

Identifying Opportunities for Latvia's Export to China

Haidong Feng

Faculty of Economics and Social Sciences, University of Latvia, Riga, Latvia

Author's Email: 1093762325@qq.com

Abstract

Latvia's economic growth relies heavily on exports. In recent years, Latvia's exports have also encountered severe challenges due to the Russian-Ukrainian war. Therefore, seeking a broader export market is crucial to Latvia's economic development. Based on the methodology of exploring and promoting Latvia's export to China, the author has explored seven product categories (Cereals, Photographic or cinematographic goods, Tin, Railway, tramway locomotives, rolling stock, equipment, Explosives, pyrotechnics, matches, pyrophorics, Silk, and Arms and ammunition, parts and accessories) can be produced in Latvia with high demand potential and high trade barriers in China's market by Trading Economics from 2008 to 2023. By the import trend of these seven product categories in China's import market, the aim of this paper is to analyze the markets of the seven product categories from political and commercial risk, country's size and growth, short and long term import growth, import market size, degree of concentration, and trade restrictions according to Decision Support Model and Papadopoulos et al.'s trade-off model to identify the opportunities of Latvia's export to China. Finally, the paper concludes with suggestions on how to reduce trade barriers for Latvian exporters of the above product categories to seek export opportunities to China's market.

Keywords: export, Latvia, China's market, demand potential, trade barriers

1. The methodology of identifying opportunities for Latvia's export to China

On the basis of Decision Support Model and Papadopoulos et al.'s trade-off Model, this research can classify all imported product categories in China's market in 2023 as product categories with high demand potential. Some of these product categories with high demand potential are already exported by Latvia to China, and these product categories are defined in this research as those with high demand potential with low trade barriers. The other part of the product categories with high demand potential have not been exported by Latvia to China's market, which is defined in this research as the product categories with high demand potential with high trade barriers (part of which can be produced in Latvia, and the other part cannot be produced in Latvia).

For the product categories with high demand potential and low trade barriers, it is only necessary to use marketing as a tool to continue to expand the market in China to increase the export of these products to China. The product categories with high demand potential and high trade barriers are the research objects of this research. The author describes the methodology of this research through the following matrix, and explores the export opportunities of the product categories with high demand potential with high trade barriers in China's market by Latvia's export to China opportunity identification model.

For all product categories with high demand potential in China's market, price adjustment is one of the most

necessary factors to expand the market share in China. Therefore, this research also finds a binary function of price adjustment based on the calculation formula of China's tariff and consumption tax, which establishes the quantitative relationship between the final price of products exported to China's market and the product cost.

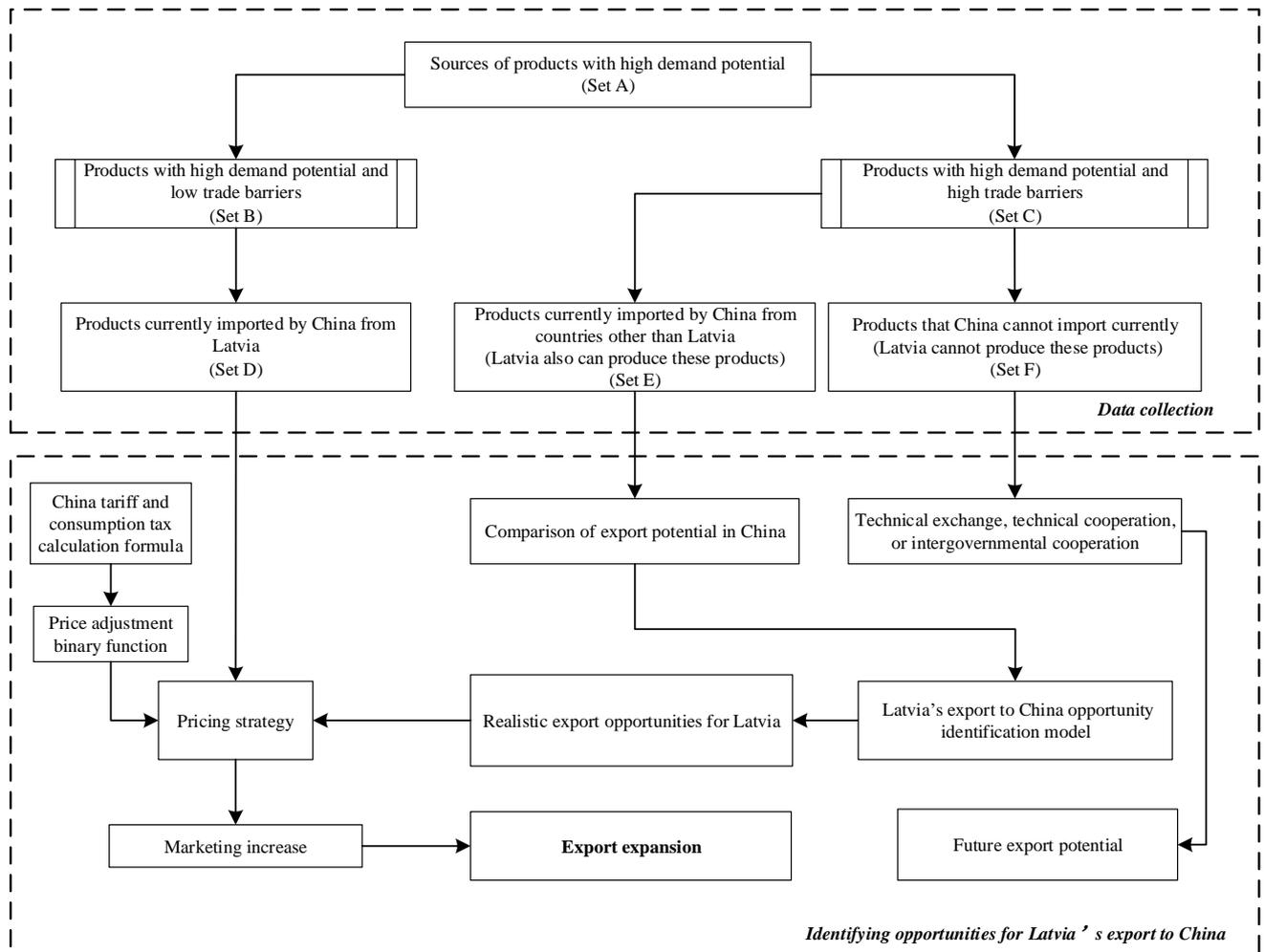


Figure 1: Matrix diagram of the methodology of identifying opportunities for Latvia's export to China

Source: Created by the author

In the figure above, for the convenience of representation. The following different product categories are represented by different sets as follows: Sources of products with high demand potential (Set A), Products with high demand potential and low trade barriers (Set B), Products with high demand potential and high trade barriers (Set C), Products currently imported by China from Latvia (Set D), Products currently imported by China from countries other than Latvia (Latvia also can produce these products) (Set E), and Products that China cannot import currently (Latvia cannot produce these products) (Set F). It can be seen that set A is the union of sets B and C, and the intersection of sets B and C is the empty set.

It can also be seen that set C is the union of sets E and F, and the intersection of sets E and F is the empty set. And the sets B and D are equal sets.

In data collection, the author considers 90 product categories of all Latvian exports to China from 2008 to 2023 as elements in set B,¹ and considers the all 98 product categories imported by China in 2023 as elements in set A.² There are two special product categories lithography machines and high-end chips in China's market demand is huge, but for various reasons these two product categories did not appear in the set A. So these two elements are grouped together in set F. After the operation of the set, we can find that the set E has seven elements. These seven elements are shown in the following table.

Table 1
 China's imports of elements in set E in 2023

Source: Trading Economics

China Imports by Category	Value
Cereals	\$20.54 billion
Photographic or cinematographic goods	\$3.36 billion
Tin	\$994.72 million
Railway, tramway locomotives, rolling stock, equipment	\$575.67 million
Explosives, pyrotechnics, matches, pyrophorics	\$120.80 million
Silk	\$80.41 million
Arms and ammunition, parts and accessories	\$14.24 million

Table 2
 Latvia's exports of elements in set E in 2023

Source: Trading Economics

Latvia Exports by Category	Value
Cereals	\$856.18 million
Photographic or cinematographic goods	\$7.00 million
Tin	\$88.98 million
Railway, tramway locomotives, rolling stock, equipment	\$19.88 million
Explosives, pyrotechnics, matches, pyrophorics	\$2.27 million
Silk	\$2.20 million
Arms and ammunition, parts and accessories	\$5.25 million

By comparing the data in the above two tables, it can be found that these seven product categories have export potential to China. In terms of the ratio of China's imports to Latvia's exports in 2023, export potential from large to small can be derived from the inequation: $480.00 (3.36 \text{ billion}/7.00 \text{ million}) > 53.22 (120.80 \text{ million}/2.27 \text{ million}) > 36.55 (80.41 \text{ million}/2.20 \text{ million}) > 28.95 (575.67 \text{ million}/19.88 \text{ million}) > 23.99 (20.54 \text{ billion}/856.18 \text{ million}) > 11.18 (994.72 \text{ million}/88.98 \text{ million}) > 2.71 (14.24 \text{ million}/5.25 \text{ million})$.

¹ Trading Economics (<https://tradingeconomics.com/latvia/exports/china>)

² Trading Economics (<https://tradingeconomics.com/china/imports-by-category>)

2. Data analysis based on Latvia's export to China opportunity identification model

According to the analysis of the data in last section, it can be seen that Latvia can produce these seven product categories, but these product categories have not been exported to China's market. In this section, the author analyzes the import market of these seven product categories in China's import market according to the six aspects of the Latvia's export to China opportunity identification model.

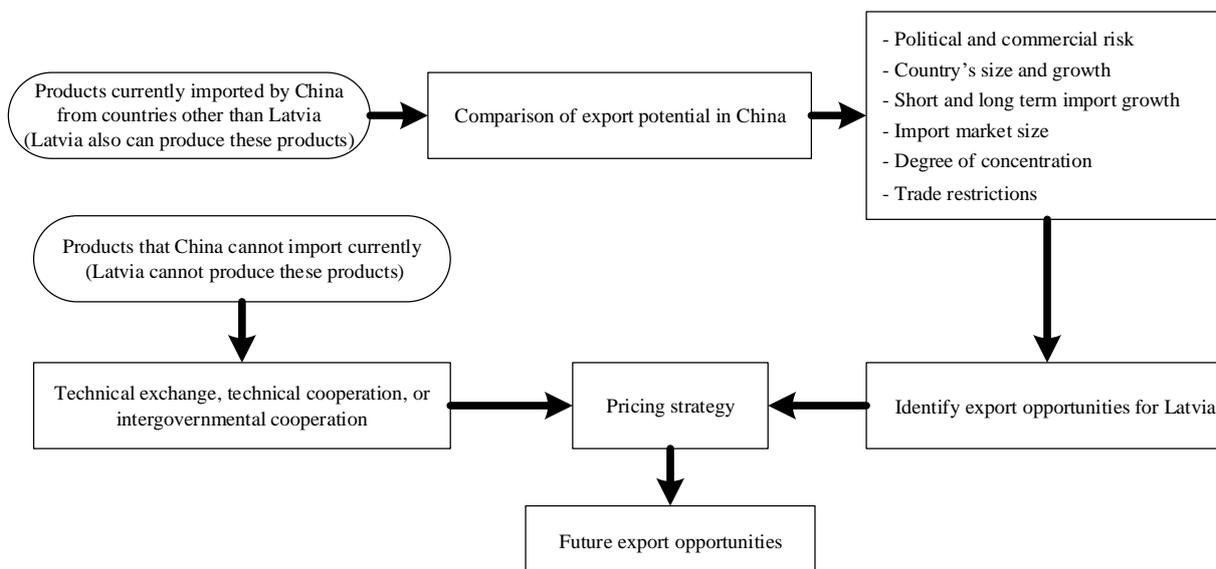


Figure 2: Latvia's export to China opportunity identification model

Source: Created by the author

The author browsed the websites of China's Ministry of Commerce, General Administration of China Customs, China National Bureau of Statistics, and industry associations and chambers of commerce. Based on the data from these websites, the author analyzes the product categories in set D and set E by Latvia's export to China opportunity identification model, and identifies which product categories have the opportunity to export to China.

(1) Cereals

The Chinese government has certain policy controls on cereal imports, such as tariffs, quotas, etc. These policies may be adjusted according to the Chinese domestic and international food market situation. The international political situation, especially relations with major food exporting countries, may affect the stability of food imports. China is one of the world's largest food consumers and has a huge market. With population growth and consumption upgrading, food demand continues to grow. In the short term, imports may fluctuate due to domestic and foreign food prices, policies and other factors. In the long term, with the growth of domestic food demand and the improvement of food production efficiency abroad, imports are expected to maintain steady growth. China's grain import market is large and growing year by year, but food import markets are relatively fragmented and concentrated in a few large countries. Trade restrictions such as tariffs and quotas may affect food imports.

(2) Photographic or cinematographic goods

These products involve intellectual property rights issues, and there are infringement risks. China has a huge

film and television market, and the market size continues to grow. Imports are expected to maintain steady growth as Chinese domestic consumers' demand for high-quality film and television productions increases. Although the import market of Chinese film and television photography items is large and growing, the import market is relatively dispersed, mainly concentrated in a few developed countries.

(3) Tin

Tin is a scarce resource and its supply is affected by the international political situation and the distribution of resources. The price of tin is affected by many factors such as the global economic situation, supply and demand, and the price fluctuates greatly. China is one of the world's largest tin consumers with a large market scale. In the short term, imports may fluctuate due to the global economic situation and supply and demand. In the long term, with the growth of China's domestic demand for tin and the development of tin resources in other countries, imports are expected to maintain stable growth. China's tin import market is large and growing, but the market is relatively concentrated, mainly relying on a few countries rich in tin resources. Trade restrictions such as tariffs and anti-dumping may affect tin imports.

(4) Railway, tramway locomotives, rolling stock, equipment

The Chinese government has certain policy controls on the railway locomotive industry, such as industrial policies and environmental protection policies. International locomotive market is competitive, which affects the market share of Chinese domestic enterprises. China has a large railway network and a large market. And with the development of railway construction and the upgrading of railway technology, the market size continues to grow. In the short term, the import volume will fluctuate due to the international economic situation and the progress of railway construction. In the long run, with the upgrading of China's railway technology and the new advanced foreign technology, the import volume is expected to maintain stable growth. China's railway locomotive and equipment import market is large and growing. China's import market for these products is relatively concentrated, relying mainly on a few countries with advanced railway locomotive technology. Trade restrictions such as tariffs and technical barriers may affect the import of related equipment.

(5) Explosives, pyrotechnics, matches, pyrophorics

The Chinese government strictly regulates the import of explosives and pyrotechnic products, including the licensing system, safety standards, etc., and policy changes may lead to the risk of import restrictions or bans. These products are potentially dangerous, because improper transportation, storage and use can lead to safety incidents, which in turn lead to political and commercial risks. Changes in the international political situation can also affect the stability of the supply chain of explosive and pyrotechnic products, especially with major exporting countries. As the world's largest producer, exporter and consumer of fireworks, China has a certain market demand for fireworks products, but explosives are mainly dependent on domestic production and imports for specific purposes. With the strengthening of domestic safety regulations and environmental requirements in China, the market size of explosives and fireworks products may be affected somehow, but the demand in specific sectors (such as mining, engineering blasting, celebration events, etc.) will continue. Affected by the international economic situation, policy adjustments, market demand and other factors, the import volume may fluctuate. As China's industry and consumption upgrade, the demand for high-quality, high-safety explosives and fireworks

products will increase, but import growth will be limited by strict regulations. China's import market for explosives and pyrotechnic products is relatively small and tightly regulated. In terms of fireworks products, due to China's strong domestic production capacity, the import market is limited. The import market for explosives and pyrotechnic products is relatively concentrated and mainly depends on a few countries with production qualifications and technology. China enforces a strict licensing system and safety standards for the import of explosives and pyrotechnic products, limiting the channels and quantities of imports. In addition, the import of such products may also be affected by international trade agreements, tariff barriers and other trade restrictions.

(6) Silk

Changes in international trade policies, such as tariff adjustments, trade barriers, etc., may affect silk imports. The quality and safety of silk products are the focus of concern for Chinese consumers, and the quality problems may lead to business risks. China is one of the world's largest producers and consumers of silk, so the market is huge. With the improvement of China's domestic consumption level and consumption upgrading, the scale of the silk market continues to grow. Affected by the international economic situation, policy adjustments, market demand and other factors, the import volume usually fluctuate. The demand from Chinese consumers for high-quality, high value-added silk products is growing. China's silk import market is large and growing. In particular, the import volume of high-end silk products, such as pure silk and silk products, continues to grow. The silk import market is relatively dispersed, and mainly concentrated in a few large silk producing countries and regions. China imposed certain tariffs on the import of silk products, but there were relatively few trade restrictions. The import of silk products may also be affected by trade restrictions such as international trade agreements and anti-dumping investigations.

(7) Arms and ammunition, parts and accessories

China has strict controls on the import of arms and ammunition, usually limited to specific official channels and uses. Therefore, political risks are higher, including policy changes and international tensions that may affect imports. In addition, China's domestic political stability is also an important factor affecting imports. As weapons and ammunition are special commodities, their market prices fluctuate greatly. The supply chain is vulnerable to many factors, such as war and natural disasters, so the business risks are relatively high. As the world's second largest economy, China has a huge market size and potential. However, in the field of arms and ammunition, the market size is relatively small due to its particularity and sensitivity. With the improvement of China's national defense strength and the needs of military modernization, the import of weapons and ammunition and their parts and accessories is likely to maintain a certain growth trend. However, the specific growth situation needs to be judged according to national policies, international relations and other factors. Affected by international political, economic, military and other factors, short-term import growth may show volatility. For example, when international relations are strained, imports may be restricted; And as China's domestic military modernization needs increase, imports are likely to rise accordingly. In the long run, with the continuous improvement of China's national defense capabilities and the continuous advancement of military modernization, the import demand for weapons and ammunition and their parts and accessories is likely to maintain a steady growth. However, the specific growth rate needs to be judged according to China's national policies, international relations, and changes

in the international military trade market. Although China's import market for arms and ammunition and their parts and accessories is relatively small, it has certain stability and growth potential. The market size is influenced by a variety of factors, including the international political and economic situation, international relations, and military requirements. Due to the particularity and sensitivity of the sector, the market concentration in the import market may be relatively high. A few official channels and large defence companies are the main importers. China has a strict licensing system for the import of weapons and ammunition, which can only be imported by specific agencies authorized by the government. Some high-tech weapons and ammunition and their parts and accessories may be subject to technical blockade or export restrictions, resulting in increased import difficulties. When international relations are tense, China may face trade restrictions or sanctions from other countries, which will affect the import of arms, ammunition and their parts and accessories.

Since Latvia cannot produce lithography machines and high-end chips, these two product categories are in high demand with high trade barriers in China's market. According to Chinese customs data and related analysis, the import amount of China's lithography machine in 2023 is about 8.74 billion US dollars. This data reflects the huge demand for lithography machines in China. Dutch lithography machine manufacturer ASML has an important position in the global lithography machine market, so the Netherlands is also a major supplier of imported lithography machines to China. In December 2023, China's imports of Dutch lithography equipment reached \$1.1 billion, an increase of nearly 1000% over the previous year, which shows China's huge demand for high-end lithography machines. China customs did not directly give specific data for high-end chip imports, but in 2023, China's chip imports reached \$349 billion, decreased 15.4% from the previous year. At the same time, China imported 479.5 billion chips, 10.8% less than the previous year. However, due to the influence of international political and economic factors, the import of high-end chips may be subject to certain restrictions. These data indicate that despite the decline in imports, imports of high-end chips may still account for a certain proportion, as the decline in the value of imports (15.4%) is greater than the decline in the volume of imports (10.8%).

3. Pricing strategy

Based on the stable tax system, the companies can make a suitable price adjustment for their products which then can be sold as fast as possible in China market. Basically, the expense is from the customs duties and transportation cost. The current China national tariff and consumption tax calculation formula for imported products:

(1) $\text{Tariff} = \text{CIF (Cost Insurance and Freight)} \times \text{CDR (Customs Duty Rate)}$;

(2) $\text{VAT (Value-added tax)} = (\text{CIF} + \text{tariff}) \times 17\%$;

(3) $\text{Consumption tax} = (\text{CIF} + \text{tariff amount}) / (1 - \text{CTR}) \times \text{CTR (Consumption Tax Rate)}$.

For Latvian companies' convenience, it is necessary to make a function expression for them to make a reasonable price for their products. Thus, the companies can make their product a price based on the tax function. Set CDR as coefficient a , and CIF as x , so tariff is ax , and VAT is equal to $(x + ax) \times 17\% = 17\% (1 + a) x$. Also set CTR as b , so consumption tax is equal to $(1+a) bx / (1 - b)$. Thus, all the taxes paid to China customs and China government is equal to the sum of Tariff, VAT, and Consumption tax, which can be illustrated by the

algebraic expression: $(101a - ab + 99b + 1) x / 100 (1 - b)$. Meanwhile, if set product cost from the factory as y (It means that the value of Insurance and Freight is $x-y$), the final price of this product is a two unknowns function (C is the value of the product shipping cost from China customs to the shopping center):

$$\text{Final Price} = F(x, y) = \frac{101a - ab + 99b + 1}{100(1 - b)} x + y + C$$

When we know the three values: Cost Insurance and Freight (CIF: x), Customs Duty Rate (CDR: a), Consumption Tax Rate (CTR: b), we can precisely calculate the final price of one product in China market. The tariff rate of each product is a constant too.³ For example, the tariff rate of food and drinks is 15%, and liqueur is 60%. The value of b is based on the consumption tax rate table of Chinese commercial products:⁴ cigarettes 36%, food 10%, alcohol 15%, wine 10%, clothes 15%, rare materials 12%, cosmetics 30%, platinum jewelry and diamonds and diamond jewelry 5%, other precious jewelry and jewelry 10%, high-end watches 20%, wooden disposable chopsticks 5%, fireworks 15%, batteries 4%, solid wood flooring 5%, gasoline (leaded gasoline 1.52 yuan / liter; unleaded gasoline 1.52 yuan / liter, Diesel 1.20 yuan / liter, Aviation kerosene 1.20 yuan / liter, Naphtha 1.52 yuan / liter, Solvent oil 1.52 yuan / liter, Lubricating oil 1.52 yuan / liter, Fuel oil 1.20 yuan / liter), commercial wholesale 11%, golf equipment 10%, paint 4%,

For example, if a company wants to export a bottle of Black Balsam to China, the Cost Insurance and Freight is 4 euro (product cost from the factory is 3 euro), Customs Duty Rate is 60% (can be found in Appendix Table1). People's Republic of China Import Tariff Tax Rate Classification Table (Import products tariff number: 02000000, Item category: liqueur, Tax rate: 60%), and Consumption Tax Rate for alcohol is 15%, and this Riga Black Balsam in China from the customs to the shopping center cost 1 euro for the shipping. Thus, we can see each value in this function ($a:0.6$, $b:0.15$, x ; 4, y : 3, $C:1$) and can precisely calculate the final price of this Riga Black Balsam in China market is $F(4, 3) = 7.6$. The Black balsam company can see 7.6 euro is the final price of this Black Balsam in China market. If in this market it sells this Black Balsam 9 euro, they can see the profit of this shop on this Black Balsam is 1.4 euro.

4. Conclusion

(1) The exploring of Latvia's exports to China should be carried out according to the methodology of identifying opportunities for Latvia's export to China, which can not only improve the efficiency of the research, but also put forward scientific methods for expanding the sales volume for Latvia's products in China's market. Product categories with high demand potential and low trade barriers can be used by marketing as a tool to increase exports. Product categories with high demand potential and high trade barriers need Latvia's export to China opportunity identification model to find potential opportunities in China's market thereby lowering trade barriers.

(2) China's political stability and continuously optimized business environment have provided a favorable import environment for foreign products. However, changes in international trade policies, such as tariff adjustments, trade barriers, etc., may bring risks. As the world's second largest economy, China's economic growth has provided a huge place for the international trade. Short-term import growth may be affected by the seasons and policy adjustments. Long-term import growth is related to economic development and industrial structure upgrading. China's import market has a certain concentration, and some products may depend on specific import source countries or regions. However, with the opening of the market and the implementation of diversified import

³ China Customs tariff rate table

(<http://www.ciedata.com/coding/personalTax.aspx?CodingD=441810&codingYear=2021>)

⁴ The scope and rate of consumption tax in China (<http://www.64365.com/zs/758351.aspx>)

strategies, the concentration will be decreased gradually. China has implemented a series of trade facilitation measures, like reducing tariffs and simplifying procedures. But there are still restrictions or quotas on the import of certain goods.

(3) If Latvia can develop competitive advantages in cereals cultivation and processing, it has the opportunity to enter China's market. If Latvia has advantages in film and television production or related technologies, it will have opportunities to export to China. Latvia has tin resources and processing capacity, so it is possible to enter China's market. Latvia has advantages in railway equipment manufacturing, so Latvia can consider cooperation with China. If Latvia has unique advantages in the production of silk products, it may consider to export their products to China. Therefore, these five product categories have opportunities to export to China, and the opportunity to export to China can be obtained by price adjustment binary function to reduce the price.

(4) Although China's imports much more explosives, pyrotechnics, matches, pyrophorics and arms and ammunition, parts and accessories than Latvia's exports in these two product categories, the export of explosives, pyrotechnics, matches, pyrophorics must comply with Chinese safety standards and regulatory requirements. And the export of arms and ammunition, parts and accessories are subject to strict supervision and restrictions, so it must comply with China's military import policies, laws and regulations. Therefore, export opportunities of these two product categories are limited and need to be evaluated carefully. With the development of technology and industrial upgrading, China's demand for high-end chips is increasing. Although the import amount of high-end chips is not given specific data, according to the overall trend, its import amount may be affected by a variety of factors and fluctuate. Latvia can also learn from the Netherlands in the production of high-end chips and lithography machines to achieve independent production capacity, thus winning potential export opportunities to China.

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Author's bio:

Feng Haidong has obtained a bachelor's degree in economics from Lanzhou University of Finance and Economics (China) and a master's degree in business administration from Lanzhou University (China). He is currently a doctoral student at the Faculty of Economics and Social Sciences, University of Latvia. He has got the Latvian National Scholarship and the Latvian Government Scholarship. During his doctoral studies, he got the Erasmus+ Scholarship and went to the Faculty of Business Studies and Economics, University of Bremen (Germany) as an exchange student. His research fields are marketing and international economics.

Author's Email: 1093762325@qq.com