choose the most attractive one, or, based on their objective, the one where they can succeed the most. Furthermore, specifics of the pharmaceutical industry have to be taken into account when examining the attractiveness of foreign markets. To this end, an analytical framework based on the gravity and trade-off models is constructed, with added specific relating to the industry-level analysis which will be conducted in this thesis.

2 LITERATURE REVIEW

2.1 INTERNATIONAL MARKET SELECTION

Exporting is beneficial to both governments and companies for several different reasons. The basic motives for international expansion are resource seeking, market seeking, efficiency seeking and strategic asset seeking (Alexander, 1995, pp. 476, 477; Karhu and Ylä-Kojola, 2010, p. 367.). In the case of Slovenian pharmaceutical industry, the main incentive to internationalize is market seeking, as the demand in Slovenia is too low to enable economies of scale for Slovenian pharmaceutical companies. This is why Slovenian pharmaceutical companies get as much as 90 percent of their revenue from export (Sloexport, 2023a, 2023b) Exporting can promote social and economic development within a country, as well as increase employment, production and impact social welfare by increasing productivity of local industries, which is why the government takes special interest in identifying countries and industries within which it then promotes nationalization and export through export promotion agencies. However, choosing an appropriate export market is not simple, as attention to details and nuances in foreign markets is essential in order to succeed. Selecting the right market for export is an important step in ensuring export success, as wrong decisions can lead to wasted financial and human investment from both the state and the firm (Papadopoulos and Dennis, 1998, p. 38; Steenkamp, Viviers and Cuyvers, 2012, p. 27; Mayer, Martini and Roecker, 2022). In their choosing of the market, firms thus consider two main factors: market attractiveness and their competitive position (Brewer, 2000, p. 162). In order to evaluate the Chinese and Japanese markets as export markets for the Slovenian pharmaceutical industry, the analytical framework of this thesis has to determine these two factors. As competition on a global scale led to an increasing number of firms looking to export to achieve their goals, there have been numerous models developed exactly for such firms to assess potential market and decide where to export to. The next section will provide an overview of such tools.

The assessment of potential foreign/export markets has been approached from two points of view that are complementary to one another: a market/country perspective and a consumer perspective. International consumer segmentation focuses on a consumer-oriented analyses and segmentation of consumers across countries and is known as International Market Segmentation (IMSeg). The market perspective is known as International Market Selection (IMS or IMSel, as proposed by Papadopoulos and Martín

Martín, 2011, p. 133) in the literature, and is defined as "the process of establishing criteria for selecting (country) markets, investigating market potentials, classifying them according to the agreed criteria and selecting which markets should be addressed first and those suitable for later development" (Andersen and Strandskov, 1998, p. 67). IMSel aims to reduce subjectivity and allows for screening of a large number of potential markets based on provided data. The difference between IMSel and IMSeg is based on how the market is defined. While IMSel approaches divide the world based on national country markets, IMSeg approaches identify markets across countries based on characteristics that consumers share regardless of where they live (Papadopoulos and Martín Martín, 2011, pp. 139, 140). Thus, according to Papadopoulos and Martín Martín (*ibid.*), the acronym IMS includes both IMSel and IMSeg, as a decision is made in the end regardless of which approach one takes. IMSel provides both analyses of the significance of internationalization on firms, as well on macro- and micro-economic analyses of country conditions and the industry and markets within potential countries flagged for export but fails to consider similarities of groups of consumers across national boundaries (Papadopoulos and Martín Martín, 2011, p. 133, Ozturk, Joiner and Cavusgil, 2015). However, as this thesis focuses on country-markets, IMSel approaches are more appropriate.

Although IMS is an important step in deciding which foreign markets to enter, the discipline faces the issues of being fragmented and under-research and is often overshadowed by works on market entry mode selections (Papadopoulos and Martín Martín, 2011, pp. 136, 137; P 2002, Sakarya, Eckman and Hillegard, 2007, p. 211; Ozturk et al. 2015). IMS research includes a variety of subfields, such as country risk analysis, foreign investment location choice, and international opportunity analysis, which can lead to a fragmented approach in seeking information and thus inconclusive or unreliable results (Papadopoulos and Martín Martín, 2011, pp. 136, 137). Furthermore, on the topic of facing obstacle due to under-research, although some of the most notable IMS scholars have called for more attention to the discipline, there is a relative lack of empirical studies done within the discipline. As per Malhotra and Papadopoulos (2007, p. 17), a comprehensive literature review identifies only 31 empirical IMS studies, of which the majority draw on secondary data. The lack of research and fragmentation of the discipline impedes development of theory that underlies IMS approaches, which is also why

"integrated frameworks and comprehensive studies of market selection process have been rare" (Bjöerkman and Eklund, 1991; Sakarya et al., 2007, p. 211).

2.2 APPROACHES TO INTERNATIONAL MARKET SELECTION

2.2.1 Overview of approaches

Within the IMSel literature, both qualitative and quantitative methods can be found. Qualitative approaches include a systematic analysis of only a handful of markets, while quantitative approaches aim at analysing a large number of potential markets. Qualitative studies include determining the obstacles and opportunities of exporting a product to each of the countries, but are criticized as being biased, since they are based on perception of the author, and largely inaccurate due to lack of systematic analysis of data (Papadopoulos and Denis, 1989, pp. 38, 39; Steenkamp et al., 2012, p. 28). Quantitative approaches, on the other hand, systematically determine which variables to analyse and then process large amounts of data for large amounts of selected market. Quantitative approaches also offer more insight into what determinants should be considered, both country and industry-wise, when comparing potential export markets (Papadopoulos and Denis, 1989, p. 39; Steenkamp et al., 2012, p. 28).

Furthermore, quantitative methods are divided into grouping models and estimation models. Grouping and estimation models are rarely strategic but attempt the operationalization of parts of the process. They usually contain both macro and micro approaches, thus considering general country factors, as well as industry-specific approaches. Besides some econometric models, most use multiple criteria and variables to analyse target country characteristics, and except the shift-share approach, which only considers imports, most models focus on total demand (Papadopoulos and Denis, 1989, pp. 39–45; Papadopoulos, Chen and Thomas, 2002, p. 167; Steenkamp et al., 2012, p. 28).

Early literature on IMS mostly consisted of conceptual, decision-making models, and addressed the question of how to select foreign markets. These models of selection have many differences and share only a few similarities, leading to the beforementioned fragmentation of the field (Cavusgil, 1985; Douglas and Craig, 1992). Although the early models have their respective strengths, none address the core issue within IMSel: providing an agreement on which indicators to use within one's analysis, or what weight

should be prescribed to them. So, while some models use a wide variety of characteristics that are not weighed, which might result in skewed decision, the studies which limit variable and indicators only to one or two dimensions such as culture or economic characteristics, do not capture the whole extent of influences that have an impact on demand within a market (Papadopoulos, 2002).

Grouping models classify countries across dimensions based on their similarities using a wide variety of social, economic and political indicators (Papadopoulos and Denis, 1989, pp. 39, 40; Steenkamp et al., 2012, p. 29). Such approaches are based on the premise that the most attractive markets for export are those which are most similar to markets where exporting to has already been successful (Steenkamp et al., 2012, p. 29). A composite index is derived within each dimension by which the countries are ranked and classified in clusters according to how similar they are. Proponents of the grouping approach assert that the perception of each country being unique presents an obstacle in comparative analysis, as more use of comparative analyses can be made by looking for similarities across countries. Generally, grouping approaches identify a set of criteria tied to specific aspects of their analyses, which is why composite indexes as well as dimensions that are analysed vary from study to study. This is one of the apparent weaknesses of grouping approaches – country rankings within clusters may differ depending on what indicators were used in a study, for example whether a study uses general indicators, industry- or product-specific indicators (Papadopoulos and Denis, 1989, p. 41). Moreover, out of the country- or industry-specific indicators, grouping approaches most often use country-specific, macro, indicators, which do not always reflect market conditions for a specific product. Lastly, grouping approaches generally rely on aggregate country indicators and ignore a country's heterogeneity, although that is not exclusive to grouping approaches (Papadopoulos and Denis, 1989; Sakarya et al., 2007, p 212; Steenkamp et al., 2012, p. 29). Since the goal of this thesis is to comparatively analyse two markets, grouping models cannot be used for its purpose.

Market estimation models are much more useful for comparative analyses, as the core principle of market estimation approach is to evaluate markets based on pre-determined criteria, measuring the attractiveness and the potential of a market (Papadopoulos and Denis, 1989, p. 41; Sakarya et al. 2007, p. 212; Steenkamp et al., 2012, p. 29). When considering many markets, those with the highest scores are chosen as final export

markets. Market estimation approaches can be divided into those which differentiate markets based on total demand and those which evaluate them based only on import market potential (Papadopoulos and Denis, 1989, p. 42; Steenkamp et al., 2012, p. 29). One of the major weaknesses of market estimation approaches is that due to the fragmentation of the IMS discipline, there is no list of 'ideal' factors to use in the analysis of a market. In some cases, factors that studies use are redundant, or the studies themselves focus too much on the macro-level of analysis, rather than industry- or product-specific analyses. Estimating industry-specific demand from general statistics is oftentimes not the most accurate. Furthermore, import demand estimation models ignore the exporters who might be able to compete against domestic competition, which is why overall industry-demand should be estimated in such cases (Papadopoulos and Denis, 1989, pp. 42, 43; Papadopoulos et al., 2002, pp. 167, 168).

2.2.2 Market estimation approaches

This thesis will utilize IMSel methods, more specifically, market estimation approaches, with the aim of distinguishing the two markets based on their attractiveness.

Market estimation approaches, as mentioned above, rank countries by order of preference based on market potential and market development. Market estimation approaches thus usually employ two dimensions of market attractiveness used to rank markets: market size or potential and market development (Papadopoulos and Denis, 1989, p. 41; Gaston-Breton and Martin Martin, 2011). Market size and level of economic development are also often used to determine potential opportunities. Potential export markets are evaluated based on multiple criteria and variables, and then ranked based on the results. There is no general consensus on which criteria should or should not be included within the analysis, leading to a variety of different methods in the IMSel literature. Most studies, however, measure the wealth, size and growth of markets, competition in a market and the ease of access, also including measures of market potential by measuring indicators derived from economic development, internal stability and cohesion, such as: GDP, population, imports, and energy consumption (Green and Allaway, 1985; Douglas and Craig, 1992; Papadopoulos and Denis, 1989, pp. 41–44; Sakarya et al., 2007; Malhotra et al., 2009; Gaston-Breton and Martin Martin, 2011; Steenkamp et al., 2012, p. 29). On the issue of demand, most studies focus on the import side of demand, based on the size and growth of imports and competition in the import markets. While some studies include

general, country-level indicators, others have aimed at integrating a range of criteria from product-specific market size and growth to country environment and market-based factors (Russow and Okoroafo, 1996; Whitelock, 2002). The issues which market estimation approaches most often face include lack of product-specific measures, assuming a static environment and other methodological problems stemming from either lack and/or inaccuracy of data, specially from secondary sources (Papadopoulos and Denis, 1989, pp. 45–48; Sakarya et al., 2007).

2.2.2.1 Gravity model

The gravity model was inspired by Newton's law of gravity and has been used to examine international trade flows since the early 1960s, when it was first introduced by a group of Dutch scientists led by Tinbergen. The basic trade model consists of three variables: value of exports, the economic size of each partner and trade resistance, which is a flexible variable that can be adjusted based on what the author determines are factors that affect resistance to trade between two countries (Pollins, 1989, pp. 744, 745; Mele and Baistrocchi, 2012). The gravity equation predicts that the volume of trade between two countries is proportional to their gross domestic products and inversely related to trade barriers between them such as distance, tariffs, and non-tariff barriers (Evenett and Keller, 2002, p. 282). In the years following, Pöyhönen (1963) and Linnemann (1966) further developed the theoretical foundations of the gravity equation – indeed, Linnemann's extensive empirical analysis using the gravity model was a major breakthrough and remains a classic reference source for the gravity model.

The standard gravity model equation is typically given as

$$T_{ij} = A\left(\frac{Y_i Y_j}{D_{ij}}\right)$$

Figure 1: Gravity model equation (Deardorff, 1998, p. 9)

Where T_{ij} is the value of exports from country i to country j, Y_i and Y_j are, respectively, their national incomes, D_{ij} is a measure of distance between the two countries, and A is a constant of proportionality (Deardorff, 1998, p. 9). In its basic form, the gravity model considers the variables of size and distance as proxies for market size and costs. Larger states with higher GDPs represent a bigger market and offer economies of scale, which

increases their economic attractiveness for exporters (Megi, 2014). Furthermore, countries that have a similar GDP, especially developed countries, are, according to the Linder hypothesis, likely to trade more (Zhou, 2011). Distance between country is used as a proxy for costs that an exporter might face, such as cultural costs, communication costs, transportation costs, etc. (Rahman, 2010; van Bergeijk and Brakman, 2010, p. 1). The model has a strong predictive power and has been used to successfully examine which factors determine trade flows ex-post, proving its usefulness in determining which factors are important in bilateral trade flows. One of the major criticisms of the gravity model was that it is based on empirical findings, without a theory to support the model itself, however, that was later amended through the works of a number of scholars, which have found support for the gravity model in various trade theories, such as the H-O theorem, the Ricardian theory and the increasing returns to scale model. Furthermore, the model is very general, taking into account only macroeconomic factors. While some authors add on industry-specific factors, there is no consensus as to which factors should or should not be used (Bergstrand, 1985; Deardorff, 1998; van Bergeijk and Brakman, 2010; De Benedictis and Taglioni, 2011, p. 79).

The use of gravity model in examining trade flows in pharmaceuticals has provided useful insights. Adolfsson (2007) used the gravity model to evaluate the impact of different factors on the Swedish exports of pharmaceuticals. He shows that GDP per capita has a significant impact on the export of pharmaceuticals, that landlocked and remote countries are less likely to import from Sweden, and that Sweden exports more to countries that share the same religion (Adolfsson, 2007). In 2012, Wilkman conducted a similar study, determining that the Swedish exports of pharmaceuticals are influenced by similar factors as the exports of other goods – Sweden exports more to countries that have a higher GDP, GDP per capita and that share the same language. Geographical distance and changes in the exchange rate were found to be negatively related to exports (Wilkman, 2012). Boring (2010) examines the effect of patent protection on the US' exports of pharmaceuticals. She develops a gravity equation using panel data between 1993 and 2007 using the trade of pharmaceuticals between the US and 181 countries (Boring, 2010, p. 10).

Blanc (2015) evaluates the explanatory power of seven variables on the EU exports of pharmaceuticals. The study produces results similar to those of Adolfsson (2007), Boring

(2010) and Wilkman (2015). The economic size of the partner country, the presence of a major container port, the size of the healthcare sector, and a higher level of IP rights protection in the partner country all positively affect exports of pharmaceuticals from the EU to the partner country. On the contrary, the distance between the EU and the importing country has a negative effect on the export of pharmaceuticals. The study, however, could not draw any definitive conclusions on the impact of FTAs on the EU exports of pharmaceuticals, since the regressions conducted in this analysis yielded different results (Blanc, 2015, pp. 25–27). What is more, deducing causality of FTAs and exports is subject to debate, since in some cases FTAs are not only the cause of increased exports, but also the consequence of these exports, since major trade partners with similar GDP that are close to each other are more likely to sign more FTAs (Blanc, 2015, p. 13). Tamas (2021) studies the macro determinants of Romania's pharmaceutical imports and exports between the year 2001 and 2008. Tamas builds her models on the studies of Adolfsson (2007), Wilkman (2012), Boring (2010; 2015), and Blanc (2015). Her model for exports includes the following variables: GDP of the partner country, health expenditure of the partner country, share of pharmaceutical imports in all imports of the partner country as the measure of the trading partner's demand, share of imports in the GDP of the importing country as the measure of openness to trade, difference between the GDPs of Romania and the importing country, distance from Romania to the importing country, EU membership, common borders and former Council for Mutual Economic Assistance (CMEA) membership as a proxy for historical ties (Tamas, 2021, pp. 135, 136). The study (2021, pp. 138–140) finds that the share of pharmaceutical imports in all imports, share of imports in GDP, GDP, distance between the two countries, common borders, EU membership and former CMEA membership are all determinants of Romanian exports. On the other hand, health expenditure per capita is not significant, and neither is the difference in GDP (*ibid.*).

All gravity model studies that analyse the export of pharmaceuticals also confirm that distance negatively impacts exports. In the literature, distance is argued to encompass different aspects, not just the basic transportation cost factor. As such, distance encompasses geographical, cultural, administrative, and economic distance. While some dimensions of distance can be measured as an objective variable (such as geographic distance), other dimensions depend on one's perceptions are not easily measured, such as cultural distance. Some authors attempt to measure cultural distance through variables

such as common religion, common language, common history or colonial history, and even various indexes that measure cultural distance. However, this oftentimes leads to skewed results, as cultural and other distances that are based on one's perception are too complicated to be efficiently simplified only in one simple variable. Although geographical distance can be used as a proxy for transportation costs, measuring and quantifying cultural distance is disputed – even in the studies of exports of pharmaceuticals, some authors conclude in their studies that religion and language affect exports, while others find they do not have any effect (Adolfsson, 2007; Boring, 2010; Wilkman, 2012).

2.2.2.2 Screening approaches

Cavusgil (1985, p. 29) proposed a framework which assesses market potential in three stages: (1) preliminary country screening, based on screening of the physical, political, economic, and cultural environment; (2) assessment of industry market potential to determine the aggregate demand for the industry based on market access, product potential, and local distribution and production; and (3) analysis of company sales potential, which is based on sales and profitability forecasting. Cavusgil's (1985) approach represents one of the earliest approaches focused on foreign market selection, and other studies have also proposed evaluating foreign markets through a similar selection process (Koch, 2001; Kumar, Stam and Joachimsthaler, 1994). The approach is a top-down one, starting off with country-level factors, continuing on to industry-level, and lastly, company-level factors. In the first stage, preliminary country screening, Cavusgil (1985, pp. 29, 30) highlights that IMSel be proposed as a theoretical base for the screening stage, and relevant variables for macro-segmentation be identified and borrowed from it. As the final classification of markets as suitable or not depends on the selection of variables for macro-segmentation carried out at the beginning of the process, variables have to be chosen with care. Indeed, as Cavusgil notes, research within the realm of IMSel has also supported the efficiency and effectiveness of sequential screening processes in decision processes when it comes to market selection (Cavusgil, 1985, p. 30). In the second stage, industry market potential is analysed – this is also the stage that is most relevant for this thesis. The stage includes the analyses of three dimensions; market access, product potential, and local distribution and production (*ibid.*).

STAGE	CATEGORIES
Preliminary screening	Demographic/Physical Environment (population, natural resources, distance, climate…)
	Political Environment (system of government, political stability, government involvement, attitudes towards foreign business - trade barriers…)
	Economic Environment (development, economic growth, role of foreign trade, balance of payments…)
	Social/Cultural Environment (literacy rate, middle class, language, similarities to home market…)
Analysis of industry market potential	Market Access (limitations on trade, import regulations, local standards, preferential treaties, legal considerations…)
	Product Potential (customer needs and desires, local production, competitive offerings, industry-specific demand…)
	Local Distribution and Promotion (availability of intermediaries, transportation facilities, local manufacture…)
Analysis of company sales potential	Sales Volume Forecasting (customer segments, projected consumption statistics, competitive pressures…)
	Landed Cost (domestic distribution costs, cost of product modification, international freight…)
	Cost of Internal Distribution (tariffs and duties, value added tax, local packaging and assembly, local distribution…)
	Other Determinants of Profitability (going price levels, competitive strengths and weaknesses, credit practices…)

Table 3: Cavusgil's (1985, pp. 30, 31) guidelines for export market research.

2.2.2.3 Three-stage model

Cavusgil's approach was adapted and expanded multiple times. In 2015, Ozturk, Joiner and Cavusgil proposed a new model, building on the original approach, that would consider more industry-specific indicators, combining them with relevant country-level measures, based on the industry that is subject of analysis (Oztruk et al., 2015). This new approach is based on industry-specific consumer expenditure drivers and reveals consumer responsiveness better than other tools, making it more appropriate for use in business-to-customer setting (Oztruk et al., 2015, p. 10). In order to provide more industry-oriented insights, the additional variables included country responsiveness, industry growth rate, and other macro measures that provide insight into the industry rather than country-level analysis. Their approach can be customized for different industries by choosing factors that that are relevant to the industry in focus. Furthermore,

the approach also includes growth potential in selected measures and is more forward-looking compared to other approaches. Lastly, their tool relies on previous research in considering the factors and dimensions that were determined to be most important in market selection, such as growth potential and consumer demand, rather than general macro-economic factors. (Oztruk et al., 2015, pp. 10, 11).

Their Three-Stage template includes three steps in analysing a market, namely: country responsiveness, growth potential, and aggregate market measure. In the first step, country responsiveness, income elasticity of industry expenditure is measured for every country-market in the analysis. Countries above the median value of income elasticity are classified as responsive, while others are unresponsive. The focus on income elasticity of industry expenditure measures the importance of an industry within a country-market. If, when income increases, consumers spend more of their income on the industry's product, this presents a better opportunity for exporters (Oztruk et al., 2015, p. 10). In step two, the likely growth of a market is assessed through the sum of industry-specific consumer expenditure and the income forecast for the next ten years. Market size is also included in this step by measuring the sum of the gross industry-specific consumer expenditure for each country in the past decade (Oztruk et al., 2015, p. 11). In step three, aggregate market measure is determined by determining the relationship between increase in income and growth in industry-specific consumer expenditure. It is expected that as incomes rise, so does industry-specific consumer expenditure. In order to further differentiate countries, an industry-relevant aggregate measure is added, depending on which industry is analysed (*ibid.*). Finally, countries are divided into four categories: global valuables, global industry winners, stagnants and industry valuables. Global valuables are characterised by high values in industry-relevant aggregate measure and lower growth rate in industry-specific consumer expenditure. Global industry winners are characterised by high values in both measures, while stagnants are characterised by low values in both measures. Industry valuables are characterised by high growth rates in industry-specific consumer expenditure and lower values in the industry-relevant aggregate measure (Ozturk, Joiner and Cavusgil, 2015, pp. 10, 11).

For the healthcare industry, the authors use 'Number of inpatient beds' as the industry-relevant aggregate measure. Although the approach is flexible in that it can be adapted to each individual industry, this can also lead to different outcomes of analyses, depending

on which measures are used. The authors propose a solution by combining all industry-relevant measures, calculating a total index, and using it instead of one aggregate measures. Furthermore, the model does not include factors that determine the attractiveness and feasibility of exporting to these markets, such as trade barriers or intensity of competition, which are an important factor when comparing potential export markets (Ozturk et al., 2015, pp. 17–19).

	FACTOR	**MEASURE**
STEP 1: COUNTRY RESPONSIVENESS	Income elasticity of industry expenditure	Linear regression model with industry specific consumer expenditure as dependent variable, and income and years as independent variables.
STEP 2: GROWTH POTENTIAL	Likely growth of the industry	Sum of industry-specific consumer expenditure and income forecast for the next ten years
	Industry market size	Sum of the gross industry-specific consumer expenditure for each country for the past ten years
STEP 3: AGGREGATE MARKET MEASURE	Aggregate market in the industry	Relationship between income growth and growth in industry-specific consumer expenditure
		Industry-relevant aggregate measure

Table 4: The Three-stage approach by Ozturk et al. (2015, pp. 10, 11).

2.2.2.4 Overall Market Opportunity Index (OMOI)

Another approach developed by Cavusgil (1997), the OMOI quantifies and ranks market potential based on economic, political and social measures. OMOI is mainly intended for analysing market opportunities in emerging or developing countries. The indicators which are measured by the OMOI include the size of the middle class, political risk, telecommunications, physical infrastructure and economic freedom. Each of the indicators has an index created for it, as well as weights assigned to it. Based on the indexes and weights, the OMOI is then calculated for prospective markets. OMOI includes seven dimension of market opportunity, and each of them is assigned a relative weight based on assessment by experts in the field, the so-called Delphi process (Cavusgil, 1997, pp. 88–90).

DIMENSION	MEASURES	WEIGHT
Market size	Total population	4/20
Market Growth Rate	Average annual growth rate of industry	3/20
Market Intensity	• PPP estimates of GNP per capita • Private consumption expenditure per capita	3/20; each measure accounts for 50% of the weight.
Market Consumption Capacity	Size of the middle class	2/20
Commercial Infrastructure	• Telephone mainlines per capita • Paved road density • Population per retail outlet • Percentage of homes with colour TV • Trucks and buses per capita	2/20; each measure accounts for 20% of the weight
Economic Freedom	The Economic Freedom Index (Johnson and Sheehy, 1995)	2/20
Market Receptivity	• Average annual growth rate of imports from the U.S. over the past five years • Per capita imports from the U.S.	4/20; average annual growth rate of imports accounts for 60% of the weight, while per capita imports account for 40% of the weights

Table 5: Criteria used in the OMOI (Cavusgil, 1997, pp. 88 – 90).

However, the OMOI is not theory-driven per se, and the number and content of OMOI indices are based on expert opinions, as well as adapted to different case studies. The weights of each of the indices are also set ad hoc, or per expert opinion, making OMOI subjective in some cases, and undefined in others. Sheng and Mullen (2006) validated the OMOI as a stable tool, but also concluded that weights for respective factors should be determined based on a more analytical approach, as they can significantly impact the results of the OMOI. They further extended the Index to a larger set of countries (Cavusgil developed it using a set of 25 emerging markets) and added gravity model components. Lastly, the OMOI ranks markets based on aggregate demand, whereas each industry has different drivers, meaning that the analyses might not be completely accurate on an industry-by-industry basis. Thus, Sheng and Mullen (2011, p. 165) use the gravity model of international trade as a theoretical basis to extend the OMOI models. Finally, their hybrid model consists of ten variables: geographic distance, market size, economic

intensity, cultural distance, language difference, FDI, RTAs, physical infrastructure, market receptivity and religious differences (Sheng and Mullen 2010, p. 170).

CONSTRUCT	**INDICATOR**
Geographic distance	Geographic distance between capital cities
Market size	• Total population • Urban population • Population projection in year 2050
Economic intensity	• GDP per capita • Electric power consumption • Energy consumption
Cultural distance	Cultural distance
Language difference	• Distance between major languages of country A and the USA • Incidence of country A's major language in the USA • Incidence of USA's major language in country A
FDI	Net outward FDI, percentage of GDP
RTAs	RTAs
Physical infrastructure	• Length of railways/land • Length of roads/land
Market receptivity	• Imports of goods and service as percentage of GDP • Total trade in percentage of GDP
Religious difference	• Distance between major religions of country A and the USA • Incidence of country A's major religion in the USA • Incidence of the USA's major religion in country A

Table 6: The OMOI as extended by Sheng and Mullen (2010, p. 170).

2.2.2.5 Decision Support Model (DSM)

The decision support model was developed by Cuyvers et al. in 1995 as a mechanism to "guide export promotion organizations in more effective country-level export promotion activities,"

(Cuyvers, Steenkamp and Viviers, 2012, p. 53) i.e., choosing export opportunity markets more effectively (*ibid.*). The DSM is a process in which potential markets pass through four filters, with undesirable markets eliminated at each step, thus arriving at a list of potential markets that should be investigated further (Cuyvers et al., 2012, pp. 53, 54). The first filter consists of macro-level research to assess the general market potential of

each of the countries under investigation by analysing market size, the political environment, social structure, and geographic factors (Cuyvers, De Pelsmacker, Rayp, and Roozen, 1995, pp. 176–178). The second filter assesses product-related criteria such as cultural acceptance of products and taxes and duties applied to the product. This filter eliminates markets that do not show adequate size and growth (Cuyvers et al., 1995, pp. 176, 178, 179). Through the third filter, micro-level research is conducted of specific factors that affect the marketing and sales of the product. At this stage, only a small number of country-product combinations are assessed, to get information which is as detailed as possible (Cuyvers et al., 1995, pp. 176, 179–181). Lastly, the fourth filter takes into consideration factors that affect market entry for the specific company which is conducting market research in the first place. It is based on the company's resources, objectives and strategies (Cuyvers et al., 1995, pp. 176, 181–183; Cuyvers et al 2012, pp. 56–70).

	DIMENSIONS	**MEASURES**
FILTER 1: GENERAL MAREKT POTENTIAL	Political and commercial risk	Economic and financial indicators (devaluation of currency, real interest rates, GDP growth, inflation), payment experience (the ONDD and other credit providers' past experience), and institutional context (corruption index, transition economy) (ONDD 2011, Cuyvers 2012, p. 56).
	Macroeconomic size and growth	GNP and GNP per capita
FILTER 2: IDENTIFYING POSSIBLE OPPORTUNITIES	Import growth	Short-term import growth: the most recent available simple annual growth rate in imports. Long-term growth: the compounded annual percentage growth in imports over a period of five years.
	Import market size	Ratio of imports of country i for product category j and the total world imports of product category j
FILTER 3: IDENTIFYING PROBABLE AND REALISTIC EXPORT OPPORTUNITIES	Import market concentration	Herfindahl-Hirshmann-index (HHI)
	Trade barriers	Index for revealed absence of barriers to trade

FILTER 4: FINAL ANALYSES OF OPPORTUNITIES	Matrix of realistic opportunities	Calculating the relative market share of the exporting country (country n) of product category j in all countries that entered filter 4.

Table 7: The DSM process (Cuyvers et al., 2012, pp. 56–70).

The DSM has been applied to real-life scenarios several times, on the examples of Belgium, Thailand, Greece and South Africa (Cuyvers et al. 1995; Cuyvers 1997; Viviers, Lubbe, Steenkamp and Olivier, 2014; Cuyvers, Steenkamp, Viviers, Rossouw and Cameron, 2017; Skintzi and Tsekeris, 2022). Although the DSM provides a tool to decide which markets might be relevant for export, its intended use is focused for a large number of country-product combinations, essentially covering all possibilities. Its goal is not to provide a ranking of opportunities, but rather a list of choices of potential markets that should be further investigated. Furthermore, the DSM does not take into account non-tariff barriers to trade, and does not include industry-specific variables. The DSM as a whole will not be used for this thesis, as the first filtering step was already completed by Slovenia's export promotion agency in assessing macroeconomic opportunities, and determining China and Japan are two markets that have potential. Furthermore, other filters related to market attractiveness can be applied as this thesis will focus specifically on the pharmaceutical industry. To this end, more micro indicators, such as market potential relating to the product, market access and assessment of opportunities.

2.2.2.6 Shift-Share Approach

The shift-share model, developed by Green and Allaway (1985) is the only new approach of IMSel developed up until the early 1990s (Douglas and Craig, 1992, p. 300). This approach relies on import measures to predict industry-specific attractiveness of target markets. To this end, it uses only two measures; import market size and import growth, analysed over a certain period of time. The main core of the shift-share approach is calculating the difference between a market's actual and expected growth – the net shift. The net shift of a market shows what performance a market could have reached if its growth rate had been comparable to other markets in the analysed group, and is positive for those markets who have gained market share, but negative for those who have lost market share. Furthermore, the percentage net shift is calculated for each market by dividing the net shift of each market with the total net shift of all markets included in the analysis. The percentage net shift figure provides the information on total gain or loss of

market share of each analysed market (Green and Allaway, 1958, pp. 84, 85; Cuyvers et al., 2012, p. 31). The key strength of this model is its simplicity and industry-specific measures. However, the reliance exclusively on import measures is a great weakness of this model. Since exporters also compete with domestic producers, not only amongst themselves, total demand measures would have to be added to the model. Besides reliance on import measures, the model is not well-grounded in theory and also lacks predictive power, which is why the shift-share approach was later revised. Authors who have applied the shift-share model in their studies have found the results vary based on the years chosen for analysis, as well as fluctuate greatly due to the influence of outliers. More recent shift-share models are built on the core logic of the approach, while also trying to satisfy requirements of building an approach that is grounded in theory and offers systematic and analytical insights (Papadopoulos et al., 2002, pp. 168, 169).

2.2.2.7 Trade-off Model

The trade-off model developed by Papadopoulos et al. (2002) is based on an assertion that in order to comprehensively assess foreign markets, both the pluses and minuses of exporting to them must be assessed. In the trade-off model, pluses are identified as demand potential, while minuses are identified as trade barriers (Papadopoulos et al., 2002, pp. 169, 170). Each of the dimensions is then assigned four variables, based on their relevance, frequency of use in past IMSel research, as well as data availability, reliability, and comparability. The model fills in the research gap left by sequencing models, which rarely consider non-tariff barriers to trade, as they are hard to measure (Papadopoulos et al., 2002, pp. 169–171). Furthermore, the model considers the exporting country as well as the importing market, which some of the other models do not do. The same import market might present different opportunities for two different exporting countries, which is why the exporting country effect has to be considered (Papadopoulos et al., 2002, p. 175). Based on the results of data analysis, the highest and lowest performing country values were subtracted from the data for each variable, thus forming a scale of ten equal intervals, assigning each country a score from zero to ten. Each country's scores for each of the variables were then averaged, calculating a total score for each of the two dimensions (Papadopoulos et al., 2002, pp. 173, 174). Based on the average score of all variables for a country-market, they are finally divided into four categories: high demand potential/high trade barriers, low demand potential/high trade barriers, high demand potential/low trade barriers and low demand potential/low trade

barriers. The best export opportunities are the markets which fall into the high demand potential/low trade barriers category (Papadopoulos et al., 2002, p. 174). The model's strengths are in that it is industry-specific and captures total rather than just import demand. However, it is impeded by deficiencies of secondary data, which can be unavailable, unreliable, or even out of date especially for developing countries. On the other hand, since the analysis is conducted at the product level, this model is very useful when having to determine priority country for the export of a product (Papadopoulos et al., 2002, pp. 184, 185; Cuyvers et al., 2012, p. 39).

DEMAND POTENTIAL	
VARIABLE	**MEASURE**
Apparent consumption	Domestic production + imports – exports
Import penetration	Imports as % of apparent consumption
Origin advantage	Exporting Country's share in target's total imports
Market similarity	Overall score of the following indicators according to Sethi (1971): life expectancy, GNP per capita, electricity production, import-to-GDP ratio
TRADE BARRIERS	
VARIABLE	**MEASURE**
Tariff barriers	Weighted mean annual tariff rate over the study period
Nontariff barriers	Composite quantitative index of 20 barrier items
Geographic distance	Mileage distance between exporting-target countries
Exchange rate	Percent change in official exchange rate vs. previous year

Table 8: The Trade-off approach (Papadopoulos et al., 2002, pp. 171, 172).

2.3 THE PHARMACEUTICAL INDUSTRY

2.3.1. Characteristics of the pharmaceuticals industry

The pharmaceutical industry is a complex industrial sector, which is responsible for "the research, development, production, and distribution of medications" (Mikulic, 2022). Under the Harmonised System (HS) by the World Customs Organization, pharmaceuticals fall under the 'products of the chemical or allied industries' section, chapter 30. The chapter includes different types of pharmaceuticals, all of which will be included in the analysis, as it will focus on HS chapter 30 (World Customs Organization, n.d.). Pharmaceuticals were the world's 6th most traded products in 2021; trade in pharmaceuticals represents 0.038 % of all global trade (Observatory of Economic Complexity, n.d. a).

The pharmaceutical industry is marked by its size and diversity, as well as by a highly fragmented global market, high dependence on science and technology, and high profitability, but also high cost when it comes to research and development (R&D) (Olmeda and Sosa-Varela 2012, p. 374). Within the pharmaceutical industry, some companies specialize in producing a single type of pharmaceutical products, while others do not specialize and produce a wider range of products, from patented medicines to generics. The pharmaceutical industry is a capital, technology and R&D intensive industry (Michels and Jonnard, 1999, p. 4-8; Brännback and Renko, 2002; Chen, 2017, p. 872). "It has a high nonhuman capital per worker, as measured by either fixed capital stock per worker or by nonwage value added per workers, high levels of R&D per dollar of sales or per worker, a comparatively skilled labour force, as measured by average wage per worker or by the number of engineers and scientists as a per cent of the total labour force, and a high rate of new product development" (Lipsey and Weiss, 1976, p. 3). As such, it employs a large amount of highly qualified workers, is a job-creating industry, and is also a significant contributor to the GDP of individual countries, as well as state budgets.

R&D is a key element of the competitiveness of companies on the pharmaceutical market. Without intensive investment in R&D, no pharmaceutical company can succeed in the medium and long term. Long-term development processes, shortening of the life cycle of new drugs, and high inputs, are a major obstacle for the entry of new manufacturers into the industry (Michels and Jonnard, 1999; Gambardella, Orsenigo and Pammolli, 2001; Brännback and Renko, 2002; Modic, 2005; Chen, 2017, p. 872). The pharmaceutical industry also stands out from any other sector in that it is a highly regulated sector in most economies, where governments control the price, purchasing, insurance schemes, and restrictions on marketing and promotion. The protection of intellectual property rights in effect contributes to regulation of the industry's standards, as it is aimed at preventing drug piracy or fakes, ensuring that the drugs which enter the market are manufactured at highest quality and standards. Furthermore, regulations vary on a country-by-country basis, meaning that when entering a new market, a manufacturer of pharmaceuticals needs to take into account national regulations which might be completely different from what the exporter might have encountered in other markets. While these regulations exist in order to protect consumers and ensure that all drugs which enter the market are of high quality, regulations can also be put in place with the

aim of obstructing trade – both import and exports. Before exporting a drug, the manufacturer has to gain market approval of the drug at home. Later, the approval of the importing country has to be gained, in order for the drug to enter the market (Cockburn, 2009, pp. 159, 160).

2.3.2 Trade in R&D intensive products and pharmaceuticals

In the global market, pharmaceutical firms face a monopolistic competition situation since multiple firms produce differentiated products. As it is a technology and R&D intensive industry, innovating firms have an advantage in entering export markets. Furthermore, trade in pharmaceuticals classifies as intra-industry trade, since not all countries produce the same variety of pharmaceuticals while also trading with each-other (Adolfsson, 2007, p. 12).

The product life cycle for drugs is relatively long. A patent can hold for up to 20 years, but it takes up to 10 years after R&D for a new drug has begun for it to be ready to enter the market, meaning that the effective time a patent holds is actually somewhere around 10 years (Adolfsson, 2007, p. 11). The product life cycle of drugs begins with the early stage, when the R&D process takes place. After the product is approved by relevant authorities, it can enter the market. When a new drug enters the market, it gains market shares until its patent runs out – that is when other companies will start entering the same market. Eventually, as better products are developed, the existing products will become obsolete. Like in other technology-intensive industries, the innovating country has an advantage over others in the beginning of the cycle in the pharmaceutical industry as well (Adolfsson, 2007, pp. 11, 12; Cockburn, 2009).

2.3.3 Demand in the pharmaceutical market

Several factors impact the export of pharmaceuticals. On the demand side, for example, Boring (2010) finds that US exports of pharmaceuticals decrease as out-of-pocket expenditure increases in a country (Boring, 2010). This is linked to the fact that in high-income countries the government intervenes much more in the delivery, financing, and regulation of pharmaceuticals, compared to low-income countries. In low-income countries, anywhere from 50 to 90 percent of medicines are paid for by the patient, not through government health expenditure (Olcay and Laing, 2005, p. 7). On the industry level, factors that affect the consumptions of pharmaceuticals include the income level

of the country, an ageing population and greater access to healthcare. Income level of the country and an expanding middle class mean that more people are able to either afford drugs or insurance schemes, which in consequence provide access to drug for them (Boring, 2010; Olcay and Laing, 2015, Finn, 2016). Greater access to healthcare comes with a well-developed and efficient healthcare system, which is, in some studies, reflected in health expenditure of government as part of GDP, as well as total health expenditure (Boring, 2010, Blanc, 2015, Tamas, 2021).

Supply and demand in the pharmaceutical industry are not determined by consumer's tastes, or even consumers themselves. On the demand side, tastes do not matter as much as the demand in the pharmaceutical sector is controlled by the so-called learned intermediaries – physicians and pharmacists (Cockburn, 2009, p. 150; Taylor-Strauss and Chen, 2019, p. 32). Factors that might influence demand lie within the wider demographic or lifestyle changes within a country. For example, cancer therapy and drugs might be in higher demand in those countries with higher incidence of risks that are connected to cancerous diseases, such as air pollution or higher incidence of smoking among the population. Diabetes drugs might be in higher demand in those countries that have a higher incidence of obesity, and so on. Demographic changes are an important factor especially in developed countries – as societies age, the demand for pharmaceuticals might rise due to the increase in elderly population, which is in need of more medical treatments (Cockburn, 2009, p. 160). On the supply side, competition is shaped by safety reviews, regulatory oversight, and legal frameworks (Cockburn, 2009, p. 150; Taylor-Strauss and Chen, 2019, p. 32).

The pharmaceutical industry, in effect, suffers from market failure in that there exists an asymmetry between consumers and manufacturers when it comes to the relative therapeutic worth of different forms of treatment (Hamilton, Lokuge and Dennis, 2005, pp. 377, 378). Consumers of pharmaceuticals – individuals – are not well-positioned to make decisions about which form of treatment is best for them and which product to purchase. In majority of the cases, individuals lack both resources and analytical ability or education background to compare the costs and benefits of different pharmaceutical and nonpharmaceutical treatments. This leads to manufacturers setting the prices of pharmaceuticals based on what the market can bear, rather than the worth of the product based on the cost of development. Consumers of pharmaceuticals are unable to act

rationally, in part because they cannot make informed decision, and in part since they cannot make decisions at all, as they rest in the hands of medical professionals who prescribe treatments and drugs. Thus, it is in the hands of medical professionals and various government bodies to compare alternate courses of treatments based on cost and efficiency and recommend what is best for the patient/consumer (Hamilton et al., 2005, pp. 378, 379). Furthermore, a unique feature of the pharmaceutical industry is that prices are not determined by demand, but rather by patents – after a patent for a drug expires, its price can drop from anywhere between 60 to 90 percent (Olmeda and Sosa-Varela 2012, p. 374). Adding onto that, the prices of drugs, even those under patents, are usually subsidized by some form of insurance with the goal of making them more accessible to patients. Several other factors also contribute to the prices of pharmaceuticals, such as the manufacturer's prices, transport cost, storage cots, import tariffs and taxes, procurement practices and dispensing fees (Hamilton et al., 2005, p. 379; Cohen-Kohler, Forman and Lipkus, 2008, p. 231).

2.3.4 Barriers to trade in the pharmaceutical industry

2.3.4.1 Overview

In exporting pharmaceuticals, barriers to trade such as tariffs and non-tariff-barriers also impede trade, just like in any other sector. Obstacles to trade, in all industries, are due to regulations and barriers both the sellers' and the buyers' side of the market. On the side of the exporting country, impediments include export taxes of export infrastructure user cost, while on the side of the importing country, they include import taxes and import infrastructure used cost. Some impediments to trade are such that they are hard to attribute to either of the sides, including transportation costs, information costs or costs due to institutional insecurity (Sadikov, 2007, p. 11; Anderson, 2011, pp. 72, 73).

The main barriers to exports in the pharmaceutical sector are tariff barriers, non-tariff barriers, as well as the level of intellectual property (IP) protection in the export markets. Tariff barriers are the easiest to track, as they are available for a given country from the WTO, which tracks both bound and applied tariffs. Non-tariff barriers are more difficult to quantify, with the most difficult type of barrier to be analysed being the trade-related impacts of domestic policies, such as subsidies, government procurement policies and other aspects of legal and regulatory systems, the impacts of which on trade are hard to trace. These factors are not necessarily related to international trade, meaning the scope

of possible policies which can impact trade is extremely wide (McCleery and DePaolis, 2014, p. 205).

2.3.4.2 Tariff barriers

"An import tariff is a customs duty imposed by importing countries on the value of goods brought in from other countries" (Olcay and Laing, 2005, p. 8). Tariffs can be levied ad valorem, on the percentage of value of the product, or on a specific basis, for example EUR 10 per 100kg of imported goods. Tariffs on finished products have two main effects: they give a price advantage to similar goods that are produced locally by raising the prices of imported goods, and provide revenue for the government (Olcay and Laing, 2005, p. 10). On the other hand, tariffs on inputs raise revenue, which can have an adverse effect on local production costs (*ibid.*). Duties and taxes that are applied to medicines can range anywhere from zero to 35 percent just for customs duties, with an additional (maximum) of 20 percent of VAT and 15 percent of other duties (Olcay and Laing, 2005, p. 17). Tariffs on medicines have been declining over the past years – in 2001, the global average tariff on medicines was 4.9 percent, while in 2018 the number declined to 3.4 percent (Stevens and Banik, 2020, p. 3). A study by Olcay and Laing (2005, pp. 24, 26–30) found that most countries apply zero tariffs for active pharmaceutical ingredients, finished pharmaceutical products, and vaccines for human medicines, with the highest tariffs (more than 20 percent) being applied only by lower-middle and lower-income countries. Furthermore, in those countries that levy tariffs, the tariff rate is usually less than 10 percent, with only 12 percent of all countries examined levying tariffs of more than 10 percent on finished products, and 10 percent of countries levying higher tariffs on active pharmaceutical ingredients (Olcay and Laing, 2005, p. 35). The study also found that for 92 percent of the countries included in the study, "revenue generated by pharmaceutical import tariffs amounts to less than 0.1 percent of the national GDP" (Olcay and Laing, 2005, p. 32). This value can be considered insignificant for national economies since if the tariffs were eliminated, this would present a minimal impact of government revenues (Olcay and Laing, 2005, pp. 32, 35). Lastly, the existence of low tariff rates, even zero tariffs, and their insignificance on the national economies shows that there is little industrial policy logic in the tariff structure. Tariffs can be linked to the protection of the local pharmaceutical production only in a few cases (Olcay and Laing, 2005, p. 35).

Efforts to reduce tariffs on pharmaceuticals at the international level can be traced back to 1994 during the Uruguay Round in the WTO, when some of the members concluded the Agreement on Trade in Pharmaceutical Products, which is today also known as the Pharma Agreement. The Pharma Agreement has eliminated tariffs, as well as other duties and charges, on some pharmaceutical products, ingredients, and substances used to produce them. Since 1994, it has been updated several times, most recently in 2010. The countries that are parties to this agreement have eliminated duties on a most-favoured-nation basis, which means that they have eliminated duties on the products in trade with all other WTO members, not just parties to the Pharma Agreement, permanently binding them at duty-free levels (Bacchus, 2021). Although multilateral negotiations as well as bilateral and regional trade agreements have contributed to lower tariffs on pharmaceuticals, some countries still apply a high tariff, especially in developing countries. This is a source of concern for European as well as Slovenian pharmaceutical companies, as high tariffs lead to higher prices on exported products, and thus limit the access to medicines as well as their competitiveness in the market (Olcay and Laing, 2005).

2.3.4.3 Non-tariff barriers

Globally, pharmaceutical products are highly regulated, and it is hard to distinguish justified regulations from unjustified ones that create barriers to trade, while they are also difficult to measure and quantify. The WTO allows countries to use technical standards to protect the health of humans, animals, and plants, as long as they are not discriminatory in nature and do not create unnecessary obstacles to trade. However, the WTO does not define what such measures might be, and has no specific provisions to enhance transparency and reducing the complexities of technical standards, which in consequence makes it hard to distinguish between those standards that are discriminatory and those that are not, leading many countries to have complex regulations in place that do indeed hamper international trade (Eliason, 2007; Taylor-Strauss and Chen, 2019, p. 32). Examples of non-tariff barriers include registration of products, certification of products, government policies regarding the price and reimbursement of medications, other technical regulations, and pre-shipment inspections (Blanc, 2015; Helble and Shepherd, 2017). Registration barriers can be a serious obstacle to exporting pharmaceuticals, since companies might have to obtain additional certifications and authorizations of their products, besides those received in the EU. In addition to administrative costs that such

processes cause for the company, they are also long-lasting (Blanc, 2015, p. 4). UNCTAD classifies NTBs into 16 chapters:

	NON-TARIFF MEASURE
Chapter A	Sanitary and phytosanitary measures
Chapter B	Technical barriers to trade
Chapter C	Pre-shipment inspection and other formalities
Chapter D	Contingent trade-protective measures
Chapter E	Non-automatic import licensing, quotas, prohibitions, quantity-control measures and other restrictions not including sanitary and phytosanitary measures or measures relating to technical barriers to trade
Chapter F	Price-control measures, including additional taxes and charges
Chapter G	Finance measures
Chapter H	Measures affecting competition
Chapter I	Trade-related investment measures
Chapter J	Distribution restrictions
Chapter K	Restrictions on post-sales services
Chapter L	Subsidies and other forms of support
Chapter M	Government procurement restrictions
Chapter N	Intellectual property
Chapter O	Rules of origin
Chapter P	Export-related measures

Table 9: International Classification of Non-Tariff Measures (UNCTAD, 2019, p. Iii).

Helble and Shepherd (2017, p. 11) argue that only the first two categories are relevant to issues of consumer protection. While other categories might also have an effect on consumer protection, the issue is that they can be misused to protect the domestic market for incumbents or reduce efficiency and access (*ibid.*).

2.3.4.4 Protection of Intellectual Property rights

Since pharmaceuticals are a technology and R&D intensive industry, the proper protection of intellectual property is key and can have a positive or negative impact on

exports of pharmaceuticals (Chadha, 2009; Blanc, 2015). “Intellectual property (IP) pertains to any original creation of the human intellect such as artistic, literary, technical or scientific creation. Intellectual property rights (IPR) refer to the legal rights given to the inventor or creator to protect his invention or creation for a certain period of time” (Saha and Bhattacharya, 2011, p. 88). IPR is a tool to protect investments, time, money and effort that is put into a product by its creator and can aid the economic development of a country by promoting healthy competition, industrial development and economic growth. The introduction of a new drug can cost the producer anywhere between USD 300 million and USD 1,000 million, which is why it is especially important in the pharmaceuticals industry (Saha and Bhattacharya, 2011, pp. 88, 89). Since the development of new drugs involves substantial cost, especially in research and development, firms are eager to protect their innovations. IPR protection allows the holders of innovation and of rights to exclude other from using the technologies that are protected. Without patents, manufacturers could freely use the costly research of an innovator in the industry, meaning firms would have no incentive to innovate without patents, which would effectively set the industry back. A stagnating pharmaceutical industry, however, has lasting effects on the society – it would mean less effective treatments for diseases, higher incidences of diseases, lower quality of life and lower life expectancy (Cohen-Koler et al., 2008, p. 229). Furthermore, return on the R&D cost that was invested into developing the product is important in the pharmaceutical industry due to long times between the invention and commercialization of a product, and especially because of uncertainty of success which comes from factors such as safety, effectiveness and patentability. What is more, the pharmaceutical industry faces an issue in that the products are easily imitated – a competitor can easily break down the molecular structure of a drug and produce their own version at lower cost. Patents are thus of central meaning in the pharmaceutical industry, since they provide the holders of IPR, the inventors of the product, with a legal protection against imitation (Lewis, 1996).

IPR protection can have a market expansion effect on exports, cost reduction effect or the market power effect (Maskus and Penubarti, 1995; Smith, 2002; Boring, 2015, p. 1315). Strong protection of intellectual property rights can have different effects on a market: the market expansion effect or the market power effect. The market expansion effect holds that strong protection of IPRs expands markets, since exporters are ensured exclusive rights to the technologies embodied in their exports, thus reducing the ability

of domestic firms to imitate the product. In the market expansion effect, larger sales of a product are induced to countries with stronger IPR protection due to shift in demand (for patented products) and due to decreased cost. Since IPR protection is granted, the cost that firms would face due to loss of technologies to local firms in the foreign market is reduced. The cost reduction effect is most substantive in countries where strong imitation abilities are present, since IPR reduces the number of imitations of a product that could potentially be sold on the foreign market. The market power concept, on the other hand, asserts that strong IPR protection in foreign markets reduces exports, since it ensures a temporary monopoly over the protected technologies. Firms that secure patent protection in foreign markets achieve the market power effect by restricting the quantity of exports and increasing their price. This reduces the elasticity of demand and leads to decreased exports to countries with stronger IPR protection. The market power effect can also arise due to additional reasons, such market segmentation or unavailability of close substitutes. However, strong IPR protection leads to reduced availability of substitutes since it limits imitation, and it also reinforces market segmentation, meaning that IPR protection leads has an effect on market power to at least some extent. Lastly, the cost reduction effect happens due to the firms' cost dropping when patenting a product, since they do not have to design strategies to deter imitation anymore (Taylor, 1993; Maskus and Penubarti, 1995; Smith, 2002; Boring, 2015, p. 1315; Chen, 2017, p. 865).

In her study of the market effect of IPR protection on the U.S. exports of between 1972 and 1992, Smith (2002, p. 505) finds a positive relationship between the strength of IPR protection and U.S. bilateral exports to countries with strong imitative abilities, and a negative relationship in countries with weak imitative abilities. The study applies a gravity model, with dummy variables for countries with strong or weak imitative abilities. Imitative abilities are determined by four measures: R&D expenditure as a percent of GDP, R&D scientists, and engineers per million population, R&D technicians per million population, and educational obtainment (Smith, 2002, pp. 501, 504). Specifically for pharmaceuticals, Smith (2002, pp. 508, 509) finds that strong IPRs enhance the market power effect on U.S. exports in countries with weak imitative abilities. On the other hand, IPR protection enhances the market expansion effect across countries with strong imitative abilities. Furthermore, there is little agreement on whether the effect of IPR protection is homogeneous in all sectors, especially since some IPR protection might only be related to brand protection, thus not providing any technology spill overs and

consequently affecting trade. However, empirical research finds that most often, firms are generally more likely to export when patent protection is in place, especially in patent-sensitive industries, such as pharmaceuticals (Smith, 2002; Chen, 2017, p. 866).

One of the most-used indices of IPR protection, the Ginarte-Park index, assesses the strength of a country's IPR protection by measuring the following five facets of patent laws: the extent of IPR coverage, membership in international patent agreements, provisions for loss of protection, formal enforcement mechanisms, and duration of protection (Ginarte and Park, 1997, p. 284; Chen, 2017, p. 869). The index is calculated based on assigned values for each of the categories, and the final sum ranges between one and five, with a higher number meaning more stringent IPR protection (Ginarte and Park, 1997; Chen, 2017, p. 869). However, the major limitation of this index is that it reflects only laws and agreements, rather than actual degree of enforcement in a country (Chen, 2017, p. 869). Blanc (2015, p. 14) uses data from the Property Rights Alliance (PRA) to measure the level of IPR protection, using the index on Intellectual Property Rights that was developed by them. The PRA measures Intellectual Property rights based on the following four indices: the protection of IPR, the patent strength, the copyright piracy, and trademark protection (Levy-Carciente, 2022, p. 6). In order to collect data, the PRA uses different sources, and has worked closely with dr. Park, one of the authors of the Ginarte-Park index. To this end, the PRA and dr. Park developed the International Patent Index and the International Trademark Index, both of which are similar to the Ginarte-Parke index but tailored to the specific area – patents and trademarks (Levy-Carciente, 2022, pp. 10, 11). In addition, data is gathered from the Global Competitiveness Report, the World Economic Forum Executive Opinion Survey, and the BSA Global Software Survey (*ibid.*). However, perhaps the most direct way of assessing IPR standards in a quantitative study is to analyse the indices of issues raised by the exporting countries to a relevant authority, as with non-tariff trade barriers. The European Commission, Directorate-General for Trade, gathers information and keeps records of all complaints made by EU member states in exporting to non-EU members, on both NTBs and IPR protection, categorized by HS chapter 30. This gives us a direct insight into whether obstacles exist in the case of exporting countries under analysis in the field of IPR protection in the pharmaceutical industry (European Commission, n. d.).

Of the greatest concern for exporting firms in the pharmaceutical industry are counterfeit medicines and piracy, as they create disincentives for originator companies to invest in R&D and threaten their competitiveness in foreign markets as well as the industry as a whole (Boring, 2015, p. 1315; Blanc, 2015, p. 5; Chen, 2017, p. 866). Furthermore, IP protection can also act aa a NTB for pharmaceutical companies, since the documents that need to be submitted to the authorities have increased in the past ten years, and the waiting times for approval of new drugs got longer (Saha and Bhattacharya, 2011, p. 91). Lastly, research finds that IPR regimes can impact international trade in pharmaceuticals, although not in every case. Delgado, Kyle and McGahan (2008) find that global trade in pharmaceuticals has increased since the passage of The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) agreement.[7] Other authors have argued that stronger IPR protection regimes could hamper international trade in pharmaceuticals, thus even limiting access to drugs in countries that import them, especially developing ones (Castro Bernieri, 2006; Chaudhuri, Goldberg and Jia, 2006; Milstien and Kaddar, 2006; Orsi, D'almeida, Hasenclever, Camara, Tigre and Coriat, 2007; Boring, 2010). Boring (2010), on the other hand, find that TRIPS did not affect US exports of pharmaceuticals, and other authors find that IPR protection is not the reason for increased prices or inaccessibility of drugs, but rather systemic issues such as poverty or insufficient infrastructure (Watal, 2000; Attaran, 2004). Moreover, the effect of IPR protection on trade-creation is disputed. Some authors find that IPR protection is not necessarily trade-creating, or that it does not have an impact on technology-intensive goods such as pharmaceuticals (Fink and Primo-Braga, 1999; Castro Bernieri, 2006). On the other hand, studies also show that the TRIPS agreement, which protects IPR, can be trade-creating, increasing the imports of technology-intensive products, such as pharmaceuticals, as well as other goods, into countries with increased IPR protection (Plasmans and Tan, 2005; Ivus, 2010) Blanc (2015), for example finds that IPR protection is one of the factors that influences EU exports of pharmaceuticals, although he did not use TRIPS as measurement. Lastly, the level of IPR is hard to measure, since it is very industry-specific, and not every method of ensuring IPR protection is suitable for every industry (Saha and Bhattacharya, 2011).

[7] The TRIPS Agreement is a WTO agreement which came into effect on 1 January 1995, and "is to date the most comprehensive multilateral agreement on intellectual property." (WTO, n.d. c).

2.4 SYNTHESIS OF THE LITERATURE REVIEW

Two key elements in the decision of selecting an export market have been found to be present throughout all models: market attractiveness and the competitive position of the exporting country. Market attractiveness encompasses a wide assortment of conceptualizations of its meaning, leading to various studies utilizing different factors and criteria in order to assess market attractiveness (Koch, 2001). As an external factor, exporting firms and countries have no control over market attractiveness, rather, their success is determined by the conditions of the market. Thus, they resort to analysing the situation in different markets, in order to choose the most attractive one, or, based on their objective, the one where they can succeed (Cuyvers et al., 1995, p. 173; Alexander, 1995; Mayer et al., 2022).

The basic elements of measuring market attractiveness boil down to size and growth of the market, accessibility of the market, and opportunities in the market (Cavusgil, 1985; Green and Allaway, 1985; Cuyvers et al., 1995; Cavusgil, 1997; Papadopoulos et al., 2002; Sheng and Mullen, 2006; Oztruk et al., 2015). Only utilizsing market potential and competitiveness analyses is not enough – accessibility of the market, an interaction between the two, has to be included in order to give a complete picture. However, there is no uniform way of addressing these elements in the IMSel literature, as there exists a diversity of models, some of which are too complex to apply in practice, which focus only on the import side of demand, have not been tested sufficiently, or are not generalizable to various industries (Douglas and Craig, 1992; Papadopoulos et al., 2002, p. 166). Furthermore, most of the models are developed to analyse large amounts of data and country-products pairs, which is not necessary in this case, as country-product pairs have already been determined. To this end, models such as the OMOI or the DSM model cannot be used, since they have either been developed for processing of over 100 countries and multiple possible country-product combinations. The Shift-share and Three-stage approach face other issues, especially with methodology and results – the shift-share approach has been found to be inaccurate due to outliers and lack of uniformity in results, while the three-stage approach lacks structure and is not well-defined in the name of flexibility. However, all models offer useful insights into what should be considered when analysing foreign markets (Papadopoulos et al., 2002; Steenkamp et al., 2012). Furthermore, specifics of the pharmaceutical industry must be taken into account when examining the attractiveness of foreign markets. To begin with,

demand in the pharmaceutical market is not determined by consumers, their habits, or tastes, but rather by socio-demographic changes, levels of income and the structure of the health system, more specifically, prevalence of out-of-pocket spending. Moreover, besides tariff barriers, other trade barriers such as non-tariff trade barriers and IPR protection are of crucial importance in the pharmaceutical sector where government regulation plays a key role in regulating supply, and where R&D is the main component in developing new, competitive products (Lipsey and Weiss, 1976; Michels and Jonnard, 1999; Smith, 2002; Hamilton et al., 2005; Olcay and Laing, 2005; Adolfsson, 2007; Chadha, 2009; Cockburn, 2009; Boring, 2010; Olmeda and Sosa-Varela 2012; Chen, 2017 Blanc, 2015; Taylor-Strauss and Chen, 2019).

Out of the above discussed approaches, the gravity model has been most often empirically used and tested, and offers useful insights into what affects the export of pharmaceuticals, namely: macroeconomic factors, exchange rates and distance, which are used as proxies for similarity and size of the market, tariff and non-tariff trade barriers, and the structure of demand in the pharmaceutical sector of the importing country. Macroeconomic factors show how similar markets might be to the exporting country, which reduces uncertainty and risk, while also providing insight into the economic and market development of the exporting market. Barriers to trade, such as distance, tariff, and non-tariff barriers and IPR protection, present challenges in exporting, while levels of income relating to out-of-pocket spending versus government spending on health, and the ageing of population, offers an insight into which market is more attractive based on demand. The trade-off model combines some of the aspects of the gravity model, such as similarities in the market, distance, exchange rates, and barriers to trade, while also measuring demand through apparent consumption, as well as competition in the market by measuring import penetration (Papadopoulos et al., 2002, pp. 171, 172). As such, it covers both the macro and the micro aspects of analysis of market attractiveness, while allowing us to account for not just import, but general demand, as well as obstacles to trade.

3 ANALYTICAL FRAMEWORK

3.1 THE EXTENDED TRADE-OFF MODEL

The trade-off model for international market selection builds on the shift-share model and was developed in order to counter some of the most pressing issues in IMSel research, such as the exclusive reliance on import measures, lack of micro measures, lack of empirical validation and inability to reflect total demand available in the market. Furthermore, the model includes variables that have been chosen based on their "relevance, frequency in past research, evidence of satisfactory performance in various settings, data availability, reliability, and comparability, and ability to express qualitative factors where necessary" (Papadopoulos et al., 2002, p. 171). The trade-off model also considers the position of the exporting country, which others rarely do. As is pointed out by the authors, a good market for one country is not necessarily a good market for another country, which is why the exporting country effect was taken into account when choosing variables. Lastly, the model also accounts for domestic producers, thus offering insights into whether the exporting country will have to face domestic or foreign competition, helping them develop more specific strategies (Papadopoulos et al., 2002, p. 175). One of the biggest setbacks of this model, as well as any other IMSel approaches, is the availability of data. The issues faced in such kind of research are primarily different definitions of data, lack of data, its unreliability, or even aging data for some countries. Furthermore, some of the factors' relevance depend on the situation of the exporting country and the product that is subject to analysis – measuring apparent consumption in countries where markets are non-existent presently does not make much sense. Lastly, some of the macro factors affect some industries more than the other, e.g., the distance between countries as a proxy for cost of transport is more relevant to industries where the transport of bulky good is needed. Authors also point out that tariffs should ideally be measured at the industry level, which is what will be done in this thesis (Papadopoulos et al., 2002, pp. 183, 184). Nevertheless, the trade-off model attempt to address as many of these limitations as it can by following approaches proposed in earlier studies, such as using official UN databases, using variables that past research has confirmed as the most appropriate and important, using a parsimonious set of indicators, and applying ad-hoc solutions grounded in theory where needed, as is the case in this thesis (Papadopoulos et al., 2002, p. 184). In conclusion, this model provides an improvement over earlier models since it captures total demand, is industry-specific and efficient, and was externally validated. It was tested on two completely different countries – Canada and China – with

no significant differences in predictive power between the two, which is why it can be applied to both developed and developing countries (Papadopoulos et al., 2002, p. 185). Lastly, the model satisfies both major dimension of international market selection: measuring market attractiveness as well as the competitive position of the exporting country.

This thesis will assess the pharmaceutical markets of Japan and China according to the Trade-off model developed by Papadopoulos et al. (2002), with some adjustments based on the fact that only one market is considered. This means that pharmaceutical market specifics which have been discussed above, can be directly included in the variables which the model examines. The basic model outline will stay the same, with minor additions to some of the variables. The proposed framework is thus as follows:

DEMAND POTENTIAL	
VARIABLE	**MEASURE**
Apparent consumption	Domestic production + imports – exports
Demand conditions specific to the pharmaceutical market	• Out-of-pocket expenditure vs. government expenditure as % of total health expenditure, out-of-pocket expenditure per capita connected to GNI per capita; • % of population aged 65 or above
Import penetration	Imports as % of apparent consumption
Origin advantage	Exporting Country's share in target's total imports of pharmaceuticals
Market similarity	Overall score of the following indicators according to Sethi (1971): life expectancy, GNI per capita, electricity production, import-to-GDP ratio
TRADE BARRIERS	
VARIABLE	**MEASURE**
Tariff barriers	Simple average tariff rate
Nontariff barriers	• Incidence of nontariff barriers as per the UNCTAD TRAINS database that are still in effect • IPR concerns reported to the European Commission which are still in effect
Geographic distance	Mileage distance between major ports of export-target countries
Exchange rate	• Percent change in official exchange rate vs. previous years • Exchange rate fluctuation over the study period

Table 10: Analytical framework, based primarily on Papadopoulos et al. 2002; extended based on Olcay and Laing, 2005; Cockburn, 2009; Boring, 2010; McCleery and DePaolis, 2014; Blanc, 2015; Tamas, 2021.

3.2 DEMAND MEASURES

3.2.1 Apparent consumption

While the import-focused approaches use measures of import growth to measure consumption, such measures 1) do not necessarily account for the specific of the pharmaceutical industry, and 2) do not portray the total available market by excluding those exporters who can compete with domestic suppliers (Papadopoulos et al., 2002). In order to counter this, market potential will be measured by apparent consumption, which has been recommended as the appropriate measure for market size in literature, measured as: *domestic consumption + imports – exports*.

Apparent consumption accounts for domestic production and suppliers, thus presenting a more accurate picture of the market. One of the issues in assessing this factor is definitely the availability of data. While there is data on the output of the Chinese pharmaceutical industry, the most accurate data can be found in the China Statistical Yearbook, however, it is reported in tonnes rather than value of output (National Bureau of Statistics of China, 2022; 2023). United Nations Industrial Development Organization (UNIDO) provides numbers in currency as well as the measure of apparent consumption, but is limited in data provided. For China, UNIDO data is available only for China, data is only available from 2011 to 2018. After 2018, data on the production of the pharmaceutical industry is only available in tonnes. For Japan, UNIDO data is available only for the years 2008 – 2010 and 2012 – 2014. More data is available in yearly reports on the pharmaceutical industry, but they are not available for all years (UNIDO, n.d. a; b). While data is also provided by some other sources, specifically the Japan Generic Medicine Foundation and Statista, it is only available in JPY, so it had to be converted to USD based on the average exchange rate in the corresponding years (Japan Generic Medicine Foundation, n.d.; Statista, n.d.). This is an issue that most IMSel research encounters – countries might be selective in reporting data, data might not be widely available, or it is not available in corresponding values. In order to account for the fact that this indicator might not fully reflect the demand conditions in the pharmaceutical industry, and that the availability of data might not be very good, another indicator to measure demand is added.

3.2.2 Demand conditions specific to the pharmaceutical industry

As per the analysis of the pharmaceutical sector, it can be concluded that it does not face ordinary laws of demand. Consumers, their tastes and habits, do not play a crucial role, as demand in the pharmaceutical sector is influenced 1) by professionals who prescribe drugs, 2) by the structure of the health system, and 3) by socio-demographic changes (Hamilton et al., 2005; Cockburn, 2009; Douglas and Craig, 2010, p. 154). When focusing on a specific industry, it is important to understand which factors affect it, as some might have a larger impact than others. For example, while economic factors such as GNI per capita, which impacts consumer ability to purchase, are particularly important in the market for luxury or consumer goods such as clothes, electronics, and entertainment, they are less important when it comes to pharmaceuticals, as their consumption is less dependent on the ability to purchase, and more dependent on societal and demographical changes within a country. Nevertheless, it is important to remember that factors are not isolated but rather interact with one another. For example, if out-of-pocket expenditure for pharmaceuticals is prevalent in a country-market, then GNI factors are also a factor worth considering, since the cost of consumption of pharmaceuticals is mainly burdened by individuals, and not government expenditure. Income level of the country and an expanding middle class mean that more people are able to either afford drugs or insurance schemes, which in consequence provide access to drug for them (Boring, 2010; Olcay and Laing, 2015, Finn, 2016). Lastly, within the pharmaceutical industry analysis, demographic factors should definitely be given special attention, as ageing population, especially in developed countries, leads to higher levels of expenditure in pharmaceuticals (Douglas and Craig, 2010, p. 154). In order to account for the specifics of demand within the pharmaceutical industry, the following factors will be measured: out-of-pocket expenditure versus government health expenditure as % of current health expenditure, out-of-pocket expenditure per capita, GNI per capita, and the % of population aged above 65.

3.2.3 Import penetration

The measure of import penetration is widely used in industry-specific analyses and other approaches to IMSel. In the trade-off model, import penetration measured based on apparent consumption; imports as % of apparent consumption. If imports represent a high percentage of imports in apparent consumption, it shows an open import market with low domestic producer competitiveness, which is a more attractive market for exporters (Root,

1994; Papadopoulos et al., 2022, p. 171). The authors of the model find that imports-to-GDP ratio is a suitable replacement if data for import penetration is unavailable.

3.2.4 Origin advantage

Origin advance is measured as exporting country's share in target country's import, a measure which is often included as import market size or import market penetration in other approaches. Origin advantage is measured in order to show whether the exporting country enjoys advantages in the exporting country, based on factors such as a favourable image of the exporting country's products in a given industry, strong trade relations between the countries and critical mass, where other firms from the same country can help with market formation (Papadopoulos et al., 2002, p. 171). Since this is an industry-oriented study, origin advantage in the pharmaceutical industry will also be measured as Slovenia's share in Japan and China's import of pharmaceuticals.

3.2.5 Market similarity

Market similarity is measured in order to account for demand, as it tends to be higher in markets that are similar to the market of origin of the product. Papadopoulos et al. (2002) measure market similarity based on four indicators: life expectancy, GNP per capita, electricity production, and imports-to-GDP ratio. This section of analysis provides for the more macro-oriented part of research, as these factors do not necessarily correspond to demand in the pharmaceutical sector, but rather account for the similarity of the importing and exporting countries, which is one of the factors emphasized by the gravity model, for instance. Indeed, markets that are more similar to the home market are often more suitable for export, as similarity reduces risk and uncertainty when entering a new market (Papadopoulos et al., 2002, p. 171). The factors for market similarity were chosen based on Sethi's (1971) proposed 29 factors of market similarity. Sethi's factors are grouped into four general categories, namely health and education, personal consumption, production and transportation, and trade. Papadopoulos et al. (2002) highlighted one factor from each of the categories, based on their high correlation to other factors in the group. The original model proposed by Papadopoulos et al. (2002) uses GNP per capita as one of the factors, which has since been replaced by GNI per capita. As explained by the World Bank, GNI is the same measure as what was previously GNP – "The World Bank uses terminology in line with the 1993 System of National Accounts and refers to GNP as "Gross national income" or GNI" (The World Bank, n.d. a).

3.3 TRADE BARRIERS

3.3.1 Tariff barriers

Tariffs are customs duties on imports to a country, which have a two-fold effect: first, they raise the price of imports, thus giving a price advantage to domestically produced products, and second, they raise revenue for the government. In the pharmaceutical sector, tariffs are usually low and do not contribute much to the government's revenue. However, that does not mean they are non-existent. The trade-off model measured tariff barriers by the weighted mean annual tariff rate over the study period, but due to the fact that a specific industry is analysed in this thesis, a simple average of the tariffs applied can be considered, since weighing by product is unnecessary. Data from the UNCTAD - Trade Analysis Information System (TRAINS) will be used, which allows for a highly-specific overview of tariffs, at HS subchapter level.

3.3.2 Nontariff barriers

While the original model by Papadopoulos et al. (2002) considers a composite index of 20 barrier items, this study will be conducted specifically for the pharmaceutical industry, meaning that direct measures of non-tariff barriers within the industry can be taken. NTBs are hard to measure since their effect on imports is hard to quantify, they can be presented as sanitary regulations, trade regulations, or are even a by-product of the import system of a country, such as long customs clearance processes. Non-tariff trade barriers will be gathered through the United Nation Conference on Trade and Development (UNCTAD) TRAINS database, which offers a comprehensive insight into NTBs. While a similar database also exists within the WTO, it is not as comprehensive since it lists only those measures which the imposing country reported to the WTO. As such, in the case of country A having notified the WTO of more measures than country B, this might not realistically reflect the number of measures applied in practice, since country A might just be more active in reporting to the WTO than country B (WTO, n.d. c; UNCTAD, 2020, p. 27). The UNCTAD, on the other hand, collects NTBs through a comprehensive analysis and review system. Thus, besides measures that countries have notified the WTO of, the TRAINS database also includes regulations in other forms of legislation, such as directives, decrees, and laws, which are being enforced by a country and are NTBs. Lastly, the UNCTAD data is filtered according to measures presented in regulations – if two different measures stem from the same regulation, they count as one measure under one

regulation (UNCTAD, 2020, p. 27). In order to assess the number and extent of NTBs in the pharmaceutical industry, the incidence of reported NTBs in all categories will be measured. A higher incidence of NTB measures reflects a less open market for imports. Measures which are currently in effect will be considered, specifically those which affect either Slovenia/the EU or all WTO members. The number of reported NTBs will be measured at the HS chapter 30 level for all pharmaceuticals and then compared by different types of NTBs. On the other hand, the UNCTAD TRAINS database does not provide information on any specific trade concerns raised by members. This data will thus be gathered from the WTO portal, so as to assess whether any specific concerns have been raised in trade with either China or Japan.

Furthermore, intellectual property protection will have to be addressed. Again, a category that is hard to measure due to obstacles in quantifying IPR measures, besides with the help of already established indexes. To this end, the Ginarte-Park Index and the Property Alliance's Indexes have been considered in the literature review, as well as the incidence of reports of IPR infringement to DG Trade, which affect EU exports to non-EU countries (Ginarte and Park, 1997; Blanc, 2015). Since neither of the indexes are not directly related to the pharmaceutical industry, the most direct way of assessing IPR issues in the pharmaceutical industry is to measure the indices of reports of IPR concerns by exporting EU members to China and Japan, in the sector of pharmaceuticals, with the Access2Markets tool. All existing concerns at this moment will be included.

3.3.3 Geographic distance

Geographic distance measures two separate effects: first, the effect transportation costs can have on price, and second, it also embodies psychic distance. In the case of pharmaceuticals, since consumer tastes, behaviour and culture are less important, geographical distance mostly plays the role of a proxy for transportation cost. The distance between the countries' major ports will be used for this factor (Papadopoulos et al., 2002, p. 172).

3.3.4 Exchange rate

Lastly, the exchange rate is considered as one of the trade barriers. Currency exchange rates are a major risk element in export and have an impact both on the pricing strategy of the product, as well as the demand for the product. If the currency of the exporting

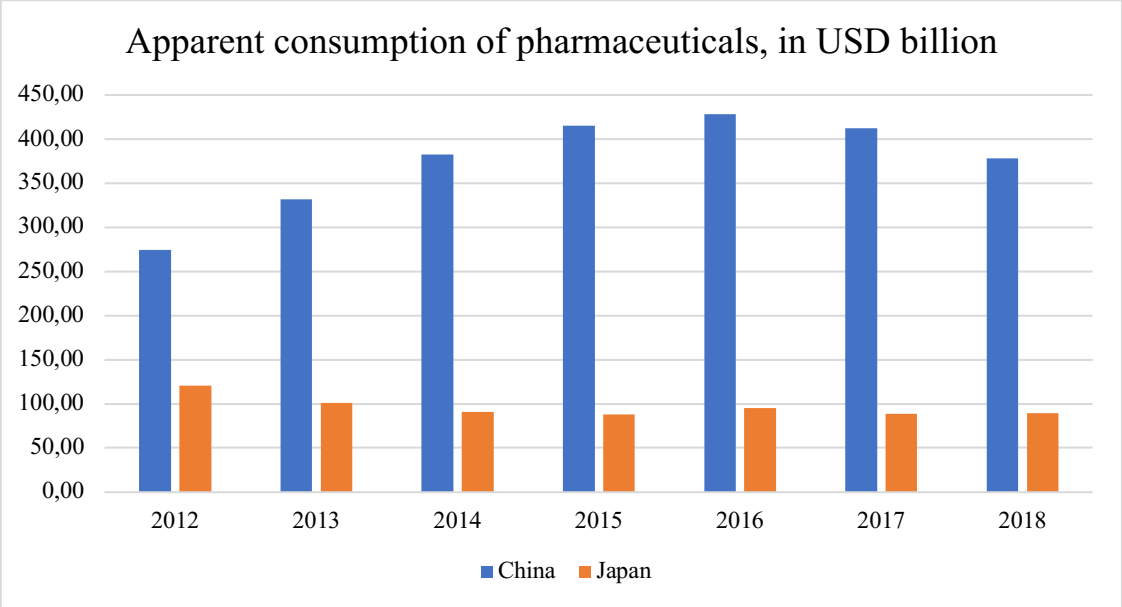
country depreciated, exports are expected to increase. On the other hand, if fluctuations in currency value are a frequents and large in terms of value, exporters have to prepare pricing strategies accordingly, since instability in currency can have a negative effect on the financial success of an exporter in the foreign market (Papadopoulos et al., 2002, p. 172; Wilkman, 2015). To comprehensively analyse the effect of exchange rate on exports, both the change in exchange rate compared to the previous year, as well as fluctuations over the study period, will be considered.

4 EMPIRICAL ANALYSIS

4.1 DEMAND POTENTIAL

4.1.1 Apparent consumption

Apparent consumption is measured as: *total output of an industry + imports – exports*, and gives us a more accurate insight into what the size of the market actually is. However, the issue with calculating apparent consumption in the pharmaceutical market in Japan and China is the lack of access to data. For China, the data on apparent consumption of pharmaceuticals is available up to 2018 through the UNIDO statistics portal, specifically the IDSB 2022, ISIC Revision 4 database, which is the Industrial Demand-Supply Balance database that provides data based on reports by National Statistics Offices and the United Nations COMTRADE Database (UNIDO, n.d. a; b). For Japan, data will be compiled from different sources. Partially from the UNIDO IDSB Database, for years 2012, 2013 and 2014, and partially from the Japan Generic Medicine Foundation, from 2015 to 2018, where it is reported in Japanese Yen. In order to be able to compare the data, it will be converted to US dollars based on the average exchange rate of the year in question. From 2018 to 2021, there is little to no data on the output of the pharmaceutical industry in China and Japan. In the China Statistical Yearbook 2022 (National Bureau of Statistics of China, 2020; 2022; 2023), the output of the pharmaceutical industry is reported only in tonnes, while data for the output of Japan is not available in its Statistical Yearbook and has been found in secondary sources in the first place. Thus, it is not possible to compare the output of pharmaceuticals in China and Japan for the year 2019, 2020 and 2021, since the numbers in which they are given are not comparable. Even if it was possible to compare the data, i.e., if data in tonnes was reported for the output of the Japanese pharmaceutical industry, it would create a ripple effect where it would then not be possible to measure apparent consumption, since data on the export and import of pharmaceuticals would have to be converted to or found reported in tonnes or other measures of weight. So, while data for the output of Japan is available, it is (already) coming from secondary sources, and it was reported in Japanese Yen and then converted to US dollars based on the average exchange rate of the year in question, it cannot be effectively compared to data provided by China, since it is reported in tonnes rather than value. Thus, for the sake of fair comparison, data that is comparable was gathered for both of the countries, leaving us with the possibility to examine the timespan of 2012 to 2018.



Graph 4: Apparent consumption of pharmaceuticals in China and Japan, 2012 – 2018, in USD billion (Japan Generic Medicine Foundation, n.d.; UNIDO, n.d. a; b).

The apparent consumption of pharmaceuticals in China was rising from 2012 to 2016. In 2012, the apparent consumption of pharmaceuticals in China was USD 274.64 billion, then rose by over 150 million, to USD 428.34 billion in 2016. From 2016 to 2018, the apparent consumption decreased, falling by USD 50 billion, to USD 378.45 billion. Overall, the apparent consumption of pharmaceuticals in China has increased in comparison with 2012. However, since 2016, the trend of growth has been turning downward, and apparent consumption has decreased by 11.63 percent (UNIDO, n.d. a).

In Japan, the apparent consumption of pharmaceuticals decreased between 2012 and 2015 from USD 121.02 billion to USD 88.31 billion. It then increased to USD 95.50 billion in 2016. By 2018, the apparent consumption of pharmaceuticals in Japan decreased again overall, to USD 89.37 billion. Since 2012, the apparent consumption of pharmaceuticals in Japan has decreased by 26.15 percent. Compared to 2015, which was the year with the lowest apparent consumption in Japan in the timespan analysed, apparent consumption has increased marginally, by 1.2 percent (Japan Generic Medicine Foundation, n.d.; UNIDO, n.d. b). As evident also from Graph 4, the apparent consumption of pharmaceuticals in Japan is over four times lower than in China as of 2018. The trend of growth of apparent consumption in China Japan is not similar– while apparent consumption in China has been rising from 2012 to 2016, the apparent consumption of pharmaceuticals in Japan was falling between 2012 and 2015. In China, the apparent consumption of pharmaceuticals then started decreasing from 2016, while

in Japan, it grew from 2015 to 2016. However, the apparent consumption of pharmaceuticals decreased between 2016 and 2018 in both of the analysed countries.

In the case of apparent consumption, first limitations when it comes to data were encountered. Data for Japan was available only in JPY for the years 2011 and 2015 to 2021, while data from 2018 to 2021 for China was only provided in tonnes. Thus, a direct comparison could not be made. However, since the comparison of data for the last three years is of interest, a rudimentary analysis will be provided based on the output, export and import data for China. As already mentioned, since the data is reported in different measurement units, only a rough approximation can be given on whether apparent consumption in China has increased or decreased, but not by how much. Thus, this analysis serves only to provide a rough picture of whether the apparent consumption in China and Japan has been growing or not in the most recent years. Final comparison will be done based on the numbers that are available.

In 2018, China altogether produced 5.44 million tonnes of medicines, that is, both chemical and traditional Chinese medicines, which are also covered in HS chapter 30, pharmaceuticals (National Bureau of Statistics of China, 2020). In 2018, China exported USD 8.87 billion of pharmaceuticals and imported USD 29.1 billion (UN COMTRADE, n.d.). In 2019, China produced 5.59 million tonnes of medicines, while exporting USD 9.16 billion and importing USD 24.42 billion of pharmaceuticals (UN COMTRADE, n.d.; National Bureau of Statistics of China, 2020). In 2020, China produced 5.37 million tonnes of medicines, and it exported USD 13.21 billion, while importing USD 34.91 billion (UN COMTRADE, n.d.; National Bureau of Statistics of China, 2022). Lastly, in 2021, China produced 5.67 million tonnes of pharmaceuticals, it exported USD 38.55 billion and imported USD 41.82 billion of pharmaceuticals (UN COMTRADE, n.d.; National Bureau of Statistics of China, 2022). In order to gauge whether apparent consumption grew or not, the next step is to look at the difference between imports and exports. Apparent consumption is calculated as: output + imports – exports. Taking the second part of the equation, imports – exports are calculated for each of the years. In 2018, China imported more than exported, so the trade part of the equation in pharmaceuticals was USD 20.31 billion. In 2019, it was USD 24.43 billion, and in 2020, it was USD 21.69 billion. In 2021, exports grew more than in previous years, making the difference between exports and imports smaller, at USD 3.28 billion. Now, the growth of

apparent consumption in China in the years 2019, 2020 and 2021 can be roughly valued. In 2019, output of pharmaceuticals increased in China by 0.15 million of tonnes, and the trade coefficient in the equation also grew in comparison with 2018, by 5.88 USD billion. From 2018 to 2019, apparent consumption of pharmaceutical in China thus grew. In 2020, China produced less pharmaceuticals than in 2019 by 0.22 million tonnes. The trade coefficient of the equation also decreased, by USD 2.74 billion. From 2019 to 2020, the apparent consumption of pharmaceuticals in China decreased. From 2020 to 2021, the production of pharmaceuticals in China grew again, by 0.3 million tonnes, but the trade coefficient was much smaller than in previous years, since imports in China grew exponentially. In comparison with 2020, the difference in the trade part of the equation amounts to USD 18.41 billion, meaning that apparent consumption of pharmaceuticals in China decreased in 2021 in comparison to 2020, since although production it grew, the trade coefficient was much smaller.

For Japan, data is also not available in the UNIDO database. For the purposes of comparing whether apparent consumption in Japan grew in the years 2019, 2020 and 2021, data was sourced from Statista, which reports on the output of the pharmaceutical industry in Japan. Data is given in JPY, so it had to be converted to USD based on average exchange rates for the corresponding years, as reported by the OECD. Data on export and import of pharmaceuticals was gathered from the UN COMTRADE database. Based on this data, in Japan, apparent consumption for the year 2019 was USD 108.01 billion, in 2020, it was USD 107.86 billion, and in 2021, it was USD 113.36 billion (Statista, n.d.; UN COMTRADE, n.d.).

	APPARENT CONSUMPTION (USD billion)	
YEAR	**CHINA**	**JAPAN**
2012	274,64	121,02
2013	331,68	100,85
2014	382,39	91,10
2015	415,50	88,31
2016	428,34	95,50
2017	412,54	89,08
2018	378,45	89,37
2019	Increased	108.01
2020	Decreased	107.86
2021	Decreased	113.36

Table 11: Apparent consumption of pharmaceuticals, 2012 – 2021, China and Japan, USD billion (Japan Generic Medicine Foundation, n.d.; Statista, n.d.; UN COMTRADE, n.d.; UNIDO, n.d. a; b).

As is apparent from the tables above, while apparent consumption of pharmaceuticals ahs been growing in Japan since 2019, it has been decreasing in China in 2020 and 2021. Although specific numbers cannot be compared due to unavailability of complete data, it can be assumed that even if the apparent consumption of pharmaceuticals in China has been decreasing while it has been increasing in Japan, the difference is not as large as to imply a drastic change whereby the market for pharmaceuticals in China would shrink below the size of the Japanese pharmaceutical market. In conclusion, China overall represents a larger market, but due to the growth of exports, apparent consumption is decreasing.

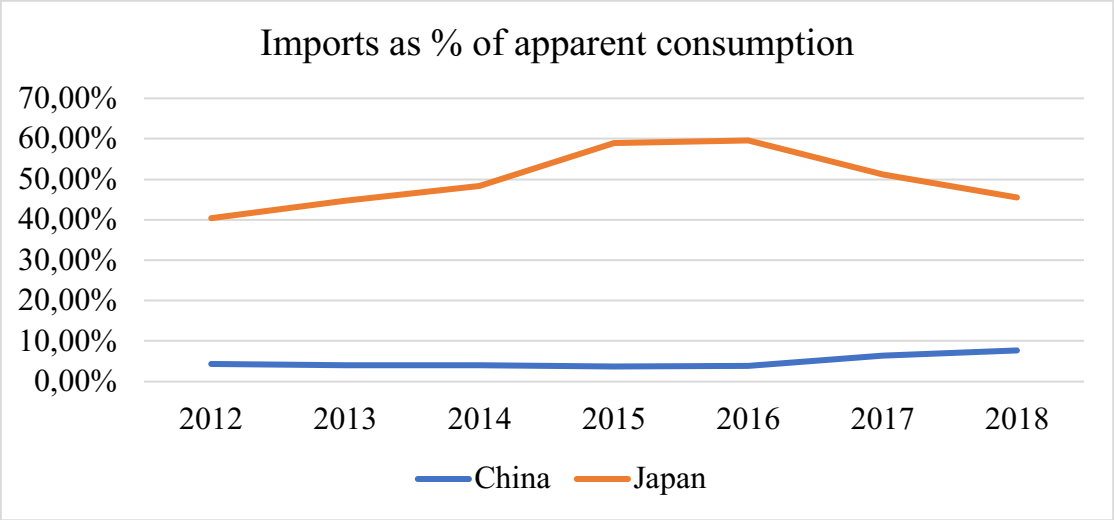
4.1.2 Import penetration

Imports as % of apparent consumption							
	2012	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
China	4.29%	3.98%	4.02%	3.74%	3.95%	6.41%	7.71%
Japan	40.38%	44.64%	48.38%	58.97%	59.60%	51.16%	45.56%

Table 12: Imports as % of apparent consumption, China and Japan, 2012 – 2018 (Japan Generic Medicine Foundation, n.d.; UN COMTRADE, n.d.; UNIDO, n.d. a; b).

In China, imports represent a relatively low share of apparent consumption. Their share in apparent consumption was actually decreasing from 2012 to 2016, with a slight spike

in 2014. In 2012, imports represented 4.29 percent of apparent consumption, then fell to 3.98 percent in 2013. In 2014, the share of imports in apparent consumption increased slightly, to 4.02 percent, but then fell again in 2015, to 3.74 percent. 2016 was the last year where imports represented under 4 percent of apparent consumption, at 3.95 percent. In 2017 and 2018, the share of imports in apparent consumption increased, first to 6.41 percent in 2017, and then to 7.71 percent in 2018 (UNIDO, n.d. a; b).



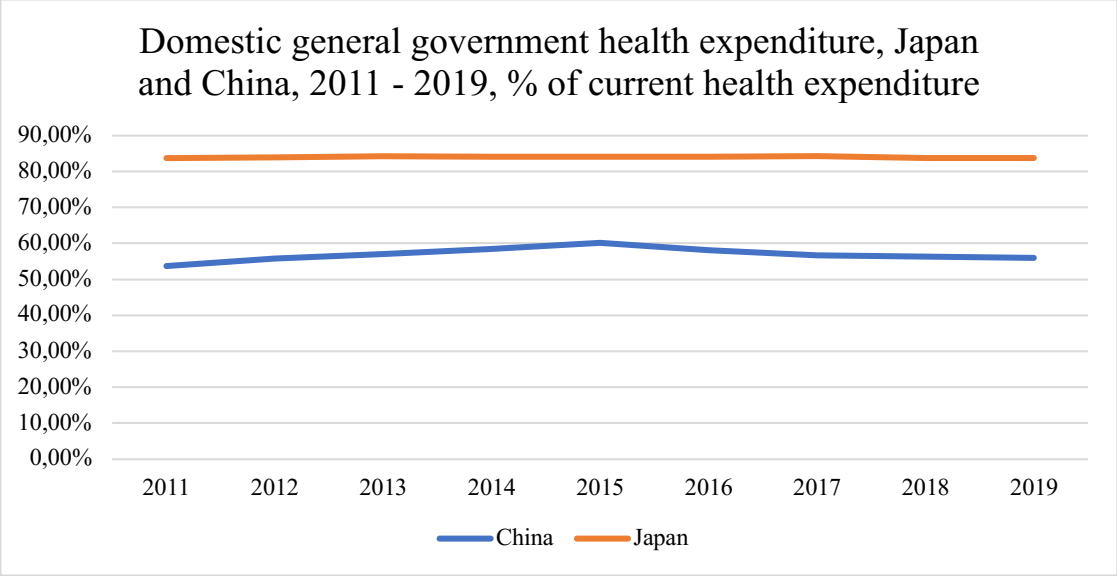
Graph 5: Imports as % of apparent consumption, China and Japan, 2012 – 2018 (Japan Generic Medicine Foundation, n.d.; UNIDO, n.d. a; b).

In Japan, the share of imports in apparent consumption has overall been increasing from 2012 to 2016, but then decreased in 2017 and 2018. At the beginning of the examined time period, in 2012, imports represented 40.38 percent of apparent consumption. Their share was then increasing – 44.64 percent in 2013, 48.38 percent in 2014, 58.97 percent in 2015, and 59.60 percent in 2016. However, in 2017, the share of imports in apparent consumption decreased, to 51.16 percent. In the following year, 2018, the percentage decreased again, to 45.56 percent, representing just below a half of apparent consumption (Japan Generic Medicine Foundation, n.d.; UNIDO, n.d. b).

4.1.3 Demand conditions specific to the pharmaceutical market

Data for both Japan and China on current health expenditure is only available for up to 2019 (The World Bank, n.d. b). Government health expenditure as % of current health expenditure has been rather steady in both China and Japan. In China, it increased between 2011 and 2015, from 53.72 percent to 60.18 percent, reaching a peak in the period between 2011 and 2019. After 2015, the share of government expenditure in

current health expenditure started decreasing, and in 2019, it stood at roughly 56 percent (The World Bank, n.d. b). In Japan, government health expenditure as % of current health expenditure has been even more steady, moving between 83.74 percent in 2011, and 84.26 percent, which was a peak in 2013. In 2019, it stood at 83.86 percent, a similar value as in 2011 (The World Bank, n.d. b).

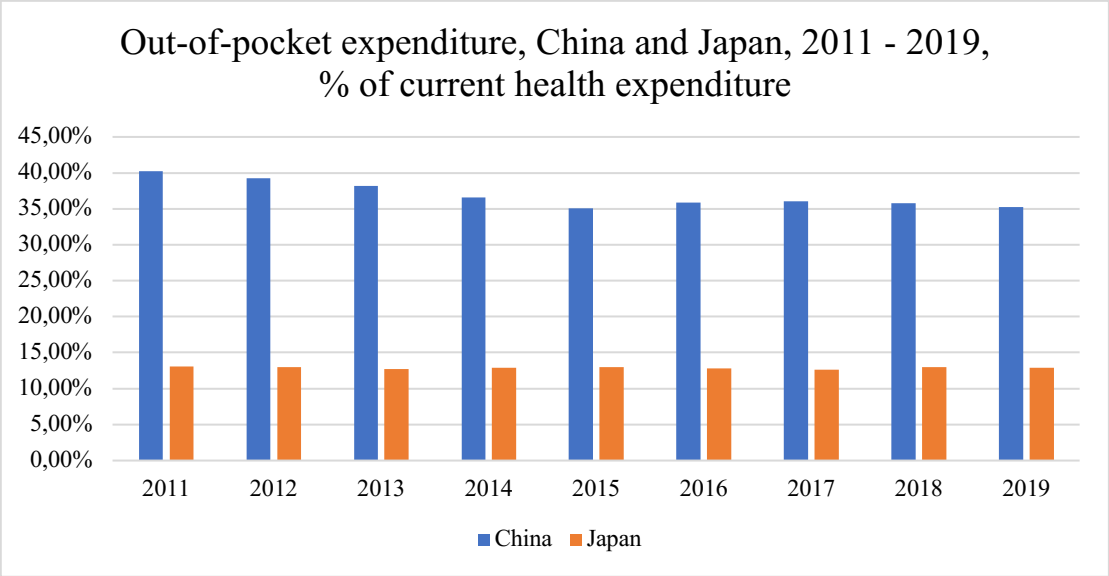


Graph 6: Domestic general government health expenditure, Japan and China, 2011 - 2019, % of current health expenditure (The World Bank, n.d. b).

Out-of-pocket expenditure per capita has been increasing in China since 2011. In 2011, OOP per capita expenditure on health was USD 95.18. Since then, it increased every year and has achieved nearly double the 2011 amount in 2019, at USD 188.53. OOP health expenditure per capita has increased the most in 2011, by almost 25 percent in relation to the 2010 value, from USD 95.18 to USD 110.51. It grew by 16 and 13 percent in 2012 and 2013 respectively, reaching USD 124.42 in 2013. Growth then slowed down from 2014 to 2016; it grew by 6 percent in 2014, and then 4 percent in both 2015 and 2016, reaching USD 141.96. In 2017, the growth of OOP expenditure per capita increased more substantially again, at 11 percent and even more – 14 percent – in 2018, reaching USD 179.13 per capita. In 2019, the growth slowed down to 5 percent and OOP expenditure per capita in China was USD 188.53 (The World Bank, n.d. j).

OOP health expenditure per capita in Japan has been fluctuating in the 2011 – 2019 period. In 2011, OOP expenditure per capita in Japan amounted to USD 667.55, a 13 percent increase from 2010. In 2012, the OOP expenditure increased again, by 1 percent, reaching

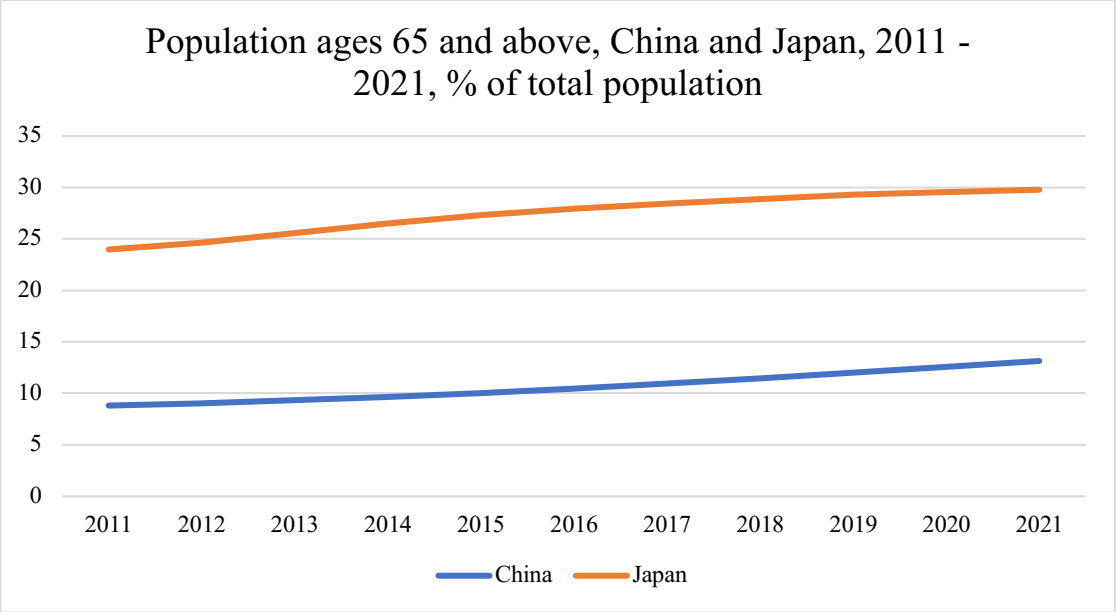
USD 676.14. After that, it started decreasing. In 2013, it decreased by almost a fifth at 19 percent, reaching USD 550.74. It continued decreasing in 2014 and 2015, by 4 percent and 8 percent, respectively. In 2015, OOP health expenditure per capita in Japan amounted to USD 483.39, the lowest value in the 2011 – 2019 period. In 2016 it grew for 11 percent, but then declined in 2017 for 3 percent. Since 2017, it has been increasing, at 6 percent in 2018 and 2 percent in 2019. In 2019, the OOP health expenditure per capita in Japan amounted to USD 562.82, roughly 100 dollars less than in 2011 (The World Bank, n.d. j). In comparison to the 2011 levels, the OOP expenditure per capita in China and Japan is quite different, as it has been growing in China and decreasing in Japan. Furthermore, while the growth has been steady in China, it was fluctuating in Japan, albeit with an overall decrease (*ibid.*).



Graph 7: Out-of-pocket expenditure, China and Japan, 2011 - 2019, % of current health expenditure (The World Bank, n.d. i).

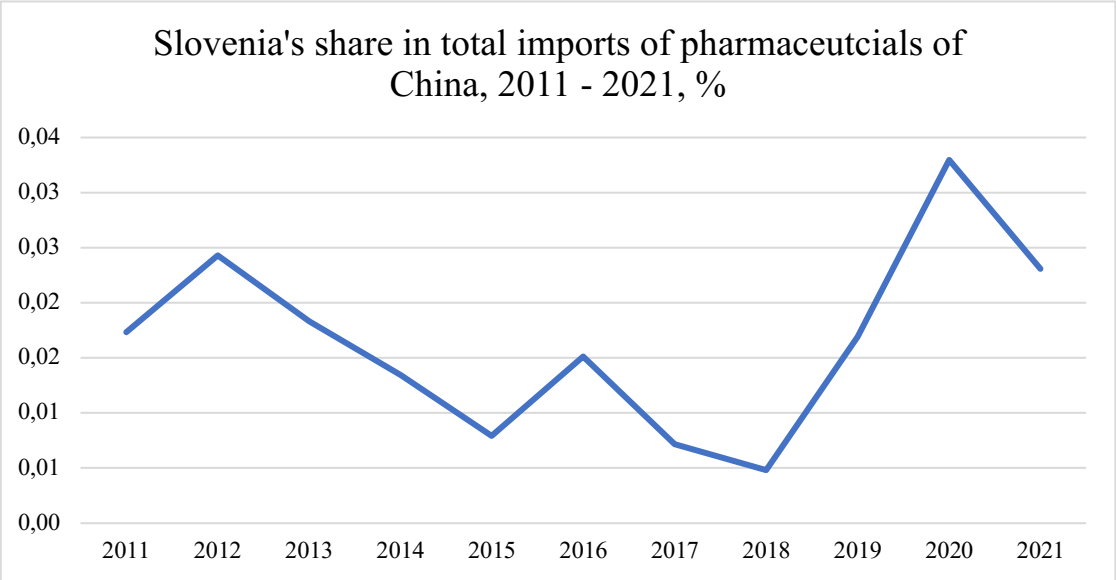
OOP expenditure as % of current health expenditure has been rather steady in both China and Japan. In China, OOP expenditure has been fluctuating between roughly 40 percent and 35 percent of total health expenditure. It has decreased since 2011, when it stood at 40.27 percent – in 2019, OOP expenditure represented 35.23 percent of current health expenditure. In Japan, OOP as of 2019 represents 12.91 percent of current health expenditure, a slight decrease from the value in 2011, which stood at 13.12 percent. OOP as % of current health expenditure has been, overall, decreasing since 2011 (The World Bank, n.d. i)

Lastly, both the Chinese and Japanese societies are ageing ones, with increases in population above 65 years of age. In China, the number of people aged over 65 rose by over 65 million in the study period – from 118.58 million in 2011, to 185.72 million in 2021. As of 2021, population aged over 65 represents 13.15 percent of the whole population. In Japan, the number of people aged over 65 increased from 30.65 million in 2011 to 37.44 million in 2019, a roughly 7 million increase. As of 2021, population aged over 65 represents 29.79 percent of the whole population (The World Bank, n.d. k).

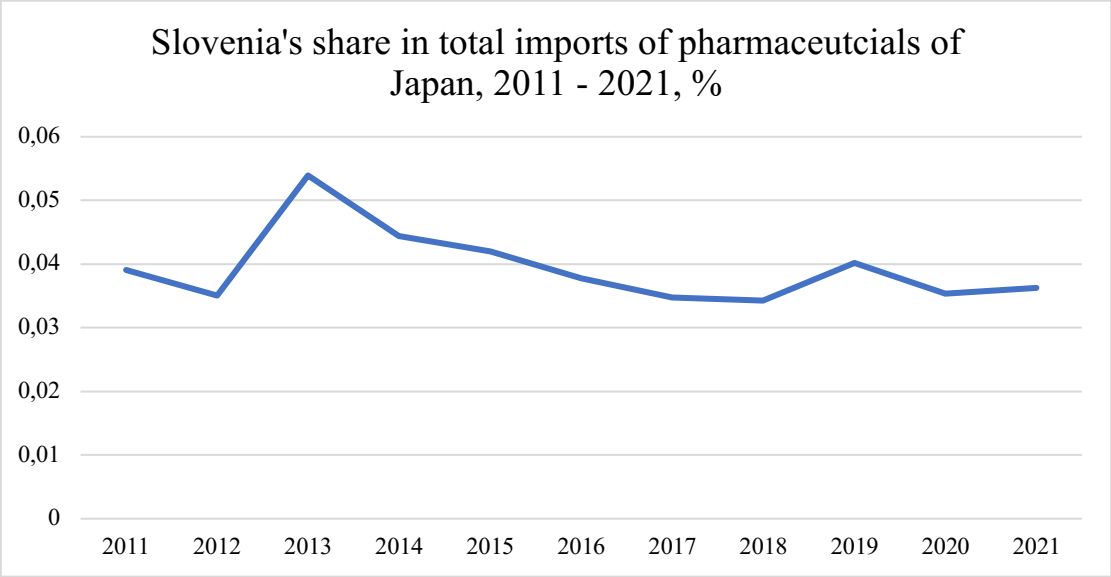


Graph 8: Population ages 65 and above, China and Japan, 2011 - 2021, % of total population (The World Bank, n.d. k).

4.1.4 Origin advantage



Graph 9: Slovenia's share in total imports of China, 2011 - 2021, % (UNIDO, n.d. a; Statistical Office of the Republic of Slovenia, 2023b).



Graph 10: Slovenia's share in total imports of pharmaceuticals of Japan, 2011 - 2021, % (UNIDO, n.d. b; Statistical Office of the Republic of Slovenia, 2023b).

Slovenia’s share in total imports of pharmaceuticals of both China and Japan is marginal, reaching at most 0.054 percent in Japan and 0.033 percent in China. Slovenia’s share of imports in China’s total imports increased from 2011 to 2013, reaching almost 0.025 percent in 2012. From 2012, Slovenia’s share was then decreasing until 2018, with a slight peak in 2016 at 0.015 precent. In 2018, Slovenia’s share of imports in total imports of pharmaceuticals to China reached an all-time low in the 10-year period, at 0.005

percent. From 2018, Slovenia's share increased and reached a peak in 2020 at 0.033 percent. As of 2021, Slovenia's share in China's total imports stood at 0.023 percent. The share of Slovenian imports in Japan's total imports has been fluctuating less. In 2011, Slovenia's share in total imports of Japan reached 0.04 percent. It then fell in 2012 to 0.035 percent. From 2012 to 2013, Slovenia's share increased and reached a peak at 0.054 percent. Since 2013, Slovenia's share in total imports of pharmaceuticals has decreased overall. Besides a slight peak in 2018 at 0.04 percent, it has been staying at around 0.035 percent. In 2021, Slovenia's share in total imports of pharmaceuticals to Japan was 0.036 percent (UNIDO, n.d. a; b; Statistical Office of the Republic of Slovenia, 2023b).

4.1.5 Market similarity

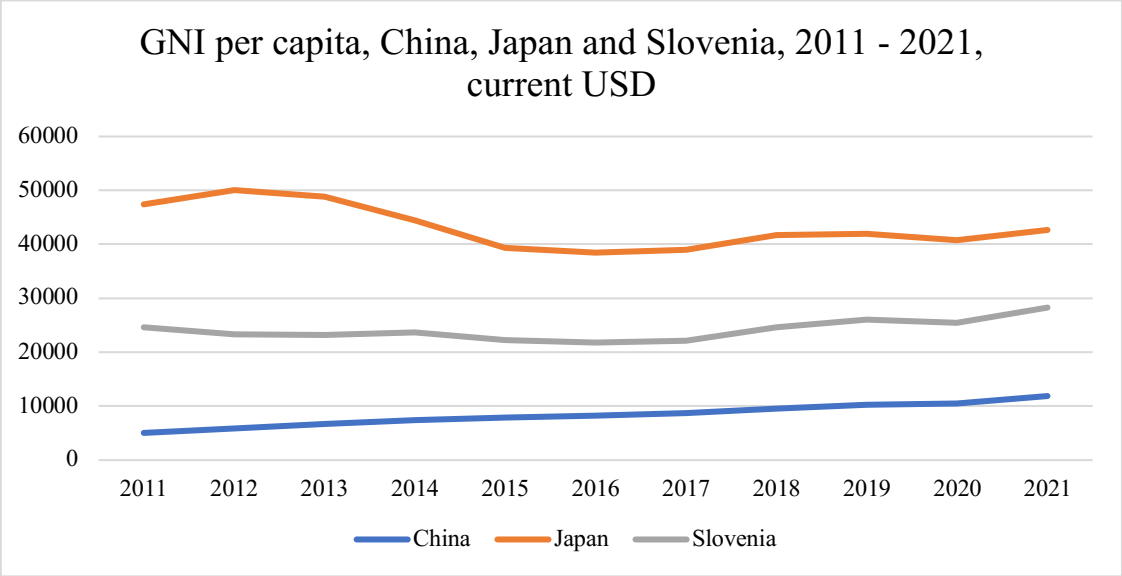
4.1.5.1 Life expectancy

Life expectancy at birth in China, Japan and Slovenia ranges between 78 and 85 years, with Slovenia in the middle. Life expectancy at birth in Slovenia is 81 years as of 2020, a years' worth of decrease in comparison to 2019. In Japan, life expectancy at birth is the highest out of the three compared countries at 85, while in China, it is the lowest out of the three compared countries, at 78 years (The World Bank, n.d. h).

4.1.5.2 GNI per capita

Gross national income (GNI) is "the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad" (The World Bank, n.d. a). GNI in China has been increasing in the 2011 – 2019 period, while it has been decreasing in Japan. Since 2011, GNI in China has increased by roughly USD 10 trillion – from USD 7.48 trillion in 2011, to USD 17.57 trillion in 2019. Although growth stagnated in 2020, it has since increased again. In Japan, GNI has decreased from USD 6.41 trillion in 2011, to USD 5.13 trillion in 2021. However, GNI has not been decreasing drastically over the past few years, stagnating around USD 5 trillion (The World Bank, n.d. e). GNI per capita, on the other hand, has been mostly growing in both China and Japan. In China, GNI per capita has increased almost twofold, from USD 5,040 in 2011 to USD 11,880 in 2021, growing steadily over the past decade. In Japan, GNI per capita has been decreasing since 2011, most noticeably to 2016. It decreased from USD 47,470 to USD 38,460. It then somewhat increased between 2017 and 2019, reaching USD 42,010 in 2019. It decreased again in 2020 but picked up in 2021 and reached above

the 2019 level at USD 42,650 (The World Bank, n.d. f). Overall, GNI per capita is more than three times higher in Japan than in China as of 2021. In Slovenia, GNI per capita was somewhat decreasing between 2011 and 2016, from USD 24,630 in 2011, to USD 21,790 in 2016. Since 2016, it has been increasing again, to USD 26,040 in 2019, falling slightly in 2020 to USD 25,400, and then growing again in 2021 to USD 28,280 (The World Bank, n.d. f). Slovenia's GNI per capita is closer to Japan's in value, with a difference of 14,370, since Japan's GNI per capita is higher while the difference between China and Slovenia's GNI per capita as of 2021 is -16,400, as China's GNI per capita is lower than Slovenia's.



Graph 11: GNI per capita, China, Japan and Slovenia, 2011 - 2021, current US$ (The World Bank, n.d. f).

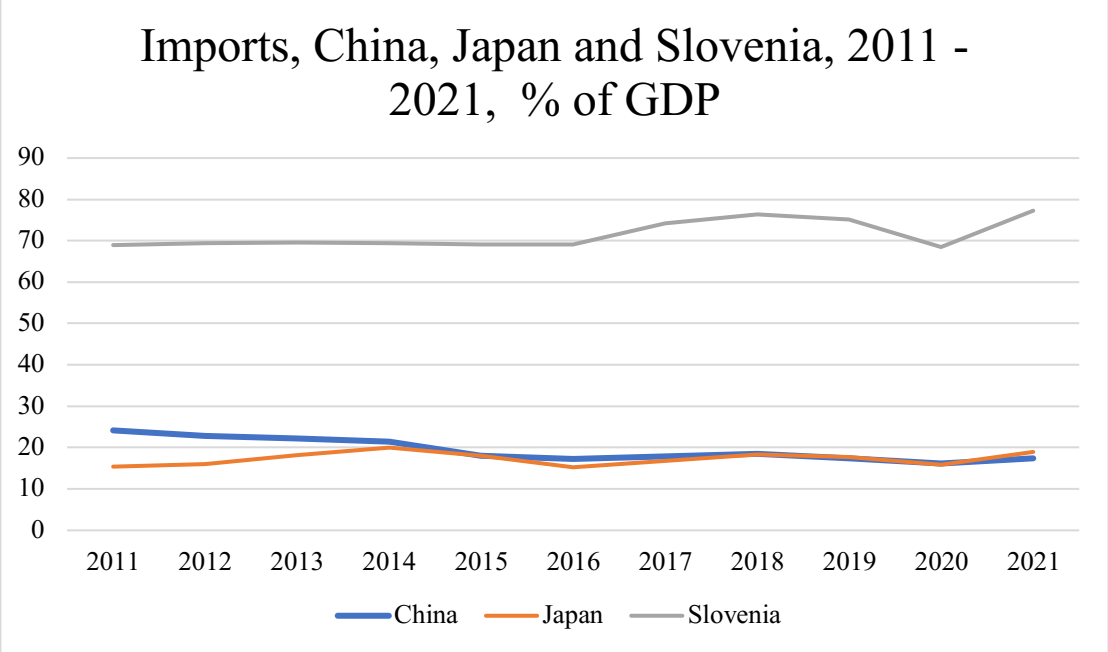
4.1.5.3 Electricity production

The latest data on electricity production which are available for all three countries – China, Japan and Slovenia – are from 2020, since Japan's Statistical Yearbook reports this specific variable only every five fiscal years. In 2020, China produced 7,779,100 GWh of electricity, while Japan produced 948,979 GWh of electricity (Japan Statistics Bureau, 2023; National Bureau of Statistics of China, 2023). Slovenia, on the other hand, produced 17,191 GWh of electricity (Statistical Office of the Republic of Slovenia, 2023a). Upon analysis, we find that the difference between the production of electricity by the three chosen countries is quite vast. China is, in comparison to Slovenia, an enormous country at 1.4 billion people, while Slovenia has a population of just over 2

million. Slovenia produces about 55 times less electricity than Japan, and about 425.5 times less electricity than China.

4.1.5.4 Imports-to-GDP ratio

Import-to-GDP ratio has been decreasing in China over the past decade. In 2011, import-to-GDP ratio stood at 24.17 percent, which was then falling steadily until 2017, to 17.31. In 2018, the import-to-GDP ratio rose to 18.45 percent, then decreasing again. In 2021, it stood at 17.43 percent. In Japan, the import-to-GDP ratio was growing from 2011 to 2014, from 15.42 percent to 20.01 percent. It then fell to 15.25 percent in 2016, rising again in 2018 to 18.30 percent, then decreasing again 2020 to 15.80 percent, lastly standing at 18.95 percent in 2021. In Slovenia, imports as % of GDP until 2016 was a rather steady percentage, ranging between 69 and 69.5 percent. In 2017, the ratio increased – imports as % of GDP grew to 74.15 percent, and even further in 2018, to 76.35 percent. The share slightly decreased in 2019, to 75.09 percent, and then decreased considerably, even lower than pre-2016 levels, to 68.49 percent, as trade was hindered by the Covid-19 pandemic. In 2021, however, imports recovered, and the value of imports as % of GDP is now the highest in the past decade, at 77.29 percent (The World Bank, n.d. g).



Graph 12: Imports, China, Japan and Slovenia, 2011 - 2021, % of GDP (The World Bank, n.d. g).

As can be seen from the graph above, Slovenia stands out by the imports-to-GDP ratio, while the imports-to-GDP ratio in China and Japan is quite similar. Slovenia is a much smaller economy compared to China or Japan, whose GDPs are in the trillions (Japan's GDP in 2021 was almost 5 trillion US dollars, while China's was almost 18 trillion US dollars), while Slovenia's GDP barely reaches over 60 billion US dollars, at 61.75 US dollars in 2021. As such, the value of external trade, both exports and imports, in comparison to GDP, is much higher, since smaller economies can even export more than is produced in the country or import more than is consumed. Although Slovenia does not import more than is consumed, the imports-to-GDP ratio is still very high, and Slovenia is actually in the 25th place by imports-to-GDP ratio in the world (The World Bank, n.d. g).

4.2 TRADE BARRIERS

4.2.1 Tariff barriers

Since China, Japan and Slovenia are all members of the WTO, the Most-Favoured Nation (MFN) principle applies when it comes to tariffs on Slovenian products being imported into China and Japan. The MFN rates apply to all members of the WTO, but preferential rates may be granted under free trade agreements or the Generalised System of Preferences (GSP). Currently, Slovenia enjoys the EU preferential rate in export of all products under HS chapter 30 to Japan, meaning that as of 2019, there are no tariffs applied to any pharmaceutical products exported from Slovenia to Japan (European Commission, n.d. b).

There is no preferential agreement in place with China, which is why the MFN rate is applied on pharmaceutical products exported from Slovenia to China. However, tariffs on exports from the EU to China have also decreased since 2018. As of 2022, the simple average of ad valorem duties on exports from the EU to China for pharmaceuticals in general was 1.83 percent. The highest tariffs apply to the 3005 subheading, which are *wadding, gauze, bandages and the like, e.g. dressings, adhesive plasters, poultices, impregnated or covered with pharmaceutical substances or put up for retail sale for medical, surgical, dental or veterinary purposes*, of which Slovenia exports the least to China of all pharmaceutical products. The most-exported products to China are included in the 3003 and 3004 subheadings, the simple average ad valorem duties on which are the lowest in the chapter 30 goods, at 0.83 and 0.94 percent for 3003 and 3004 subheading, respectively (WTO, n.d. a).

	2018	2019	2020	2021	2022
30	4.76%	1.85%	1.85%	1.85%	1.83%
3001	3%	3.00%	3.00%	3.00%	3.00%
3002	3%	3.00%	3.00%	3.00%	3.00%
3003	5.67%	0.83%	0.83%	0.83%	0.83%
3004	5.03%	0.94%	0.94%	0.94%	0.94%
3005	5.00%	5.00%	5.00%	5.00%	5.00%
3006	4.35%	4.35%	4.35%	4.35%	4.05%

Table 13: simple average of ad valorem duties on exports from the EU to China, MFN rates apply (WTO, n.d. a)

4.2.2 Non-tariff barriers

4.2.2.1 Non-tariff trade barriers

To gather data for analysis, the UNCTAD TRAINS database was used to collect information on non-tariff trade barriers. The database is quite comprehensive as it includes regulations in various forms of legislation – a comprehensive overview of national legislation is considered in order to compile a list of existing NTBs currently in force, which is then filtered by the UNCTAD experts. Specific trade concerns raised by members were not included in the UNCTAD data and will be gathered from the WTO portal to assess any concerns regarding trade with China or Japan.

TYPE OF MEASURE APPLIED TO HS CHAPTER 30[8]	**CHINA**	**JAPAN**
Sanitary and Phytosanitary	73	18
Technical Barriers to Trade	230	119
Pre-Shipment Inspection and Other Formalities	13	9
Contingent Trade-protective Measures	0	0
Non-Automatic Import Licensing, Quotas, Prohibitions, Quantity-Control Measures and Other Restrictions not Including Sanitary and Phytosanitary Measures or Measures Relating to Technical Barriers to Trade	67	20
Price-Control Measures, Including Additional Taxes And Charges	6	13
Finance Measures	0	0
Measures Affecting Competition	3	0
Trade-Related Investment Measures	0	0
Distribution Restrictions	0	0
Restrictions on Post-Sales Services	0	0
Subsidies and Other Forms of Support	0	0
Government Procurement Restrictions	0	0
Intellectual Property	9	0

[8] HS chapter 30, Pharmaceuticals.

Rules of Origin	4	0
TOTAL:	**405**	**179**

Table 14: types of measures applied to HS chapter 30 goods in China and Japan (UNCTAD, n.d.).

4.2.2.1.1 Chapter A and Chapter B measures

Chapter A in UNCTAD classification of NTBs covers sanitary and phytosanitary measures, while Chapter B covers technical barriers to trade (UNCTAD, 2019, pp. 1, 10. These are the most common used measures in trade, and are, as per Helble and Shepherd (2017, p. 11) also the category of NTBs which are reasonable, as they are related to issues such as public safety and proper testing and development of medications. As of the beginning of 2023, there were in total 405 regulations or NTBs in force in China which affect the import of pharmaceuticals (HS chapter 30) into the country. NTBs included in this overview are those pertaining specifically to the EU, Slovenia, or those that cover all trading partners. Most of the measures applied are sanitary and phytosanitary measures (73) and technical barriers to trade (230). While SPS measures pertain to issues such as preventing the spread of diseases in both animals and humans as well as restricting the import of certain substances, technical barriers to trade (TBTs) relate to specifications of the product, quality requirements, measures such as proper packaging and labelling, as well as assessments such as certification, testing and inspection. Measures applied by Japan also in majority fall under SPS and TBT measures – 18 SPS measures are applied in Japan as of the beginning of 2023, and 119 TBT measures. Overall, there are 179 measures in effect in Japan which regulate the import of pharmaceuticals from Slovenia (UNCTAD, n.d.).

CHAPTER A; SUB-CHAPTER	**CHINA**	**JAPAN**
A11: Prohibitions for sanitary and phytosanitary reasons	22	0
A12: Geographical restrictions on eligibility	3	0
A14: Authorization requirement	5	3
A15: Authorization requirement for importers for sanitary and phytosanitary reasons	1	0
A19: Prohibitions or restrictions of imports for sanitary and phytosanitary reasons, not elsewhere specified	5	5
A22: Restricted use of certain substances in foods and	0	1

feeds and their contact materials		
A31: Labelling requirements	2	1
A49: Hygienic requirements not elsewhere specified	1	0
A62: Animal-raising or -catching processes	1	0
A63: Food and feed processing	0	1
A64: Storage and transport conditions	0	2
A82: Testing requirements	3	0
A83: Certification requirements	7	1
A84: Inspection requirements	5	0
A85: Traceability requirements	4	3
A86: Quarantine requirements	13	1
A89: Conformity assessment related to sanitary and phytosanitary conditions not elsewhere specified	1	0
TOTAL	**73**	**18**

Table 15: Chapter A measures applied to the imports of HS chapter 30 goods in China and Japan (UNCTAD, n.d.).

The measures under Chapter A that China is applying on imported products are not only more numerous but are also more diverse. While China applies eight types of measures which Japan does not, Japan applies only three types of measures that China does not. For example, Japan does not prohibit imports of products for sanitary of phytosanitary reasons from any country indirectly, while the measures within that subchapter (A11) applied by China cover measures such as prohibition of importing products from other countries indirectly. None of the measures concern direct prohibition of imports of products from Slovenia. Furthermore, in those subchapters where measures are applied by both countries, the biggest difference can be observed in subchapters A83 and A86, which cover certification and quarantine requirements, respectively, implying that China applies stricter restrictions on certification and quarantine when it comes to imports of pharmaceuticals from Slovenia.

CHAPTER B; SUB-CHAPTER	CHINA	JAPAN
B19: Import authorization/licensing related to technical barriers to trade not elsewhere specified	6	1
B21: Tolerance limits for residues of or contamination by certain substances	1	5
B22: Restricted use of certain substances	2	3
B31: Labelling requirements	24	13
B32: Marking requirements	1	0
B33: Packaging requirements	7	7
B41: Technical barriers to trade regulations on production processes	2	10
B42: Technical barriers to trade regulations on transport and storage	4	8
B49: Production or post-production requirements not elsewhere specified	1	17
B7: Product quality, safety or performance requirements	27	7
B81: Product registration/approval requirements	22	1
B82: Testing requirements	19	4
B83: Certification requirements	44	3
B84: Inspection requirements	35	1
B85: Traceability requirements	26	32
B89: Conformity assessment related to technical barriers to trade not elsewhere specified	8	7
B9: Technical barriers to trade measures not elsewhere specified	1	0
TOTAL	**230**	**119**

Table 16: Chapter B measures applied to the imports of HS chapter 30 goods in China and Japan (UNCTAD, n.d.).

In comparison to measures falling under Chapter A, the difference in measures falling under Chapter B applied by China in Japan is not so much in diversity of measures, but rather their numbers. Here, China applies only two types of measures that Japan does not, and they only cover two specific measures. However, overall, China applies almost twice the number of measures falling under Chapter B in comparison to Japan. China applies

20 or more measures more than Japan in the following subchapters: B7: Product quality, safety or performance requirements; B81: Product registration/approval requirements; B82: Testing requirements; B83: Certification requirements; and B84: Inspection requirements. It applies 11 measures more than Japan under the subchapter B31: Labelling requirements. On the other hand, Japan applies 16 more measures in comparison with China under subchapter B49: Production or post-production requirements not elsewhere specified. Under all other subchapters, the difference in measures applied by either China or Japan is less than ten.

4.2.2.1.2 Chapter C measures

Furthermore, both China and Japan apply NTBs covered in Chapter C of the UNCTAD classification, which are pre-shipment inspection and other formalities (UNCTAD, 2019, p. 17). Within this chapter, China applies 12 measures, while Japan applies nine (UNCTAD, n.d.).

CHAPTER C; SUB-CHAPTER	**CHINA**	**JAPAN**
C1: Pre-shipment inspection	1	0
C3: Requirement to pass through specified port of customs	10	2
C4: Import monitoring, surveillance and automatic licensing measures	1	6
C9: Other formalities not elsewhere specified	1	1
TOTAL	**13**	**9**

Table 17: Chapter C measures applied to the imports of HS chapter 30 goods in China and Japan (UNCTAD, n.d.).

In measures applied by China and/or Japan falling under Chapter C, the difference in the scope of measures is not that stark, as China applies only one measure that falls under a subchapter that is not also covered by Japan's measures. The biggest difference in measures applied, though, can be observed in subchapter C3: Requirement to pass through specified port of customs, where China applied eight more measures than Japan, and in subchapter C4: Import monitoring, surveillance and automatic licensing measures, where Japan applies five more measures than China. Besides this difference, the overall difference in measures applied under Chapter C is relatively small, only four measures.

4.2.2.1.3 Chapter E and Chapter F measures

These chapters include harder measures that are applied on imports; in Chapter E, licensing, quotas and other quantity-control measures are covered, while in Chapter F, measures covered include price-control measures that control or impact the price of imported goods (UNCTAD, 2019, pp. 23, 32). These two chapters also include tariff-rate quotas raising the price of imported goods. Out of the other measures that are applied by China and Japan, *Non-Automatic Import Licensing, Quotas, Prohibitions, Quantity-Control Measures and Other Restrictions not Including Sanitary and Phytosanitary Measures or Measures Relating to Technical Barriers to Trade (Chapter E)* and *Price-Control Measures, Including Additional Taxes and Charges (chapter F)* are the second most represented group. China applies more such measures on imported pharmaceuticals than Japan. As of the beginning of 2023, there were 67 active Chapter E regulations in China, and six active Chapter F regulations. In Japan, there were 20 active Chapter E regulations and 13 active Chapter F regulations.

CHAPTER E; SUB-CHAPTER	**CHINA**	**JAPAN**
E1: Non-automatic import-licensing procedures other than authorizations covered under the chapters on sanitary and phytosanitary measures and technical barriers to trade	56	19
E211: Quotas, permanent, global allocation	1	0
E32: Prohibition for non-economic reasons	10	1
TOTAL	**67**	**20**

Table 18: Chapter E measures applied to the imports of HS chapter 30 goods in China and Japan (UNCTAD, n.d.).

Overall, China applies over three times the measures in comparison to Japan under Chapter E. It exceeds Japan in measures applied in all three subchapters covered, including prohibitions of import and import quotas. Under subchapter E211, which covers permanent quotas where no condition is attached to the country of origin of the product, China applies a quota on first time import of various genetic resources of livestock and poultry. Other measures regulate the import of various substances as well as licensing of import products which is not included under Chapters A and B.

CHAPTER F; SUB-CHAPTER	CHINA	JAPAN
F61: Custom inspection, processing and servicing fees	1	1
F65: Import licence fees	0	6
F69: Additional charges not elsewhere specified	4	6
F71: Consumption taxes	1	0
TOTAL	**6**	**13**

Table 19: Chapter F measures applied to the imports of HS chapter 30 goods in China and Japan (UNCTAD, n.d.).

Under Chapter F, Japan applies more than twice the measures in comparison with China. Specifically, while China does not apply any measured under the subchapter F65: Import licence fees, Japan actually applies six. Another difference in subchapter F71: Consumption taxes, where China applies one measure, while Japan does not apply any. In other subchapters, the number of measures applied by either country is relatively comparable.

4.2.2.1.4 Measures under Chapters H, N and O

Japan and China both apply measures falling under Chapters A through F of the UNCTAD classification of NTBs. Only China applies measures which fall under Chapters H, N and O. Chapter H includes measures affecting competition, granting special privileges to certain economic actors. Such measures include mainly monopolistic measures, such as state trading (UNCTAD, 2019, p. 39). As of the beginning of 2023, there are three such measures in effect in China that affect the imports of pharmaceuticals from Slovenia and/or the EU. Under chapter H, China prescribes that import and export of certain products can only be carried out by designated units.

CHAPTER H; SUB-CHAPTER	CHINA	JAPAN
H19: Other selective import channels not elsewhere specified	2	0
H29: Compulsory national service not elsewhere specified	1	0
TOTAL	**3**	**0**

Table 20: Chapter H measures applied to the imports of HS chapter 30 goods in China and Japan (UNCTAD, n.d.).

Chapter N covers restrictions applies to IPR and measures – it covers laws pertaining to patents, trademarks, etc. (UNCTAD, 2019, p. 65). Although Japan is not implementing

any specific measure relating to IPR in the imports of pharmaceuticals, China is implementing eight such measures. While chapter N also includes subchapters, the regulations as per the TRAINS databased are logged only under the overarching chapter. Under Chapter N, China applies certain restrictions on the use of intellectual property of trademarks or brands such as the Shanghai Expo and 2008 Beijing Olympic logos, as well as restrictions on ownerships of intellectual property rights in research (UNCTAD, n.d.).

Chapter O covers rules of origin and includes those measures that restrict the origin of products (UNCTAD, 2019, p. 70). China, as of the beginning of 2023, implements four rules of origin measures on the imports of pharmaceuticals form Slovenia and/or the EU, while Japan implements none. The measures applied by China under this chapter prescribe that imported products must have clear indication of where they are imported from. While chapter O also includes subchapters, the regulations as per the TRAINS databased are logged only under the overarching chapter.

4.2.2.1.5 Specific trade concerns

There are no specific trade concerns raised by Slovenia in relation to neither China nor Japan. There is, however, a specific trade concern raised by the European Union in relation to China in 2009, by which time Slovenia was already an EU member state. The specific trade concern is related to China's sanitary and phytosanitary measures' notification (SPS) practices. In 2009, China's new Food and Safety Law entered into force, with trading partners being notified of new measures only after the Law already entered into force. Furthermore, China submitted almost 100 SPS notifications in only a few days, with a 15-day deadline to comment, which left trading partners largely unable to respond comprehensively, as the usual recommended period is 60 days. This specific trade concern has not been resolved, but no other specific trade concerns have been raised by the EU and/or Slovenia at the WTO since (WTO, Committee on Sanitary and Phytosanitary Measures, 2010, p. 6; WTO, n.d. b).

4.2.2.2 Intellectual property rights concerns

There are no trade barriers relating to IPR protection in Japan reported to DG Trade in the sector of pharmaceuticals (European Commission, 2023).

There is one trade barrier relating to IPR protection in China that has been reported to DG Trade in the sector of pharmaceuticals. The report has been made on December 9, 2016, and has (at time of writing) been last checked on April 13, 2023, showing it is still in effect. The reported measure is lack or insufficient IPR protection, except for geographical indications, specifically relating to the Draft Implementing Measures for Protection of Clinical Trial Data (dated May 2018). The definition of 'new pharmaceuticals' in the Draft raises concerns that those pharmaceuticals which were first approved or marketed outside China, will receive slower regulatory consideration and not benefit from the same exclusivity which is granted to pharmaceuticals in China (European Commission, 2023).

4.2.3 Geographic distance

Geographic distance is measured between the main ports of China and Japan, and Slovenia's main port. Main port is the port which sees the most traffic in twenty-foot equivalent units (TEU), which are the standard unit, referring to 20-foot equivalent units or 20-foot-long cargo container (World Bank, n.d.). According to the World Shipping Council, the shipping industry trade association, the biggest port in China, and the world, by TEU is Shanghai. In 2021, 47.03 million TEU passed through the port in Shanghai. In Japan, the main port is the Keihin port, that is, ports of Tokyo Bay which consists of three smaller harbours: Tokyo Port, Kawasaki Port, and Yokohama Port (Government of Japan, Ministry of Land, Infrastructure and Tourism, 2019). Since the calculation is made to a specific port, in this case, the distance to the port of Tokyo will be measured. The latest data for Keihin port is from 2018, when 8 million of TEU moved through the port (World Shipping Council, n.d.). As for Slovenia, it has only one international cargo port, that is the Port of Koper, which handled just over a million of TEUs in 2022, becoming

the first Adriatic port to exceed a million TEUs in a year (Karalis, 2023; Luka Koper, 2023, p. 4)

Figure 2: Sea route from Port of Koper to Port of Shanghai (Ports.com, n.d.).

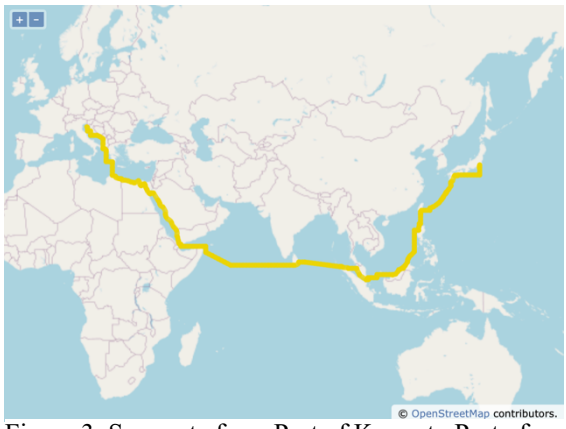


Figure 3: Sea route from Port of Koper to Port of Tokyo (Ports.com, n.d.).

The distance between the port of Koper and the port of Shanghai is 9772 nautical miles, which is 18,097.74 kilometres. The distance between the port of Koper and the port of Tokyo is 10,852 nautical miles, which is 20,097.904 kilometres (Ports.com, n.d.).

4.2.4 Exchange rate

The exchange rate is analysed from two aspects: first, if the currency of the exporting country depreciates against the currency of the importing countries, products become more accessible in the export market (Wilkman, 2012, p. 19). Second, if a currency fluctuates frequently or greatly in value, that makes exporters more prone to potential losses and signifies a less attractive market (Papadopoulos et al., 2002, p. 172). Slovenia's official currency is the Euro (EUR), the exchange rate of which will be first analysed against the Chinese yuan (CNY) and Japanese Yen (JPY). Secondly, the exchange rate movements of CNY and JPY in the timespan considered for this analysis, 2011 to 2021, will be analysed to determine the stability of the currency.

YEAR	1 EUR to CNY exchange rate	1 EUR to JPY exchange rate
2011	8.99	110.96
2012	8.11	102.49
2013	8.17	129.66
2014	8.19	140.31
2015	6.97	134.31

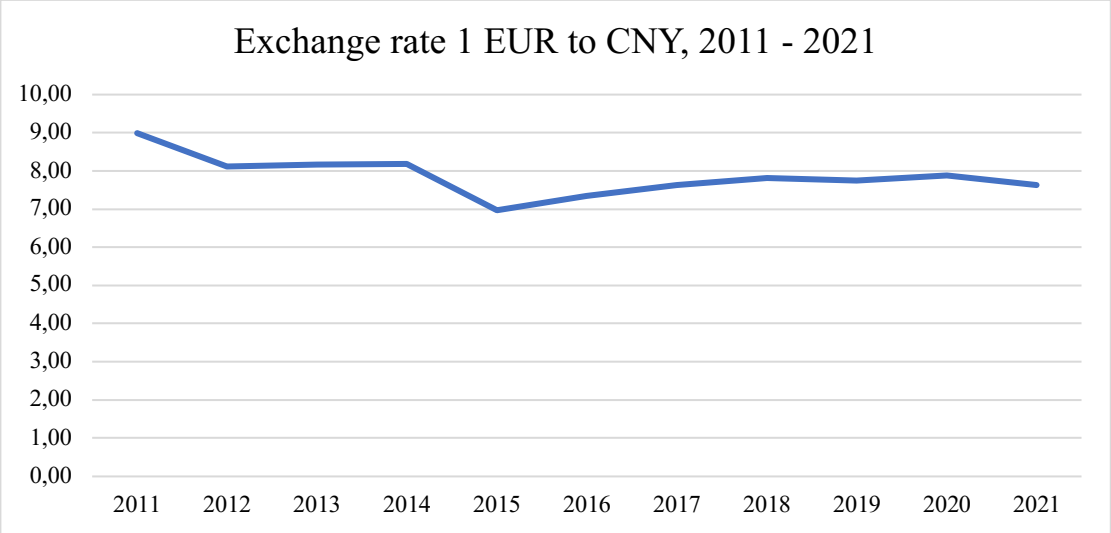
2016	7.35	120.20
2017	7.63	126.71
2018	7.81	130.40
2019	7.74	122.01
2020	7.88	121.85
2021	7.63	129.88
2022	7,08	138,03

Table 21: Exchange rate of the euro against the Chinese yuan and Japanese yen, 2011 – 2022 (Bank of Slovenia, n.d.).

Beginning with exchange rate analysis of the EUR against CNY and JPY, a 1-year lag must be considered since there is a delay between currency depreciation or appreciation and its effect on exports. To this end, the average exchange rates in years 2021 and 2022 will be compared. The average exchange rate for the EUR against CNY in 2021 was 1 CNY = 0.13, while in 2022, the average exchange rate was 1 CNY = 0.14. From 2021 to 2022, the EUR depreciated by 7.14 percent relative to the CNY. Moving on to the analysis of the exchange rate of the EUR against the JPY, the average exchange rate for the year 2021 was 1 EUR = 0.0077 JPY, while in 2022, the average exchange rate was 1 JPY = 0.0073. From 2021 to 2022, the EUR appreciated by 5.48 percent against the JPY (Bank of Slovenia, n.d.).

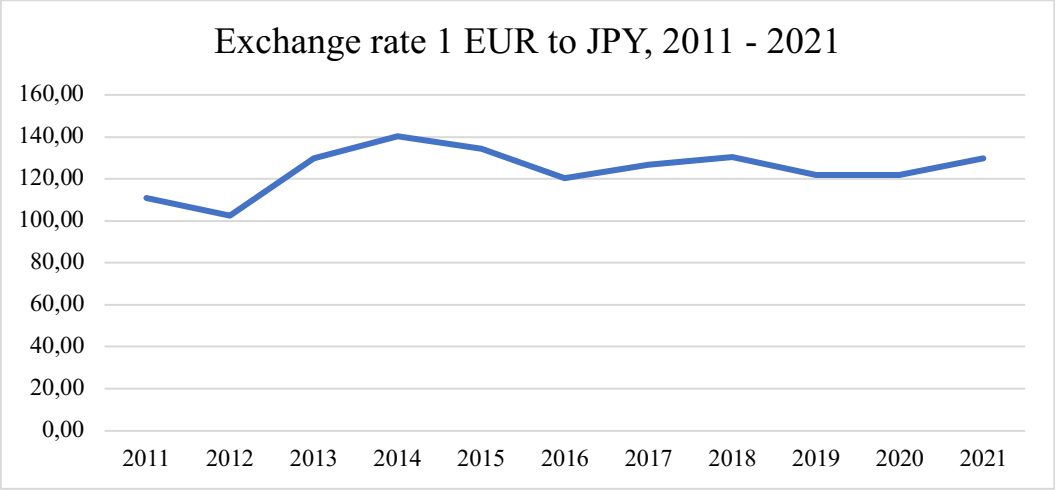
Moving on to the analysis of the fluctuation of exchange rates of the CNY and JPY against the EUR, the analysis to determine whether one currency is more stable than the other is done by analysing currency value movements in absolute rather than relative terms. More specifically, two factors are analysed: the frequency of changes in value and the amplitude of changes in vlaue. Beginning with the analysis of changes in value of the CNY against the EUR, there are a three major trends: from 2011 to 2015, the CNY was decreasing in value against the EUR. In 2011, the exchange rate was 1 EUR = 8.99, which has over the years decreased by 2.02 CNY, to 1 EUR = 6.97 CNY in 2015. From 2015 to 2017, the CNY then increased in value, to 1 EUR = 7.63 CNY in 2017, and has, until 2021, stayed in the range of 1 EUR = 7.63 CNY to 1 EUR = 7.88 CNY, with no major decreases or increases in value (Bank of Slovenia, n.d.). The value of the CNY has rapidly decreased from 2011 to 2015, but has since been stable. There were no major changes in value since 2015, and fluctuation is not very common, as the value was first constantly

decreasing from 2011 to 2015, then increasing steadily until 2017, and has since stayed in a stable range.



Graph 13: Exchange rate 1 EUR to CNY, 2011 – 2021 (Bank of Slovenia, n.d.).

The movement of the JPY against the EUR, on the other hand, has been comparatively less stable than that of the CNY. The frequency of changes in value, or the fluctuation of the exchange rate, has been less stable – from 2011 to 2012, the JPY decreased in value by 8.74, from 1 EUR = 110.96 JPY to 1 EUR = 102.49 JPY. From 2013 to 2013, it then increased in value by 27.17, increasing above 2011 levels, as the exchange rate in 2013 was 1 EUR = 129.66 JPY, and it increased to 1 EUR = 140.31 JPY in 2014. The value of the JPY was then falling from 2013 to 2016, when it reached the value of 120.20 JPY against the EUR. It increased again between 2016 and 2018, to 1 EUR = 130.40 JPY, then decreasing between 2018 and 2020, and increasing again in 2021. Besides the frequency of changes, the amplitude of the changes in value is also comparatively larger, as the JPY has been moving in the value range of 102.49 JPY and 140.31 JPY against the EUR, a difference of 37.82 (Bank of Slovenia, n.d.). Overall, both the frequency of changes in value and the amplitude of changes is larger in the JPY than the CNY.



Graph 14: Exchange rate 1 EUR to JPY, 2011 – 2021 (Bank of Slovenia, n.d.).

5 FINDINGS AND DISCUSSION

5.1 OVERVIEW

After the analysis of data for both China and Japan, this chapter now turns to compare the findings of the primary analysis in order to answer the research question: *What are the opportunities and challenges for Slovenia in exporting pharmaceuticals to China and Japan*?

To answer the research question, an analytical framework was compiled based on the literature review, which used the trade-off approach by Papadopoulos et al. (2002), but further extended it to include the specifics of the pharmaceutical industry, specifically demand conditions specific to the pharmaceutical market, as well IPR protection. Furthermore, some of the indicators were adapted so as to fit the purpose of this research, which is to analyse the pharmaceutical industry. To this end, the general indicators, such as tariff barriers, origin advantage and the incidence of NTBs in 20 key sectors, which were used by Papadopoulos et al. (2002) have been adapted to only consider the export of pharmaceuticals to China and Japan, i.e., only tariffs on pharmaceuticals that apply when exporting there. Within the empirical analysis, two dimensions of exporting were considered: opportunities, measured by demand potential, and challenges, measured by trade barriers. Within the dimension of demand potential, five factors were measured: apparent consumption, demand conditions specific to the pharmaceutical market, import penetration, origin advantage and market similarity. Within the dimension of trade barriers, four factors were measured: tariff barriers, non-tariff barriers, geographical distance, and exchange ratel. In this chapter, the data for China and Japan will be compared in order to conclude which of the two markets might be more suitable for Slovenia's export promotion strategy when it comes to the export of pharmaceuticals to China and Japan. Finally, a synthesis will be given along with recommendations for further research.

5.2 DEMAND POTENTIAL

5.2.1 Apparent consumption

Apparent consumption reflects the market size for a certain product or industry and is the first of industry-specific factors considered in this analysis. Since it measures the amount of domestic consumption + imports – exports, it gives a realistic market size (Papadopoulos, 2002, p. 171) Apparent consumption in China is much larger than

apparent consumption in Japan, when measured in USD billion. This is not surprising, as China is a much larger economy both by GDP and population than Japan, which leads to higher consumption rates. In China, apparent consumption was increasing until 2016 and then decreased by 2018, while in Japan, apparent consumption has been decreasing between 2012 and 2015, then grew in 2016, and then decreased again to 2018. Both nominally and relatively, the decrease was much larger in China. The decrease in apparent consumption in China was from USD 428.34 billion in 2016 to USD 378.45 billion in 2018, which is a 11.65 percent decrease. Comparatively, in Japan, apparent consumption decreased from USD 95.50 billion in 2016, to USD 89.37 billion in 2018, which is a 6.42 percent decrease (Japan Generic Medicine Foundation, n.d.; UNIDO, n.d. a; b). Apparent consumption of pharmaceutical decreased almost twice as much in China compared to Japan. However, overall, the scale of the Chinese market is still much larger than the Japanese market, as the Chinese market is more than four times larger. The size of the market is oftentimes mentioned as a mitigating factor when comparing other markets to China – even if imports are decreasing, even if the market is getting smaller, the sheer size of it is still bigger than most other global markets. In this specific example, even if apparent consumption in China keeps decreasing, it would still take some time until it became smaller than the market in Japan, not accounting for force majeure events that might impact market size and growth in either of the countries. Besides that, apparent consumption is used to measure the total available market in a country, in absolute terms. In those terms, China represents a bigger, and thus more attractive, market for exporters.

5.2.2. Import penetration

Import penetration is measured in imports as % of apparent consumption, paining an industry-specific image of demand for imports in a certain country-market (Papadopoulos, 2002, p. 171). Although China is the larger market, import penetration in the Chinese market is lower than in Japan. As of 2018, imports represented 7.71 percent of apparent consumption of pharmaceuticals in China, while in Japan, the number reached almost half of apparent consumption, at 45.56 percent (Japan Generic Medicine Foundation, n.d.; UNIDO, n.d. a; b). While import penetration is rising in China, meaning that imports are becoming increasingly important in the consumption of pharmaceuticals, it has decreased in Japan from 2017 to 2018, as imports have also decreased from 2017 to 2018. For an exporting business, the higher the import penetration in apparent consumption, the better, since a higher rate of imports means that there is more demand

for imported products and lower domestic competition (Papadopoulos, 2002, p. 171). Thus, from the point of view of prioritizing markets within an export promotion strategy, Japan represents a better opportunity than China when it comes to the measure of import penetration.

Import penetration in a target market is measured in percentages rather in value because it is not used to assess the volume of imports in a market, or the market size – that was done by measuring apparent consumption. Rather, import penetration is used to measure the importance of imports and domestic producer competitiveness. The higher the percentage of imports in apparent consumption, the more open a market is, and the lower domestic product competitiveness exists in that market, meaning that foreign firms will have to compete against either a lower number of domestic producers, or lesser quality of product, which is why more product is imported (Papadopoulos et al., 2002, p. 171). Even in absolute terms, Japan performs better than China, as 7.71 percent of apparent consumption in China represents USD 29.18 billion worth of imports, while 45.56 percent of apparent consumption in Japan represents USD 40.71 billion worth of imports (Japan Generic Medicine Foundation, n.d.; UNIDO, n.d. a; b).

5.2.3 Demand conditions specific to the pharmaceutical market

Demand in the pharmaceutical market is determined by different factors than in most other sectors. In the pharmaceutical sector, tastes of consumers matter much less, since they are rarely the ones making decisions on which medicine to get. Rather, this decision is made by stakeholders such as healthcare professionals – physicians and pharmacists, shifting the focus from the tastes of consumer. Of course, when it comes to over-the-counter medicines, the preference of the consumer has more weight, but even in this case, end consumers are rarely educated enough to make the best decision for themselves, and as such do not act completely freely in the market. Instead, educated professionals influence or even determine the choice of product, recommending what is best for the patient (Hamilton et al., 2005, pp. 378, 379; Cockburn, 2009, p. 150; Taylor-Strauss and Chen, 2019, p. 32). Furthermore, demand is influenced by socio-demographic factors, such as the ageing of society, incidence of certain diseases, air pollution, incidence of smoking… (Cockburn, 2009, p. 160). Other factors include the income of the population in the target country, OOP spending and government spending on healthcare. In high-income countries, the government intervenes more in pharmaceutical policy, their

regulation, delivery and financing, than in lower-income countries. Furthermore, where OOP spending on pharmaceuticals is high relative to the share of government expenditure on healthcare, individuals are less likely to be able to afford drugs and treatments, since they have to finance it themselves. What is more, if OOP per capita is high relative to GNI per capita in the country, that means that individuals have to give a larger share of their income to afford said drugs and treatments, making them even less likely to be able to afford pharmaceuticals (Boring, 2010; Blanc, 2015; Olcay and Laing, 2015, Finn, 2016; Tamas, 2021). Thus, demand cannot be measured simply through consumer tastes or origin advantage in the pharmaceutical sector.

In both China and Japan, government health expenditure as % of current health expenditure is higher than out-of-pocket spending as % of current health expenditure. However, the difference in the shares of government and out-of-pocket spending is much lower in China than in Japan. In China, government health expenditure in 2019 represented 55.98 percent of current health expenditure, while OOP represented 35.32 percent of current health expenditure. In comparison, in Japan, government health expenditure in 2019 represented 83.86 percent of current health expenditure, while OOP expenditure represented 12.91 percent of current health expenditure (The World Bank, n.d. b; i). This is a much larger difference in proportion of expenditures in total health expenditures than in China, and as is evident, in Japan, most of the health expenditure is financed by the government. What is more, both government expenditure and OOP expenditure as % of current health expenditure have been rather steady in Japan between 2011 and 2019, changing only by a percent or so in value. In China, government health expenditure as % of current health expenditure has also been rather steady, but also changing more than in Japan. It increased by 6.46 percent between 2011 and 2015, but then decreased again between 2015 and 2019, to 55.98 percent. OOP expenditure as % of current health expenditure in China, however, has been overall decreasing, just like in Japan expenditure, while OOP expenditure represented 12.91 percent of current health expenditure (The World Bank, n.d. b; i). Overall, in terms of health expenditure, Japan performs better in demand conditions specific to the pharmaceutical market, since government health expenditure represents a higher share of current health expenditure in comparison to OOP health expenditure. In China, the shares of both variables are much closer in value than in Japan, meaning that people are more likely to have to pay out of

pocket for their medicine. This means they are less likely to afford it, presenting a less attractive market compared to Japan, where government expenditure is higher.

Although government health expenditure represents a higher % of current health expenditure in Japan than in China, OPP health expenditure per capita is still higher in Japan than in China. OOP expenditure per capita has been increasing in China since 2011, reaching USD 188.35 in 2019, an almost twofold increase since 2011, when OOP expenditure per capita in China was USD 95.18. In 2019, OOP health expenditure per capita in Japan amounted to USD 562.82. Lastly, OOP per capita in Japan has decreased by 2019 in comparison to 2011 (The World Bank, n.d. j). However, so has current health expenditure per capita in Japan, which is why this change might be contributed to the general trend. As per Blanc (2010) and Olcay and Laing (2015), the higher the OOP health expenditure, the less demand there is for pharmaceuticals, since people have to buy pharmaceuticals on their own. But besides the amount of OOP per capita health expenditure, income levels also have to be considered, since in countries with higher income levels, citizens are more likely to be able to afford pharmaceuticals than in low-income countries. To this end, OOP health expenditure per capita must be interpreted with GNI per capita in both China in Japan in mind. As already mentioned, OOP health expenditure per capita is increasing in China and falling in Japan, but the overall expenditure was still higher in Japan than in China. However, although China's OOP health expenditure per capita is almost three times lower than that of Japan, so is its GNI per capita. In 2019, OOP health expenditure per capita in China was USD 188.35, while China's GNI per capita was USD 10,310. In Japan, OOP health expenditure per capita in 2019 was USD 562.82, while its GNI per capita was USD 42,010. Furthermore, OOP health expenditure per capita in China in 2019 represented 1.8 percent of its GNI per capita. In comparison, Japan's OOP health expenditure per capita in 2019 represented 1.3 percent of its GNI per capita. While this seems like a marginal difference, comparing China's OOP health expenditure per capita and GNI per capita with Japan paints a different picture. In 2019, OOP health expenditure per capita in China was 33 percent that of Japan (The World Bank, n.d. f; i). In comparison, China's GNI per capita at that time was 25 percent that of Japan's. This tells us is that while OOP health expenditure per capita in China in 2019 was much lower than in Japan, its GNI per capita was even lower in comparison to Japan's GNI per capita. Thus, we can conclude that China is performing worse than Japan when it comes to OOP health expenditure per capita,

especially if we also take into account the fact that its values are rising in China and stagnating in Japan.

Moving on to the last sociodemographic factor, which is the ageing of population, both the Chinese and Japanese societies are ageing ones. An ageing society brings with it larger demand in the pharmaceutical sector, as the elderly population needs more care due to two processes; first, as the elderly population increases in size, the number of people who need medical care increases, and second, as the life expectancy gets longer, more people need medical care for longer (Cockburn, 2009, p. 160). As for the ageing society, although both China and Japan are ageing overall, the population that is above 65 years of age represents a much larger share of the total population in Japan than in China. In China, the population aged 65 and more represented 13 percent of the whole population as of 2021, while in Japan, the population aged over 65 represents 30 percent of the whole population (The World Bank, n.d. k). In both countries, the elderly population is increasing but overall, since the elderly population is much larger in Japan, the effect of this sociodemographic factor on the demand for pharmaceuticals is larger. Still, as China is a relatively less ageing society than Japan, it might present growth opportunities in the future. Lastly, Japan also has a longer life expectancy at birth than China, at about 85 years, while China's is only at 78 years (The World Bank, n.d. h). Since people, especially the elderly, tend to live longer in Japan, it gives it an advantage also in the second aspect of the effect that the ageing population has on the demand for pharmaceuticals. Overall, Japan has an advantage from the point of view of export market attractiveness in both factors when it comes to the ageing of population – high percentage of elderly people that need care, and longer life expectancy, meaning those people need medical care longer. In demand conditions, specific to the pharmaceutical market, it can be concluded that Japan represents a better opportunity than China at the moment.

5.2.4 Origin advantage

Furthermore, within the dimension of demand potential, the origin advantage of Slovenia in both markets was measured, as Slovenia's share in total imports of both China and Japan, respectively. The higher the share, the more present and recognizable a country is in the foreign market. As the number of available products in a market is growing, exporters can use country of origin cues as competitive advantage for their brand. If a country has a recognizable image abroad which is also attached to its products, its image

can be used as advantage to convince consumers into buying a certain product. For example, Germany is known for their engineering, so German cars might have a country of origin advantage over other cars in a foreign market, or Apple using 'Designed in California' to indicate the technological capacities of the US on their products (Papadopoulos and Heslop, 1993; Baker and Ballington, 2002, pp. 160, 161; Papadopoulos et al., 2002, p. 171; Suter, Munjal, Borini and Floriani, 2021, pp. 415, 416). Furthermore, origin advantage is not used only in consumer products or branding, but also in forging good relations with importing country government and institutions, which is of help especially when exporting products which are subject to a large number of regulations, such as pharmaceuticals (Alexandrides and Moschis, 1977; Papadopoulos and Heslop, 1993; Papadopoulos et al., 2002, p. 171; Suter et al., 2021, p. 415). However, to realize positive effects that country of origin image might have on a competitive position of a product in a foreign market, the country image must first be recognized in that market. If a country is not well-known in a foreign market, i.e., if it is not highly present, if it is not internationally known, etc., its origin advantage is low and cannot be used to positively impact its competitive advantage in a certain market (Suter et al., 2021, p. 416). Moreover, exporters face established product-country images in a foreign market regardless of whether they have taken an active role in creating them. For example, consumer would rather buy a low-risk product from a developing country, such as T-shirt, than a high-risk product, such as pharmaceuticals, as developing countries might carry an image of low-quality production. Thus, especially in high-risk products, country image is one of key elements in exporting (Papadopoulos and Heslop, 1993). Lastly, exporters from countries with a high overall share in the target country's imports also enjoy the benefit of other countries from the same country helping with market information and knowledge (Papadopoulos et al., 2002, p. 171).

Overall, Slovenia's origin advantage is rather low in both markets, its share in total imports not even exceeding 0.03 percent in China and 0.05 percent in Japan. Slovenia's position in the Japanese market is relatively more advantageous, since its share in China's total imports is 0.036 percent as of 2021. In China, Slovenia's share in total imports is even lower at 0.023 percent in 2021. Furthermore, Slovenia's share in the total imports of both countries has been falling (UNIDO, n.d. a; b; Statistical Office of the Republic of Slovenia, 2023b). This leads to the conclusion that Slovenia does not have a clear origin advantage in either of the two target markets, with its possibility of gaining a more

prominent origin advantage actually falling. While its position is relatively better in China, the difference is not significant enough to conclude that exporting to China represents a clear advantage based on the representation and recognizability of Slovenia there.

5.2.5 Market similarity

Besides industry-specific determinants of market attractiveness, some macroeconomic factors should also be considered in order to compare the export market to the domestic market. According to Papadopoulos et al. (2002, p. 171), demand tends to be higher in markets which are similar to the country where the product was originally developed. Furthermore, a more similar market is more attractive for export, since companies are more familiar with the circumstances in the market, thus reducing any uncertainty and risk (*ibid.*). In this case, they are summarized under the market similarity dimension, which compares four macroeconomic factors of both the exporting country and the target markets: life expectancy, GNI per capita, electricity production, and import-to-GDP ratio. The reasoning behind these factors is that exporting to countries in which the exporting firm faces similar conditions to the domestic market is easier, since firms are more equipped with knowledge and experience from a similar market. The original model proposed by Papadopoulos et al. (2002) uses GNP per capita as one of the factors, which has since been replaced by GNI per capita. As explained by the World Bank, GNI is the same measure as what was previously GNP – "The World Bank uses terminology in line with the 1993 System of National Accounts and refers to GNP as "Gross national income" or GNI" (The World Bank, n.d. a). In Sethi's model, GNP per capita is found to be highly correlated to all other micro indicators in the cluster of personal consumption, such as energy consumption, per capita ownership of cars, radios, televisions and phones, as well as school enrolment, college enrolment and even hospital beds (Sethi, 1971, p. 351). As of 2021, GNI per capita in China is USD 11,087 while in Japan, it is USD 36,360. Japan's GNI has also experienced less growth than China's but is overall higher. In comparison with Slovenia, Japan is closer by GNI per capita. In 2021, Slovenia's GNI per capita was USD 28,280 (The World Bank, n.d. f). While this is still lower than Japan, it is only about USD 8,000 lower. In comparison, China's GNI per capita in 2021 did not even amount to half of Slovenia's GNI per capita. With a difference in GNI per capita of USD 8,080 as of 2021, Japan represents a more similar market in this aspect compared to China, the difference in whose GNI per capita with Slovenia was USD 17,193 as of 2021. A

similarity in GNP means that individuals in that market are more likely to have similar consumption and spending habits compared to individuals in the domestic market. As per the similarity in GNI per capita, consumers in Japan are more likely to be similar to Slovenian consumers than those in China, thus representing a more familiar environment for Slovenian exporters.

Secondly, life expectancy in all three countries was compared. Life expectancy represents the cluster of health and education, as it is most highly correlated to other micro indicators in this cluster in Sethi's analysis (Sethi, 1979, p. 351). As for life expectancy, as of 2020, life expectancy at birth in Japan was 85 in Japan and 78 in China. In Slovenia, life expectancy at birth is 81 years, which is closer to China's life expectancy. Indeed, Slovenia's life expectancy decreased from 82 to 81 from 2019 to 2020, while both China and Japan's has increased (The World Bank, n.d. h). Thus, when it comes to life expectancy, Slovenia is more similar to China, with a 3-year difference in life expectancy, and a 4-year difference in life expectancy with Japan. As mentioned, life expectancy is closely correlated to other factors in the health and education cluster, especially the health portion. A closer similarity to China shows that the population of China might have a similar health profile than that of Slovenia, which is important especially in the pharmaceutical field. However, with only a years' difference, the similarity to China or Japan might not be as significant as in some of the other factors. Indeed, although Slovenia is more similar to China in this aspect, the difference is rather marginal.

Another measure of market similarity is electricity production, used as a proxy for aggregate production and transportation, since electricity production was most highly correlated to other factors in this cluster, such as urbanization, air activity, air passengers and air cargo. The issue with this indicator is that while Papadopoulos et al. (2002) use the total electricity produced by a country, this number is very different when comparing Slovenia, Japan and China. Slovenia is, in comparison to China and Japan, a very small country, both by size and population. Thus, its electricity needs are much smaller – in 2020, when last data is available, Slovenia produced 17,191 GWh of electricity, while Japan produced 948,979 GWh of electricity, and China produced 7,779,100 GWh of electricity (Statistical Office of the Republic of Slovenia, 2023a). At first glance, the numbers are vastly different. In order to be able to better compare the respective country's electricity production, let's look at how the numbers compare relative to each other. In

comparison to Japan, Slovenia produces 1.81 percent of the electricity that Japan does. In comparison to China, Slovenia produces only 0.22 percent of the electricity that China produces. While Slovenia is not very similar to either selected country when it comes to electricity production, it is more similar to Japan than China when compared relatively. The share of Slovenia's production of electricity, compared to Japan's, is approximately 8 times larger than the share of Slovenia's production of electricity when compared to China. Thus, in the case of electricity production, Slovenia is more similar to Japan, which tells us that Slovenia is economically more similar to Japan than China, when it comes to output generated by its economy.

Lastly, the import-to-GDP ratio was analysed as a proxy for trade, since it is most closely correlated to other factors in Sethi's trade cluster. As of 2021, import-to-GDP ratio in China was 17.4 percent and in Japan, it was 19 percent. For Slovenia, the import-to-GDP ratio is much higher, as Slovenia is a smaller economy. The ratio in 2021 stood at 77.3 percent, the highest in the decade (The World Bank, n.d. g). When comparing the three countries, China and Japan are closer in import-to-GDP ratio than Slovenia is to them, as the difference in the share of imports in China and Japan's GDP is only 1.6 percent, while the difference between Slovenia, Japan and China is almost 60 times higher. Due to such small differences in the imports-to-GDP ratio in the countries we are comparing to Slovenia, and such a large difference when it comes to the import-to-GDP ratio of Slovenia, neither of the countries represents a more similar market in this aspect. It would be unfair to say either China or Japan is a more similar market, as neither are very similar to Slovenia. It shows that Slovenia is more open to trade than both China and Japan, but is at the same time also more dependent on trade than them. As already mentioned, the Slovenian pharmaceutical industry largely relies on exports for revenue, while the industry in China and Japan does not have to, since it has a large enough market and domestic demand to consume a higher percentage of its output. Lastly, smaller countries are more likely to have high import-to-GDP (as well as export-to-GDP) ratio, as their economies tend to be smaller, thus when comparing the economy to trade, a high ratio is produced (OECD, 2011).

5.3 TRADE BARRIERS

5.3.1 Tariff barriers

The other dimension one has to consider when prioritizing export markets are the challenges in exporting to one market or the other. They are reflected in trade barriers, which encompass different aspects, from tariff and non-tariff trade barriers to other measures such as distance or the exchange rate.

Although tariff barriers in the pharmaceutical industry are generally low, they still exist. Overall, tariffs on pharmaceuticals have been declining over the past decade, and the average global tariff imposed on pharmaceuticals as of 2018 was 3.4 percent (Stevens and Banik, 2020, p. 3). Tariffs are declining for multiple reasons – partially, because the world is becoming increasingly more globalised and economies are encouraging trade, but partially also because tariffs on pharmaceuticals do not bring in a lot of government revenue (Olcay and Laing, 2005; Bacchus, 2021). The study by Olcay and Laing (2005) found that for 92 percent of the countries included in the study, "revenue generated by pharmaceutical import tariffs amounts to less than 0.1% of the national GDP" (Olcay and Laing, 2005, p. 32). This value can be considered insignificant for national economies and if the tariffs were eliminated, this would present a minimal impact of government revenues (Olcay and Laing, 2005, pp. 32, 35).

As for tariff barriers, exporting to Japan undeniably represents less challenges, as the EU and Japan have signed the EU-Japan Economic Partnership Agreement, which has come into effect as of 1 February 2019 (European Commission, n.d. b). The Agreement removed a great majority of the duties that were paid on EU good imported to Japan – over the course of the implementation period, 97 percent of customs duties on EU products exported to Japan will be scrapped, as well as some long-standing NTBs on an industry basis, as Japanese standards often differ from international standards by which the European companies abide (European Commission, 2019). This means that European companies had to adapt their products for export to Japan. Pharmaceuticals were one of the specific industries the Agreement targeted by removing both tariff and non-tariff barriers, and it was expected that pharmaceuticals will be one of the sectors which will benefit the most from the implementation of the Agreement. Due to the agreement, there have been no tariffs imposed in Japan on pharmaceutical products from the EU since

2019 (European Commission, n.d. a). Although there are no tariffs applied in Japan, it must be mentioned that the tariffs that China applies are also relatively low, but still there.

With China, Slovenia is trading under the Most-Favoured Nation (MFN) principle, meaning all imports are subject to the MFN rate of tariffs. On average, tariffs China imposes on pharmaceutical imports have decreased significantly since 2018, from 4.76 to 1.83 percent in 2022. That said, this is just the simple average ad valorem rate, and within the HS chapter 30 (pharmaceuticals), tariffs do rather vary. The pharmaceutical products Slovenia exports the most fall under the 3002, 3003, 3004, and 3005 subchapters. The 3005 subchapter; *wadding, gauze, bandages and the like, e.g. dressings, adhesive plasters, poultices, impregnated or covered with pharmaceutical substances or put up for retail sale for medical, surgical, dental or veterinary purposes*; is the subject to the highest tariff; 5.00 percent, but also represents the least exports from Slovenia to China. In comparison, the goods under subchapter 3003; *medicaments consisting of two or more constituents mixed together for therapeutic or prophylactic uses, not in measured doses or put up for retail sale (excl. goods of heading 3002, 3005 or 3006)*; and 3004; *medicaments consisting of mixed or unmixed products for therapeutic or prophylactic uses, put up in measured doses "incl. those for transdermal administration" or in forms or packings for retail sale (excl. goods of heading 3002, 3005 or 3006)*; represent the majority of exports to China, 8.7 and 0.9 million US dollars, respectively. The 3003 subchapter is actually subject to the lowest tariff, 0.83 percent, and the 3004 chapter is subject to the second-lowest tariff, 0.94 percent. Lastly, the 3002 subchapter; *human blood; animal blood prepared for therapeutic, prophylactic or diagnostic uses; antisera and other blood fractions and immunological products, whether or not modified or obtained by means of biotechnological processes; vaccines, toxins, cultures of micro-organisms (excl. yeasts) and similar products; cell cultures, whether or not modified*; is subject to a relatively high tariff, 3.00 percent (WTO, n.d. a). Overall, the majority of pharmaceutical products that Slovenia already exports to China are not subject to high tariffs. However, if considering exporting new products, they could be subject to higher tariffs, which acts as a deterrent to exporters and lowers the attractiveness of the Chinese market. Thus, when it comes to tariffs, exporting to Japan represents a more attractive market. Since tariffs are designed not only to provide revenue for the government, but also give a price advantage to similar goods that are produced locally by raising the price of imported goods (Olcay and Laing, 2005, p. 10), the absence of tariffs means that

pharmaceuticals which are exported from Slovenia to Japan would be competitive in pricing with goods that are produced locally in Japan, while that might not be the case in China.

5.3.2 Non-tariff trade barriers

NTBs, including sanitary and phytosanitary measures (SPS), technical barriers to trade (TBTs), customs formalities, contingent protection such as antidumping, safeguards and countervailing duties, and quantity control measures such as licences or quotas, can also represent a challenge in exporting of pharmaceuticals, or any other product for that matter, as they can be misused to protect the domestic market for incumbents or reduce efficiency and access (Helble and Shepherd, 2017, p. 11). Since pharmaceuticals are, globally, a highly regulated industry, it is hard to distinguish which NTBs are justified, and which are not. While some NTBs are definitely expected to be applied especially to pharmaceuticals, such as SPS or TBTs, the criteria to defining whether an NTB is justified or not is very vague, leading some countries to indeed apply restrictions that do hamper international trade or the competitiveness of exporters in the market (Eliason, 2007; Taylor-Strauss and Chen, 2019, p. 32). Since NTBs were only one aspect of analysing trade barriers in this thesis, the incidence of NTBs was analysed rather than their content, as that would warrant an analysis of its own solely of the nature and effect that specific regulations in China and Japan have on the export of pharmaceuticals to the two markets.

Within non-tariff trade barriers, two distinct measures were considered: first, the incidence of NTBs collected by UNCTAD and applied by China and Japan at the beginning of 2023, and second, the incidence of IPR protection-related trade barriers that have been reported to DG Trade at the European Commission, since such reported trade barriers would also be relevant to Slovenia, a member of the EU. Regarding the first measure, exporting to Japan represents more of a challenge than exporting to China. First, China applies overall more NTBs to trade in pharmaceuticals than Japan, roughly twice more. However, in both cases, the majority of the measures applied fall under Chapter A and Chapter B of NTB classification as per the UNCTAD, which are Sanitary and Phytosanitary Measures, and Technical Barriers to Trade. These two categories are expected to have the highest numbers of measures, as the measures concerning regulations such as consumer safety, proper testing, packaging, labelling, and other

quality requirements fall under these two chapters. Still, even in these two chapters, China applies roughly twice the number of measures in comparison to Japan – 303, compared to 137 applied by Japan. Furthermore, the measures applied by China are not only higher in number but are also more diverse than those applied by Japan (UNCTAD, n.d.). This is not to say that the measures applied by China are not necessarily warranted when it comes to the import of pharmaceuticals, but looking from an exporter's point of view, it means that the process of exporting to China, especially when it comes to satisfying conditions of the technical aspects of the product, all the testing, certification and inspection requirements, is much more complicated, thus probably more lengthy and costly. From a business point of view, having to satisfy such a large number of requirements, in comparison to the other market, as well as a diverse list of requirements, means investing time as well as money into a process, which is a burden on the company. On the other hand, China does represent a much bigger market, meaning that if a company successfully navigates the procedures when it comes to SPS and TBTs in China, and can sell their product successfully, the reward will be much bigger.

In most of the other chapters, China applies more measures than Japan, except for Chapter F. Furthermore, while Japan does not apply any measures under Chapter H, N, and O, China does. Chapter H covers measures affecting competition, which is especially important when it comes to determining the attractiveness of a potential export market. Measures which negatively affect competition and are aimed at the exporting country mean that the exporters will face an unfavourable situation in the market, which most importantly affect exporters from Slovenia. Chapter O covers rules of origin – here, measures applied in China are aimed at specifying the origin of the products that are imported. Lastly, Chapter N covers IPR protection, such as laws pertaining to patents, brands, trademarks, etc. Under this chapter, China applies restrictions when it comes to branding and the ownership of IPR in research (UNCTAD, n.d.).

Overall, the situation in regard to NTBs when it comes to the export of pharmaceuticals to China is less favourable than that of Japan. First, China applies numerous more measures in number and diversity on pharmaceuticals from Slovenia and/or the EU that are exported to China. Furthermore, even in Chapters A and B, where the necessity of such measures is most warranted, China applies almost twice the measures in comparison to Japan. Moreover, China applies measures under Chapter H, N, and O, while Japan

does not. Lastly, measures under Chapter H are aimed at restricting competition, and while Japan does not apply any such measures, China applies three. Not only is the incidence of NTBs higher in China, so is the diversity and gravity of the measures it applies, from the point of view of an exporter, making the Chinese market less attractive to export pharmaceuticals to.

In addition to the incidence of NTB measures applied by China and Japan, specific trade concerns that were raised at the WTO either by Slovenia or the EU concerning trade with China or Japan have been considered. While there are no current trade concerns raised concerning trade with Japan, the EU has raised a concern regarding the lack of appropriate time frame to respond to China's notification of sanitary and phytosanitary measures at the WTO. The practice at the WTO is such that when a country submits a notification of a measure that affect trade, other members are usually given 60 days to respond. In this case, China submitted over 100 notifications with a 15-day deadline, leaving other members unable to respond comprehensively. This trade concern has not been resolved, however, there have been no further similar concerns raised by Slovenia or the EU for pharmaceuticals (WTO, Committee on Sanitary and Phytosanitary Measures, 2010, p. 6; WTO, n.d. b). It cannot be concluded that similar practices have since not been used by China, since they might have gone unreported. On the other hand, it also cannot be concluded that China still uses such practices, since there were no similar reports made. Overall, however, there were no special trade concerns raised concerning Japan, which is another reason why, when it comes to NTBs, Japan is a more attractive export market.

Furthermore, the incidence of IPR-related trade concerns or barriers reported to DG Trade at the European Commission was analysed. DG Trade's portal, Access2Markets, provides an overview of relevant trade information for EU members that wish to trade with 3rd countries, i.e., non-EU members. For trade barriers, its data collection is similar to that of the WTO – in the Access2Markets portal, all barriers to trade which have been reported by EU member states are displayed (European Commission, 2023). This somewhat limits the available data, since there might exist barriers to trade which have not been reported to DG Trade. On the other hand, the reasoning behind using such portals is that if a trade barrier exists that has a major adverse effect on the export of certain goods to a specific market, it is in the exporting country's interest to report it and

raise concern, so as to raise awareness about the trade barrier, which can then be addressed in dialogue with the specific trade partner. While there have been no such measures reported concerning trade with Japan, one such reported measure has been reported concerning trade in pharmaceuticals with China on December 9, 2016, and has not yet been resolved. The reported measures concerns the lack or inefficient IPR protection, specifically relating to the Draft Implementing Measures for Protection of Clinical Trial Data implemented by China, in which 'new pharmaceuticals', those that have first been marketed or approved outside China, will receive slower regulatory consideration that pharmaceuticals first marketed or approved in China. This is especially concerning when it comes to exporting pharmaceuticals to China, as all such pharmaceuticals have to first be approved abroad, i.e., in their country of origin, only then applying for approval in China (European Commission, 2023). Such a regulation would significantly obstruct the export of pharmaceuticals to China, since pharmaceuticals produced abroad and approved by national agencies in the producing country would be discriminated against in the regulatory process. In the case of IPR protection, combined with the measure that China applies under Chapter N, which have been analysed above, China represents a less attractive market than Japan, as foreign products might be discriminated against based on their origin.

5.3.3 Geographic distance

For geographic distance, the distance between the countries' main ports by sea was measured. The distance from the Port of Koper to the Port of Shanghai is considerably smaller than the distance from the Port of Koper to the Port of Tokyo, with the difference of 1080 nautical miles, or 2,000 kilometres (Ports.com, n.d.). It would take a vessel longer to reach the port of Tokyo from Koper, and cost more in terms of other transportation costs. Distance is used a proxy for measuring transportation costs – the farther away a market, the more it costs to transport products, which then affects the price of products as the exporter has to account for the logistics costs in their pricing strategy. Distance can also affect psychic distance, as both countries and companies usually have less experience with markets that are farther away. Such markets are also culturally more different, and the amount of knowledge available about them is lower, making them seem riskier to enter (Papadopoulos et al., 2002, p. 172; Adolfsson, 2007, p. 1; Wilkman, 2012, p. 10). In this thesis, however, distance was mostly used a transportation cost proxy, since comparing the cultural differences between China, Japan and Slovenia is a task of its own,

and it could be argued that since neither of the two cultures is particularly close or similar to Slovenia, the effect of psychic distance on the comparison of the two countries is marginal. In this case, the distance and route a vessel has to travel to reach Japan is longer than the route travelled to reach China, which is why from the transportation point of view, China is a more attractive market for exports.

5.3.4 Exchange rate

Lastly, the exchange rate of the euro against the national currencies of China (Chinese yuan) and Japan (Japanese yen) was compared, as well as the frequency of changes in the exchange rates of the JPY and CNY against the EUR. From 2021 to 2022, the EUR has appreciated against the JPY by 5.48 percent and depreciated against the CNY by 7.14 percent (Bank of Slovenia, n.d.). A depreciation of the exporting country's currency is expected to have a positive effect on exports, as goods become more affordable in the importing country, making exports more expensive and imports less expensive. This leads to higher competition from foreign markets. Furthermore, it also has an expected positive effect on the pricing of pharmaceuticals, where the industry is pricing to market (Kandil and Mirzaie, 2003, p. 15; Wilkman, 2012, p. 13). From the aspect of currency appreciation/depreciation, the Chinese market is more attractive or export, since the EUR depreciated against the Chinese currency, thus positively affecting exports.

Overall, if the currency of the exporting country depreciated against the currency of the importing country, exports tend to rise, since commodities become more accessible in the foreign market. However, if an exchange rate of a currency of a specific export market is especially unstable, that would negatively impact the decision to export there, since it would present too big of a risk for the exporting company. "Given their volatility, currency exchange rates between the exporting and importing country are a major risk element in exporting and can have a major impact on pricing and strategy" (Papadopoulos et al., 2002, p. 171). If a currency is prone to changes in its value, if the exchange rate against the euro, in this case, changes often and if the changes are numerically large, it can negatively affect business transactions. If the exporter is being paid in local currency and the currency loses value, i.e., depreciates against the domestic currency of the exporter, it means that the exporter will receive less money that was originally agreed. If the exporter is paid in their domestic currency, and the currency of the importing country loses value, then the burden of the change is on the buyer or the

consumer, if the goods are sold to consumer directly. However, if the local currency appreciates in value, and the exporter is paid in local currency, then the situation is the opposite – the burden is on the buyer or the consumer. If the exporter is paid in their local currency, then they receive a lesser sum than was originally agreed. The specifics of the payment are determined by each individual business, but in any case, if a currency changes value frequently and/or the change in value is large, this impacts the pricing strategy of exporters, as they need to be prepared for such changes and ensure they do not lose their advantage in selling in the foreign market (Donnenfeld and Zilcha, 1991; Fang, Lai and Miller, 2006; Zhang and Buongiorno, 2010). To discuss the results of the analysis of the exchange rate of the euro against the Chinese yuan and Japanese yen, both of the concerns must be taken into account.

To this end, the stability of both exchange rates will be discussed. Out of the two currencies, the Japanese yen is comparably less stable than the Chinese yuan, since stability is measured in absolute rather than relative rates, meaning it is measures not in percentages, but the value of the currency of the importer against the currency of the exporter. The Japanese yen has, in the time span of 10 years analysed, frequently lost or gained in value. Some of the most noticeable changes in value are the change from 2012 to 2013, when the exchange rate went from 1 EUR = 102.49 JPY to 1 EUR = 129.66 JPY; then another increase in value in 2014 to 1 EUR = 140.31 JPY, and the decrease in 2015 to 1 EUR = 134.31, even further in 2016 to 1 EUR = 120.40. The most recent change, from 2021 to 2022, is an equally noticeable one, from 1 EUR = 129.88, to 1 EUR = 138.03 (Bank of Slovenia, n.d.). This does not necessarily mean that JPY as such is a volatile currency or has been performing badly, which is another topic of analysis. What it does signify, however, is that changes in value against the EUR occur often and are, in absolute terms, larger than changes in CNY against the EUR, meaning that exporters have to be more careful in their pricing strategies and implement appropriate measures to protect themselves financially, perhaps more so than in the Chinese market.

In conclusion, considering the factor of the exchange rate, China represents a more attractive market, since 1) the euro has somewhat depreciated against the Chinese yuan, meaning that goods exported from Slovenia are more accessible to consumers, and 2) the Chinese yuan is comparatively more stable and less prone to frequent, and in absolute terms, impactful change in value of currency, as compared to the Japanese yen, meaning

that creating a pricing strategy for exported products is easier and more reliable than for goods exported to Japan, where currency changes in value more frequently and more in terms of numeric value.

5.4 SYNTHESIS OF THE ANALYSIS

In determining priority markets for exports, both the governments, export promotion agencies, and companies have to analyse a large number of markets based on pre-determined factors. Such analyses vary in depth and level of specifics. The first level of analysis is aimed at distinguishing between markets with general potential, i.e., markets that are potential export markets based on macroeconomic indicators. Further analyses are then conducted for specific markets that are determined to show potential in the first step. These analyses are conducted on industry level for specific products or industries of interests for export. Based on the results of such analyses, a decision can be made on which markets to promote as export markets. Some markets are, based on their performance and potential, promoted more than others. If the wrong markets are determined as priority markets and export promotion or exporting itself is not sufficient, this can lead to wasted financial and human investment from both the state and the firm (Papadopoulos and Dennis, 1998, p. 38; Steenkamp, Viviers and Cuyvers, 2012, p. 27; Mayer, Martini and Roecker, 2022).

In order to make the right decision in which markets to promote within priority sectors, an industry-level analysis was concluded within this thesis. Two dimensions of export market attractiveness were considered, namely demand potential (opportunities) and trade barriers (challenges), to determine which of the analysed markets, China or Japan, represents more opportunities or challenges for Slovenia's export of pharmaceuticals. Based on the empirical analysis and discussion, although China is overall a bigger market, companies also face more challenges in exporting there. It should be noted that although origin advantage was classified as opportunity by Papadopoulos et al. (2002, p. 171), and tariffs were classified as a challenge (Papadopoulos et al., 2002, p. 172), in Slovenia's case, this is not necessarily so. It might be due to the fact that the analysis was done on a small economy as opposed to large economies that Papadopoulos et al. (2002) analysed, but the 'origin advantage' of Slovenia is so small that it might actually represent more of a challenge than an opportunity, since it has to compete with other countries that have a much better origin advantage. We are not talking about a comparatively lesser

competitive advantage, but almost inexistent presence in a market. Furthermore, it is worthy of discussion whether tariffs, when there are none, represent an opportunity or not. Tariffs, when applied, definitely represent a challenge as they impact the price of a product. However, if there are no tariffs is that an opportunity or simply a comparatively more attractive market? Perhaps import subsides would represent an opportunity in this case, rather than 0 percent tariffs, as they offer additional incentive to exporters. Since tariffs are generally low on pharmaceutical products, perhaps no tariff is not such an advantage as it would be in those products where imports duties are generally much higher.

Based on these findings, a table with an overview of the analysis is presented below. In it, the finding for each of the measures is presented on a country-basis – whether the factor analysed presents an opportunity or challenge in the specified country.

DEMAND POTENTIAL		
VARIABLE	**COUNTRY**	**OPPORTUNITY**
Apparent consumption	China	Yes, more
	Japan	Yes, less
Import penetration	China	No
	Japan	Yes
Demand conditions specific to the pharmaceutical market	China	No
	Japan	Yes
Origin advantage	China	No
	Japan	No
Market similarity	China	No
	Japan	Yes, but only in GNI and electricity production
TRADE BARRIERS		
VARIABLE	**COUNTRY**	**CHALLENGE**
Tariff barriers	China	Yes
	Japan	No
Nontariff barriers	China	Yes, more
	Japan	Yes, less
Geographic distance	China	Yes, less
	Japan	Yes, more
Exchange rate	China	No
	Japan	Yes

Table 22: Overview of findings.

5.5 LIMITATIONS AND RECOMMENDATION FOR FURTHER RESEARCH

This research is only the first step in analysis of the opportunities and challenges that Slovenian companies might face in exporting pharmaceuticals to China and/or Japan. Although the study was conducted based on factors and measures which are most frequently used in international market selection, which are most reliable and most relevant to the export market selection process, some of the data was still either incomplete or inaccessible. For the most part, one would wish to gather data from primary and trustworthy sources, which can then be further analysed. The inaccessibility and unavailability of data is most apparent in the data for apparent consumption, where the first obstacle was the fact that China only reports the output of pharmaceuticals in metric tonnes, rather than currency. This made data difficult to compare with data gathered from sources such as the WTO, UNIDO and UN COMTRADE, all of which is reported in currency value. Although data was available for China up until 2018 in the UNIDO database, it was not available for Japan. It had to be sourced from secondary sources and then converted to dollars. The issue of unavailability of data was somewhat mitigated by a rough analysis based on the comparison of data that was available for China, although a comprehensive analysis could not be conducted to compare the data for 2021. Overall, while an analysis was concluded, its comprehensiveness and value would be improved with the latest data.

Furthermore, due to the nature and scale of the research, which considered many different factors, some of the factors were not analysed in-depth. Research had to be done quantitatively in order to be able to compare numbers and data, shedding a more objective light on the market conditions in both China and Japan. However, in the case of NTBs and IPR protection, this necessarily means that some of the data was obscured. Although the incidence of IPR-related trade concerns and the number of NTBs applied does also tell a story, regulations concerning IPR and the content of NTBs are also an important aspect, since that is what shows the real effect on companies. Of course, an argument is made that even the sheer number of NTBs applied, as well as the fact that China is the only one which applies NTBs aimed at curtailing competition, is enough to say Japan is more attractive in this aspect. Still, analysing the content of existing regulations would give a better and more in-depth insight into what companies should expect when entering the Chinese or Japanese market. Such and analysis could be done on a company-specific level in order to provide specific insights from a legal as well as IMS point of view. This

is one of the recommendations for the focus of future research – analysing the content and effect of NTBs and IPR protection in exporting pharmaceuticals from Slovenia or the EU to Japan and China.

Furthermore, although the factors and measures included in this thesis are, as already mentioned, chosen with a purpose – they are most frequently used, relevant and also accessible or the data provided is reliable, the choice of factors could be further improved if research was conducted specifically for Slovenia to determine to what extent each of the factors actually impacts the decision to export and then properly weight them in concluding the analysis. Such an analysis could be done using the gravity model or even qualitative interviews with the Slovenian pharmaceutical companies which are exporting to China.

Overall, while this thesis provides an industry-level analysis of the attractiveness of China and Japan as potential export markets for the Slovenian pharmaceutical industry, this topic is still under-researched and could benefit from more niche, qualitative, analyses, such as an in-depth analysis of NTBs or IPR protection relevant for Slovenian pharmaceutical companies exporting to Japan and China, or a statistical analysis of the effects of each individual factor on the decision to export to either of the markets.

6 CONCLUSION

In promoting export to foreign markets, governments and export promotion agencies have limited resources which have to be distributed in efforts of export market promotion. To this end, they have to filter through several potential markets and choose the most prospective ones, which they will then focus on. Wrong decisions can lead to wasted financial and human investment from both the state and the firm (Papadopoulos and Dennis, 1998, p. 38; Steenkamp, Viviers and Cuyvers, 2012, p. 27; Mayer, Martini and Roecker, 2022). Although Slovenia's government has already determined priority markets to be explored, with two of them being China and Japan, the market-sector analysis has not been conducted in order to determine whether China or Japan is the more attractive market for exports in the pharmaceutical industry, which was categorised as a priority industry for export (Government of the Republic of Slovenia, 2021, p. 49). In order to do so, this thesis compared the two markets with the research question: *What are the opportunities and challenges for Slovenia in exporting pharmaceuticals to China and Japan?* The aim of this thesis was to determine which of the two markets is more attractive for export of pharmaceuticals and based on that, to which market further export promotion efforts by Slovenia should be oriented. As pharmaceuticals are the primary export of Slovenia based on HS chapter categorization, and since the Slovenian pharmaceutical industry is extremely export-oriented with exports representing up to 95 percent of Slovenian pharmaceutical companies' revenue, determining the attractiveness of potential export markets for pharmaceuticals can serve as a future orientation for the internationalization of the Slovenian economy and its growth (Sloexport, 2023a, 2023b ; Statistical Office of the Republic of Slovenia, 2023b).

In Chapter 2, different approaches to IMSel were discussed. Based on the review and discussion of approaches, and analytical framework was constructed in Chapter 3, which is based primarily on the trade-off by Papadopoulos et al. (2002), which considers both opportunities (demand potential) and challenges (trade barriers) in exporting. The model was extended so as to reflect the specifics of the pharmaceutical industry and other updates, such as the switch from GNP to GNI. In Chapter 4, an empirical analysis of the proposed factors was conducted. Based on the empirical analysis, in Chapter 5 findings were discussed to compare challenges and opportunities in exporting to either China or Japan in the pharmaceutical industry. The analysis was done based on an extended. In demand potential, both Japan and China represent an opportunity in apparent

consumption, which measures the realistic demand in the pharmaceutical market in the two countries. This factor must be considered comparatively. In this case, China represents a much better opportunity, since it is objectively a much larger market than Japan. At this point, it should be noted that the latest figures for comparison are from 2018, and for the years after, only speculative analysis was provided since numbers could not be compared directly due to unavailability of standardized data. For Japan, data was available, and showed increase in apparent consumption, while data was not available completely for China, but based on the rough analysis by comparing values for previous years, apparent consumption China has decreased from 2019 to 2020 and from 2020 to 2021. In any case, it is unlikely any drastic change happened that would mean Japan has overtaken China in the size of the pharmaceutical market. In other factors, such as import penetration, demand conditions specific to the pharmaceutical market and market similarity, Japan represents more of an opportunity, since it has comparably much higher levels of import penetration, it scores better in demand conditions specific to the industry and is also more similar to Slovenia than China. Lastly, Slovenia faces a challenge in both of the markets when it comes to origin advantage, since it really cannot be said that it has an advantage. Slovenia's presence in both of the markets is quite small, and although Papadopoulos et al. (2002, p. 171) classify origin advantage as an opportunity, in this case, it represents more of a challenge, as Slovenia has a lesser competitive advantage to other countries competing in the market.

When it comes to trade barriers, the biggest difference between China and Japan is observed in tariffs and the exchange rate variables. Although tariffs are presented as a challenge to trade, since they are used to increase the price of imported products and protect the competitiveness of domestic producers, in relation to Japan, this challenge does not exist. With the EU-Japan Economic Partnership Agreement, tariffs on pharmaceuticals have been eliminated in 2019, making Japan the more attractive market in this case. On the other hand, Japan's currency is less stable than China's, and what is more, the EUR has appreciated against the JPY in the last year, making exports from Slovenia to Japan less affordable. In this case, China represents a more attractive market, a better opportunity or a lesser challenge. In both of the other variables, NTBs and geographic distance, that is, exporting to both China and Japan represent somewhat of a challenge. While Japan applies less NTBs to pharmaceutical products both in number and in diversity, it is farther away than China, making shipping costs more expensive.

Overall, which market is then more attractive? All in all, while China is a larger market, it also represents more challenges than Japan, especially due to low import penetration, tariff rates, numerous and diverse NTBs applied to pharmaceuticals, and lesser demand specific to the pharmaceutical industry. Japan is a more attractive market, since it does not apply tariffs, applies less (in number) and less diverse NTBs to pharmaceutical products, has high import penetration (almost a third of the market are imports) and demand, and is more similar to Slovenia. On the other hand, it has a less stable currency and a smaller market. The definitive answer would have to lie with the exporters. Japan is easier to enter as a market, but that is not to say that China is an impenetrable market which is impossible to export to. As is evident from the numbers, it is possible to export to China, and many in fact do. If an exporter is adamant on entering the Chinese market and is ready to take on the costs which come with tariffs, numerous and diverse NTBs, low import penetration with which comes stronger competition, all the while Slovenia faces challenges in origin advantage, if the size of the market outweighs the negatives, then China is the right answer. In many cases, that is so, since an exporter would need to capture only a small percentage of the Chinese market in order to be successful. The apparent consumption of pharmaceuticals in China alone was almost seven times the size of Slovenian GDP in 2018. If a Slovenian exporter sold only one percent of the available market worth of pharmaceuticals in China, USD 3.8 billion, that would equal to seven percent of Slovenia's GDP, in 2018 numbers (The World Bank, n.d. c; UNIDO, n.d. a).

Should the Slovenian government and its export promotion agencies focus on promoting the export of pharmaceuticals to Japan rather than the Chinese market? Well, exporting to the Japanese market proved easier from the aspect of the company, which might lead to 1) more companies deciding to export to Japan, and 2) more success with those companies who export to Japan. On the other hand, that does not mean it should abandon all efforts to promote exporting to China. Those companies which have resources available to enter riskier and more difficult markets, should definitely do so, but should also be made aware of the challenges and approach the Chinese market with caution. This is also reflected in the fact that Slovenia already exports more pharmaceuticals to Japan than it does to China, but exports to China are more diverse. Lastly, although Slovenia's exports of pharmaceuticals are high, exports to China and Japan are relatively small compared to the overall exports. There is opportunity here – to perhaps increase the

diversity of products exported to Japan, and to increase the exports of pharmaceuticals to China overall.

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8 APPENDIX

8.1 ENGLISH ABSTRACT

This thesis compares the opportunities and challenges for exporting pharmaceuticals to China and Japan, with the aim of determining which market is more attractive for Slovenia to focus its export promotion efforts on. The study utilizes the Two-Stage approach by Papadopoulos et al. (2002), which was extended to reflect the specifics of the pharmaceuticals industry. The analysis, concluded in two dimensions – demand potential and trade barriers – showed that while Japan is the smaller market, it represents more opportunities and less challenges when it comes to exporting pharmaceuticals. Although Japan is the smaller market, China still represents a very large market and could thus be an opportunity for those companies which have resources and are able to focus their efforts on a more demanding market. The research provides a future orientation for the internationalization of the Slovenian economy and its growth in the pharmaceutical industry.

8.2 GERMAN ABSTRACT

In dieser Arbeit werden die Chancen und Herausforderungen für den Export von Arzneimitteln nach China und Japan verglichen, um zu prüfen welcher Markt für Slowenien attraktiver ist und worauf es seine Exportförderungsbemühungen konzentrieren sollte. Die Studie verwendet den zweistufigen Ansatz von Papadopoulos et al. (2002), der erweitert wurde, um die Besonderheiten der pharmazeutischen Industrie zu berücksichtigen. Die Analyse, die in zwei Dimensionen – Nachfragepotenzial und Handelshemmnisse – abgeschlossen wurde, ergab, dass Japan zwar der kleinere Markt ist, aber mehr Möglichkeiten und weniger Herausforderungen bietet, wenn es um den Export von Arzneimitteln geht. Obwohl Japan der kleinere Markt ist, stellt China immer noch einen sehr großen Markt dar und könnte daher eine Chance für diejenigen Unternehmen sein, die über Ressourcen verfügen und in der Lage sind, ihre Bemühungen auf einen anspruchsvolleren Markt zu konzentrieren. Die Untersuchung bietet eine zukünftige Orientierung für die Internationalisierung der slowenischen Wirtschaft und ihr Wachstum in der Pharmaindustrie.