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INTERNATIONAL COMPETITIVENESS OF THE EXPORT BUSINESS OF CONCENTRATED APPLE JUICE

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Abstract: The size of the international market for apple juice concentrate (JCM) is USD 2000 million. The main actors are China, Poland and Turkey, which explain 55% of the participation, while Chile has a share of 3.7%. Due to the high competition of this economic activity, it is relevant to analyze the competitiveness of this agroindustry. The objective of this work was to determine the competitiveness of the Chilean JCM export business. A total of 8 competitiveness indicators were determined for 32 countries, with greater appreciation in exports, in the period 2015-2019: Revealed comparative advantage index, Tradability, Degree of export openness, Degree of import penetration, Market specialization index, Distance between the supplier and the buyer, Lafay Index and Market Insertion Matrix. These were assigned a score to prepare a ranking, in which Poland, Chile and Serbia stand out as the most competitive countries. Potential markets (Canada, India, Netherlands, Russia and Spain) were identified through an international demand matrix. Chile is a competitive country in the export of JCM, however, trade agreements do not provide greater competitiveness, because other suppliers sell at lower prices and/or are located at a shorter distance from the destination. The fact that the Chilean supply is not burdened with tariffs is not enough.

Keywords: Competitiveness indicators; Malus domestica; Apple juice market

INTRODUCTION

The Economic Commission for Latin America and the CaribbeanUN ECLAC (2006) describes competitiveness as the ability to introduce new and better products to the market, accompanied by new forms of business organization and an increase in productive sufficiency. Additionally, it states that this competitiveness is dynamic, sustainable in the long term, and allows for an increase in real remuneration corresponding to health, education, housing, employment and working conditions (Aguilar et al., 2011).

Strong international competitiveness favors the creation of resources and material improvements that promote individual well-being, that is, a desire to invest and achieve a position in the market is generated (Alomari et al., 2019; Charles and Sei, 2019). To set goals, it is essential to know the essence of competitiveness and the reasons for its decline, as well as the growth factors (Dima et al., 2018).

The effectiveness of a country's industrial exports is directly linked to its ability to increase its share in the global market for certain products, which translates into better performance (Hoang, 2020). In addition to production conditions, competitiveness is determined by the factors that stimulate or discourage the export of a country's products, trade policies, the efficiency of marketing channels and financing systems, international agreements and strategies. of companies (Haguenauer, 1989; Medeiros et al., 2019).

Chile stands out for being the main producer and exporter of fruits in the southern hemisphere. It is the leader in shipments of grapes, cherries, and blueberries, and in processed fruit it leads the shipment of dried plums and apples (ODEPA, 2020). As an apple-producing country, it has around 27,000 hectares planted distributed throughout the territory. Production is around 1,100,000 tons, of which 650,000 are exported in a fresh state and the rest is aimed at the domestic market and for export as concentrated juice (JCM),dehydrated and frozen,(USDA, 2019; ODEPA, 2021).

The size of JCM's international market in 2023 was around USD 2,000 million. By 2025, an increase in the growth rate of 5.45% is forecast. The increase is attributed to changes in consumers' eating habits, desire

for products of natural origin and an increase in the general income of the population (Marcuta et al., 2020).

The main importing countries of concentrated apple juice are the United States, Germany, Austria, the United Kingdom and Japan. Exports of this product represented for Chile a business of USD 90 million annually, equivalent to 45 thousand tons in the year 2022. Regarding the world market, Chile had a share of 3.7% of the exportable supply in the year 2022, lower than that of the main exporters such asChina, with USD 432 million and a 23.8% share in world exports; Poland (17.2%) and Türkiye (15.7%) (PASO, 2020; Trademap, 2022). Finally, regarding FOB unit prices (USD/ton), the value obtained by Chile was USD 1,300, China with the lowest values with USD 1,000 and Austria with the highest with approximately USD 1,600 (Andrade, 2005; ODEPA, 2020; Trademap, 2022).

Considering that Chile is the main exporter of JCM in South America, added to the increase in international competition, the growth of Chilean exports and the need to explore the potential development it could have, it becomes relevant to analyze the competitiveness of this industry, in order to face possible future opportunities and threats. Consequently, it is pertinent to determine the competitiveness of the apple juice export business and determine the potential market for this product in the world.

MATERIALS AND METHODS

METHODOLOGY

The data used, recorded by TRADEMAP and FAOSTATS, corresponded to import, export series (Tariff Gloss 200597) and production of concentrated apple juice °Brix > 20 in the period 2015-2021.

VARIABLES TO MEASURE

ANALYSIS OF EXPORT MARKETS

An analysis of the main exporting countries was carried out, for thisthe top 10 JCM exporting countries were considered. Based on the methodology proposed by Guevara et al. (2021), the growth rates of price, quantity and value exported from each country were compared with the average obtained worldwide for the year 2015-2021.

ANALYSIS OF COMPETITIVENESS INDICATORS OF THE MAIN JMC EXPORTING COUNTRIES

From secondary sources of information, the following indicators were estimated and quantitatively analyzed for the period 2015-2019, considering 32 countries with the highest valuation in JCM exports, which represent 95% of the main exporting countries.

INDEX OF REVEALED COMPARATIVE ADVANTAGE (RCIV)

The IVCR corresponds to the relative participation relationships, the participation of a good in the total exports carried out by the country was considered, and the denominator is the participation of that same good in total exports worldwide.(ECLAC, 2008; Alonso et al., 2012; Guevara et al., 2021). The index can have values between 1 (OPTIMAL) and -1 (negative)

$$IVCR = \frac{(Xik\,/\,Xi)}{(Xk\,/\,X)}$$

Xik:Exports of product i, by country k in a given period of time.

Xi: Total exports of the country, to the world in a given period of time.

Xk:Total exports of product i, by world k in a given period of time.

X: Total exports of the worldin a certain period of time.

TRADABILITY (T)

Measures the relationship between the net trade balance and apparent consumption. It was used to track the gain or loss of the export capacity of the country that produces the good (IICA, 2005; Magaña, et al., 2020). If you

$$T = \frac{(Eij - Iij)}{(Pij - Eij + Iij)}$$

Pij = Internal production of good i in country j in a given period of time.

Iij = Imports of product i, for a country j in a given period of time.

Eij = Exports of product i, for a country j in a given period of time.

DEGREE OF EXPORT OPENNESS (AE)

It corresponds to a measurement that indicates thedegree to which exports of a product, with respect to its apparent consumption, penetrate a market (Schwartz et al., 2016).

$$AE = \frac{Eij}{(Pij - Eij + Iij)}$$

Where:

Eij = Exports of product i, by country j, in a given period.

Iij = Imports of product i, by country j, in a given period.

Pij = Internal production of good i in country j, in a given period.

DEGREE OF IMPORT PENETRATION (PI)

It corresponds to a measure that indicates the relationship between imports and their apparent consumption, together with the index of the degree of openness of exports, determines the relevance that foreign trade activities have for each country (Schwartz et al., 2016; Magaña et al., 2020).

$$PI = \frac{Iij}{(Pij - Eij + Iij)}$$

Where:

Eij = Exports of product i, by country j, in a given period.

Iij = Imports of product i, by country j, in a given period.

Pij = Domestic production of good i in country j, in a given period

MARKET SPECIALIZATION INDEX (IE)

It was used to establish global market share or a specific market share (Schwartz et al., 2016).

$$IE = \frac{(Eij - Iij)}{EMi}$$

Iij = Imports of product i, for a country j in a given period of time.

Eij = Exports of product i, for a country j in a given period of time. Emi = Total world exports of product i in a given period of time.

INTERNATIONAL MARKET INSERTION MATRIX (MIMI)

It evaluated the competitiveness of the JMC exporting country with respect to other exporting countries of the same product, it was measured by the variation of its presence in the international market and its adaptability to growing markets. It is composed of two factors, positioning and efficiency (Maldonado, 2015).

DISTANCE

Distance is a determining factor in international trade, it directly influences the cost of transportation, increase or decrease in trade in goods (IDB, 2013). Therefore, the distances of the main exporters were compared, assigning them a category (bad, average, good, excellent).

LAFAY INDEX (IL)

Measures the degree to which the country has a comparative advantage with respect to the export of a product, evaluates whether the country is a natural exporter of JCM. It shows the quotient between the production of the good and its apparent consumption (production plus imports minus exports) (Bernal et al., 2020).

$$iL = \frac{Pij}{(Pij + Lij - Eij)}$$

Iij = Imports of product i, for a country j in a given period of time.

Eij = Exports of product i, for a country j in a given period of time.

Pij = Domestic production of good i in country j, in a given period

COMPETITIVENESS RANKING

Based on the indicators, a ranking was developed with the objective of determining which countries have greater competitive capabilities, for this a rating from 1 to 4 was assigned to each index, the better the competitiveness, the greater the weight it acquires (Schwartz et al., 2007; Maldonado, 2015).

$$Ranking = (IVCR + T + AE + PI + IEM + MIMI + D + IL)$$

Where:

IVCR= Revealed comparative advantage index. T= Tradability. AE= Degree of export openness.

PI= Degree of import penetration.

IEM= Market specialization index.

MIMI= International market insertion matrix.

D= Matrix of export advantages.

IL= Lafay index.

MARKETING STRATEGY

With the purpose of implementing the marketing strategy, a research study was carried out with the objective of identifying the predominant factors that impact the consumer's purchase decision, through bibliographic compilation (Vásquez, 2019). Subsequently, seals/certifications were selected that are in accordance with the aforementioned factors. Finally, the way of implementing the seals and/or certifications and their respective promotion and advertising was implemented through the methodologies proposed by Suleiman et al, 2016; Diaz, 2020.

RESULTS

ANALYSIS OF EXPORT MARKETS

When considering the 10 main JCM exporting countries, the growth in export value and quantity was evaluated together with the prices obtained in the period 2015-2021. The corresponding world averages for export values, quantity and prices were 12.1%, 9.9% and 6.9% respectively. The countries that led the growth in export value were the Netherlands (27.5%), Turkey (25%), and the Republic of Moldova (16.6%). In the specific case of Chile, there was a 4.8% growth in the quantity exported and a 2% increase in the prices obtained, which generated an increase in the value of exports of 6.6% (Figure 1).
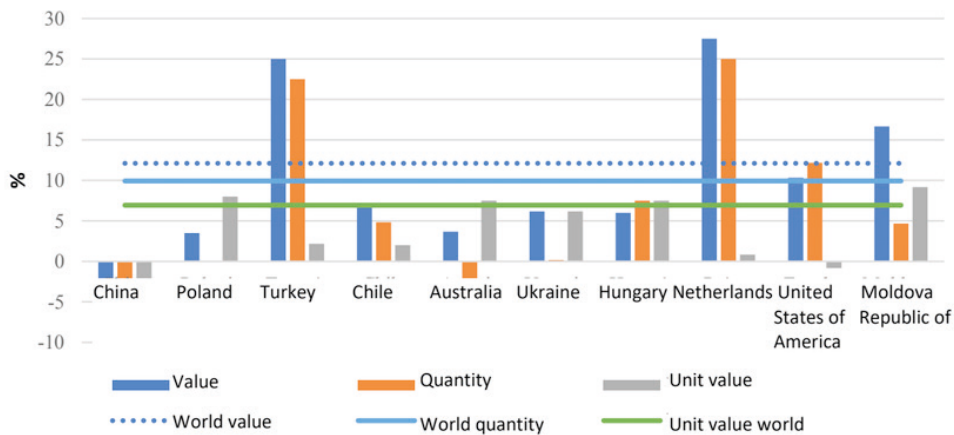
Figure 1: Average annual growth rate (%) of price, quantity and value of the main exporters of apple juice concentrate (JCM), 2015-2021.
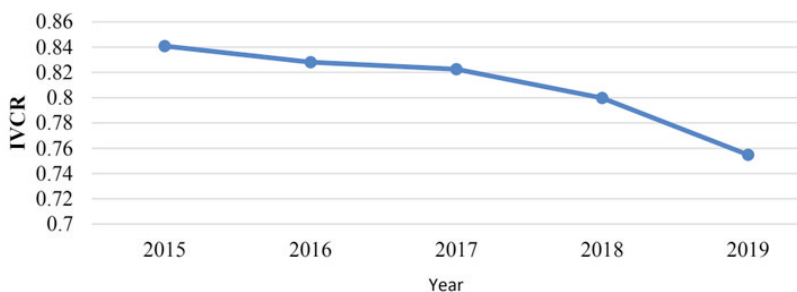
Figure 2: Chile Comparative Advantage Index (2015-2019).

ANALYSIS OF COMPETITIVENESS INDICATORS

INDEX OF REVEALED COMPARATIVE ADVANTAGE (RCIV)

This indicator allows us to identify if a country's JCM export is efficient compared to other countries, that is, if it has comparative advantages. For the analysis of the competitiveness indicator, the main 32 exporting countries were compared.

In Table 1, you can see the countries that presented a higher IVCR: Moldova (0.989), Ukraine (0.901) and Poland (0.859) and a lower IVCR, such as Switzerland (-0.953), Russia (-0.930) and Belgium (-0.812).

Likewise, it is confirmed that Chile is one of the most competitive countries in the production of JCM, with an average of 0.814 for the period 2015-2019, which indicates that it uses its resources efficiently. However,

in Figure 2, it can be seen that in general a decreasing trend is maintained, however, it allows it to remain above the main exporters such as China (0.407) and Turkey (0.672).

Exporting countries	IVCR
Moldova	0.989
Ukraine	0.901
Poland	0.859
Georgia	0.818
Chili	0.814
Uzbekistan	0.799
Ireland	-0.758
France	-0.762
Canada	-0.806
Belgium	-0.812
Russia	-0.930
Swiss	-0.953

Chart 1: Index of Revealed Comparative Advantage (IVCR) of JCM exporting countries.

TRADABILITY (T)

This index measures the relationship between the net trade balance and apparent consumption. It was used to track the gain or loss in the export capacity of the country producing the good. In Table 2, you can see the most competitive countries based on this index, such as Chile, New Zealand and Serbia. On the other hand, Moldova, Italy, and Ukraine had negative values for the period 2015-2019, which indicates losses in export capacity.

In the specific case of Chile, its competitiveness is above the main JCM exporters, such as China (3.52), Turkey (1.58) and Poland (3.59), presenting an index of 17.91 for the total of the period. Despite this, a negative trend is observed in Figure 3. However, Chile remains the main JCM exporter in the southern hemisphere, ranking fourth with an average market share of 3.7% during the period. analyzed.

Exporting countries	T
Chili	17.91
New Zealand	4.77
Serbia	4.06
Poland	3.58
China	3.51
North Macedonia	3,009
Honduras	0.11
Austria	-0.12
France	-0.96
Ukraine	-2.06
Italy	-5.02
Moldova	-6.38

Chart 2: Tradability Index (T) of JCM exporting countries.
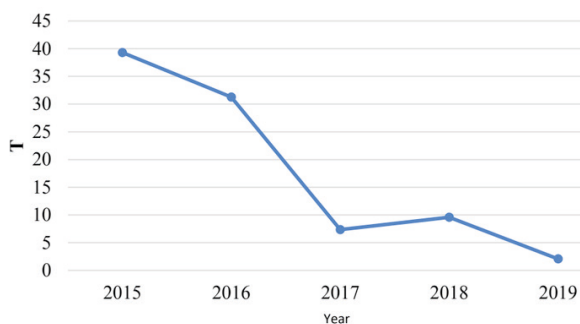
Figure 3: Chile: evolution of Tradability for the JCM market (2015-2019).

DEGREE OF EXPORT OPENNESS (GAE)

This index shows the degree to which exports of a product with respect to its apparent consumption penetrate a market. Table 3 shows that countries such as Poland, Macedonia and Portugal present the greatest competitiveness, due to the high levels of exports compared to their levels of domestic consumption.

Exporting countries	GAE
Poland	95.19
North Macedonia	41.01
Portugal	34.84
New Zealand	34.24
Chili	18.15
Austria	7.9
Ireland	0.18
Iran	0.11
France	0.096
Ukraine	-2.18
Moldova	-6.41
Italy	-6.41

Chart 3: Degree of export openness index (GAE) of JCM exporting countries

In Figure 4, you can see the evolution of the 6 countries with the highest degrees of export openness in JCM's export business for the period 2015-2019. This graph shows the clear competitive superiority of Poland in 2019. For the specific case of Chile, Figure 5

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shows a negative trend mainly associated with the reduction in exports.
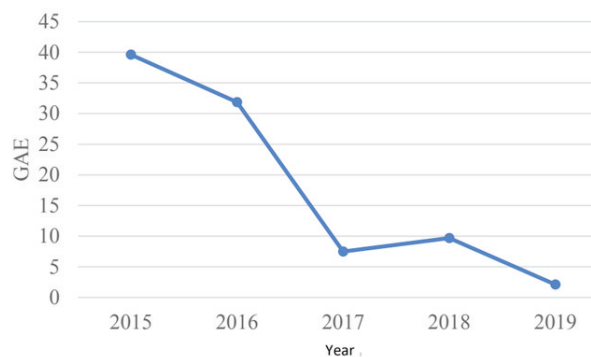
Figure 5: Chile: evolution of the degree of export openness for the JCM (2015-2019).

DEGREE OF IMPORT PENETRATION (GPI)

This indicator shows the relevance that each country has in foreign trade, specifically in JCM imports. The greater the degree of import penetration, the lower its competitiveness, since the country is not capable of generating the necessary production that it requires internally.

Table 4 contains the level of import penetration for the top 12 results of JCM exporters. Italy, Ukraine and Moldova are the most competitive countries for their IP. On the other hand, Poland, Macedonia and Austria have the lowest IP, due to their high level of imports.

MARKET SPECIALIZATION INDEX (IE)

The Specialization Indicator (IE) establishes the country's export vocation and its ability to build advantages. If a country's net export is equal to world export, the indicator is 1, therefore, the country has a high degree of competitiveness and specialization since it would represent 100% of the market. If the result is -1 it represents the opposite.

In Table 5 it can be seen that none of the 12 exporting countries reaches unity, due to the existence of more JCM suppliers worldwide. China represents 1/3 of the total world market, therefore, it is the most competitive country. Countries with an EI < 0, such as the United States, Germany, Austria, and Russia, do not present competitive advantages in JCM exports since their market share compared to other countries such as China, Turkey, Poland, and Chile is irrelevant.

Exporting countries	GPI
Italy	-1.3889
Ukraine	-0.1222
Moldova	-0.0285
Uzbekistan	0.0002
Iran	0.0036
Argentina	0.0053
Portugal	2.2246
New Zealand	5.4535
Austria	8.0342
North Macedonia	13.5340
Poland	15.0945

Chart 4: Degree of Import Penetration Index (GPI) of JCM exporting countries.

Exporting countries	IE
China	0.320
Poland	0.135
Ukraine	0.046
Chili	0.037
Türkiye	0.036
Hungary	0.026
Canada	-0.0204
South Africa	-0.0210
Netherlands	-0.0285
France	-0.0435
Russia	-0.0491
Germany	-0.0917

Chart 5: Market specialization index (IE) of JCM exporting countries.

The figure 6 shows the evolution of the IE for the main exporters. Although China is the main exporter worldwide, it has shown a downward trend in recent years, unlike
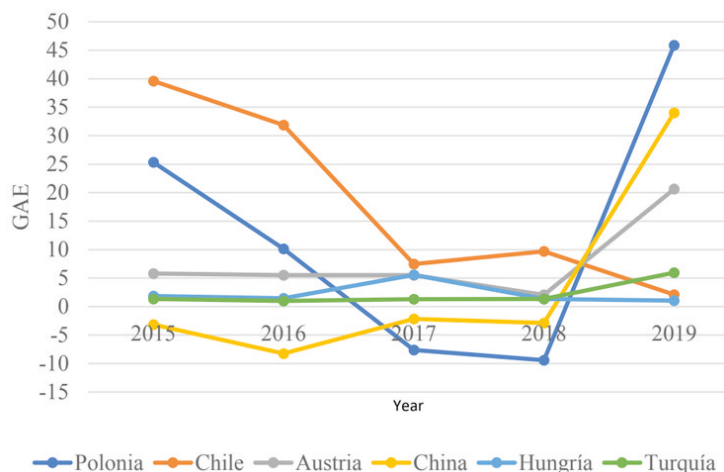
Figure 4: Evolution of the degree of export openness of different countries for the JCM (2015-2019).
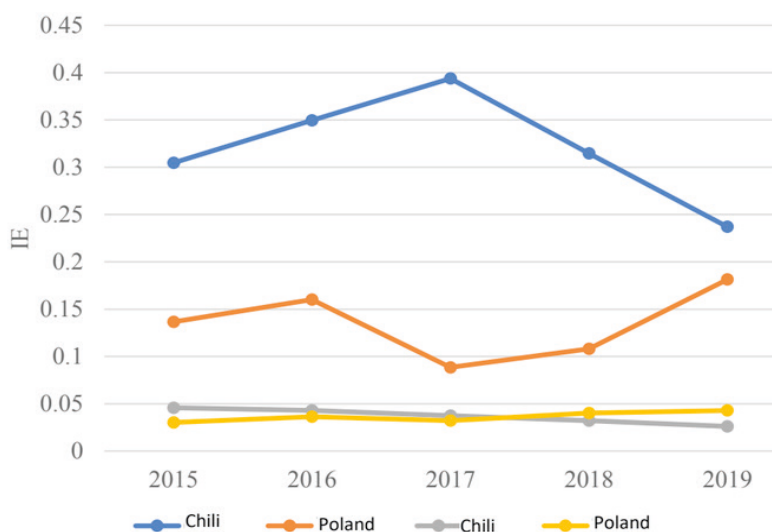
Figure 6: Evolution of the market specialization index of the top 10 different countries for the JCM (2015-2019).

Poland, which has increased its market share annually since 2017. In the specific case of Chile, the trend has been negative since 2015 (Figure 7).
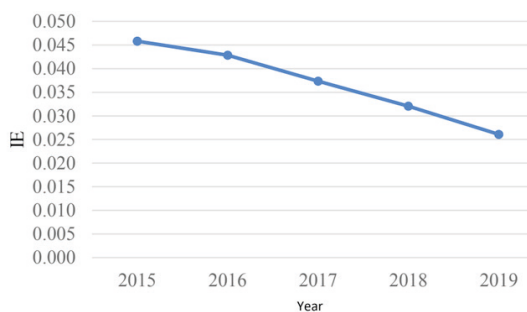
Figure 7: Evolution of the Chilean market specialization index for the JCM (2015-2019).

INSERTION MATRIX TO THE INTERNATIONAL MARKET

With this matrix, it is determined which are the most competitive countries considering two variables:

Positioning: corresponds to the growth rate of annual JCM exports from a country to the international market.

Efficiency: corresponds to the annual growth rate of the share of JCM exports in total world exports.

The table 6 presents the 32 main exporters of JCM, their positioning and efficiency (2015-2019). Where, 25 countries present optimal (positive) insertion into the international

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market, and 7 present vulnerability because their export growth rate has decreased in the period 2015-2019. Finally, only North Macedonia has the classification of "retreating" (negative), which indicates that there is a decrease in its market share as well as its export growth rate.

In Figure 8, the 4 quadrants and their respective description are presented.

Optimal Quadrant: The countries located in this quadrant have both positioning and efficiency greater than zero, and therefore are in an optimal competitive position. In this quadrant are Romania, Portugal, Russia, Chile, Bulgaria, among others.

Lost Opportunities Quadrant: The countries located in this quadrant have a positioning greater than zero and a negative efficiency, so the countries located here are in a position of lost opportunities. In this study carried out, no country is found in this quadrant.

Vulnerable Quadrant: Countries located in this quadrant have a negative positioning and positive efficiency. In this quadrant are China, Germany, Belarus, Belgium, France, Italy, New Zealand.

Quadrant In retreat: The countries located in this quadrant have a negative positioning and efficiency, which places them competitively as countries in retreat. In this quadrant lies North Macedonia.

DISTANCE

Distance is a determining factor in international trade, it directly influences the cost of transportation, increase or decrease in trade in goods (IDB, 2013).

In Table 7 are the 32 main JCM exporting countries, where 18 present an excellent classification with respect to the average export distance, the rest are made up of 6, 4 and 2 in the good, average and bad category respectively.

Exporting country	Average export distance	Classification
China	8217	REGULAR
Germany	1849	EXCELLENT
Argentina	8489	REGULAR
Austria	3076	WELL
Belarus	994	EXCELLENT
Belgium	2462	EXCELLENT
Brazil	9168	BAD
Bulgaria	963	EXCELLENT
Canada	1243	EXCELLENT
Chili	9831	BAD
Spain	6354	REGULAR
United States of America	3330	WELL
France	5312	WELL
Georgia	2249	EXCELLENT
Hungary	1291	EXCELLENT
Iran	2290	EXCELLENT
Ireland	3116	WELL
Italy	3543	WELL
Macedonia	579	EXCELLENT
Moldova	2781	EXCELLENT
New Zealand	8424	REGULAR
Netherlands	1425	EXCELLENT
Poland	1305	EXCELLENT
Portugal	1371	EXCELLENT
Romania	778	EXCELLENT
Russia, Federation of	1224	EXCELLENT
Serbia	1189	EXCELLENT
South Africa	10810	BAD
Swiss	509	EXCELLENT
Türkiye	7296	REGULAR
Ukraine	5312	WELL
Uzbekistan	2362	EXCELLENT

Chart 7: Top 32 exporting countries of apple juice concentrate and their average export distance.

LAFAY INDEX (IL)

This index shows the relationship between the production of the good and its apparent consumption. Therefore, if this value is greater than unity (1), the country is a net exporter of the good.

Exporting countries	Posc. (%)	Efficiency (%)	Classification
China	-5.17	31.53	VULNERABLE
Germany	-3.50	3.15	VULNERABLE
Argentina	4.17	1.12	OPTIMUM
Austria	3.67	5.93	OPTIMUM
Belarus	-10.17	0.25	VULNERABLE
Belgium	-1.17	0.35	VULNERABLE
Brazil	14.50	1.12	OPTIMUM
Bulgaria	25.33	0.15	OPTIMUM
Canada	19.17	0.12	OPTIMUM
Chili	6.67	4.52	OPTIMUM
Spain	8.83	1.30	OPTIMUM
USA	10.33	1.98	OPTIMUM
France	-2.50	0.78	VULNERABLE
Georgia	81.50	0.12	OPTIMUM
Hungary	6.00	3.42	OPTIMUM
Iran	9.60	1.50	OPTIMUM
Ireland	0.50	0.17	OPTIMUM
Italy	-0.33	2.83	VULNERABLE
North Macedonia	-11.60	0.00	IN RETIREMENT
Moldova	16.67	2.00	OPTIMUM
New Zealand	-7.50	0.72	VULNERABLE
Netherlands	27.50	1.93	OPTIMUM
Poland	3.50	18.28	OPTIMUM
Portugal	12.50	0.43	OPTIMUM
Romania	20.33	0.20	OPTIMUM
Russia, Federation of	47.17	0.08	OPTIMUM
Serbia	17.50	0.53	OPTIMUM
South Africa	26.50	0.67	OPTIMUM
Swiss	17.17	0.05	OPTIMUM
Türkiye	25.00	5.55	OPTIMUM
Ukraine	6.17	4.83	OPTIMUM
Uzbekistan	49.00	0.60	OPTIMUM

Chart 6: Insertion matrix to the international market

Of the 32 countries analyzed, in 24 of them JCM production is consumed in the domestic market; 8 countries did not exceed the value 1, which implies that they do not cover the demand with their production (Table 8).

Exporting countries	I.L.
Poland	81,098
Portugal	33,618
New Zealand	29,792
North Macedonia	28,476
Chili	18,918
France	0.031
Austria	0.87
Ukraine	-1,061
Italy	-4,028
Moldova	-5,383

Chart 8: Lafay index of countries exporting concentrated apple juice.

COMPETITIVENESS RANKING

With the data obtained from the previous competitiveness indices, a ranking was developed to determine which countries were most competitive; for which, a rating between 1 and 4 was assigned according to tables 1,2,3,4,5,6,7 and 8; The better the competitiveness, the higher the grade obtained. Subsequently, the scores assigned for each index were added and it was determined which countries were most competitive in JCM international trade.

IDENTIFICATION OF POTENTIAL MARKETS FOR THE EXPORT OF JCM FROM CHILE

For the selection of the main importing markets, it was assessed and classified based on the active reducible approach method, where 4 filters were considered for the selection of potential countries for the export of JCM. In a first stage, the 181 JCM importing countries were evaluated, discarding the countries that at first may have seemed less striking

through 3 criteria: import volume, percentage variation in imports and trade balance deficit. From this information, potential markets could be identified and sized (Czinkota and Ronkainen, 2011).

To determine how demand evolves - in terms of volume - for the JCM, the International Demand Matrix was constructed. Table 10 shows the growth rates of imports (efficiency) and market share (positioning) and the status of the main importing countries. In Figure 9, you can see the international demand matrix

Main importing countries	Positioning	Efficiency	State
United States of America	-4.2	28.04	VULNERABLE
Austria	-1	4.82	VULNERABLE
Russia, Federation of	3.8	4.76	OPTIMUM
Netherlands	5	4.36	OPTIMUM
Canada	0.2	3.58	OPTIMUM
South Africa	1	2.84	OPTIMUM
Spain	22.8	0.86	OPTIMUM
India	20.2	0.54	OPTIMUM
Korea, Republic of	-0.8	0.56	VULNERABLE

Chart 10: International demand matrix 2015-2019 period.
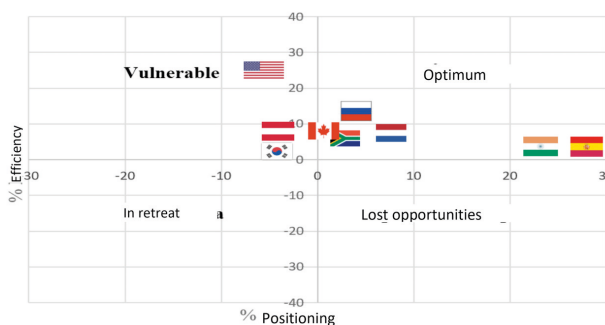
Figure 9: International demand matrix 2015-2019 period.
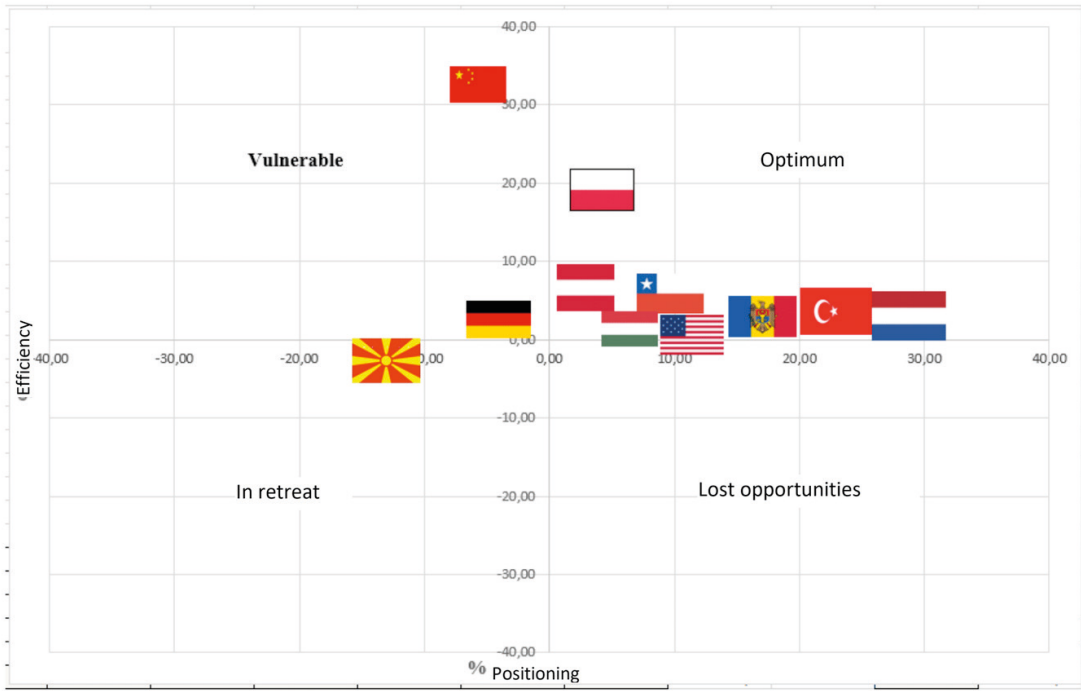
Figure 8: Matrix for insertion into the international market period 2015-2019.

exporting countries	IVCR	T	GAE	GPI	IE	MMI	D	IL	Punctuation
Poland.	4	4	4	1	4	4	4	4	29
chili.	4	4	4	3	4	4	1	4	28
Serbia.	4	4	3	2	3	4	4	4	28
Portugal.	3	4	3	4	4	2	2	4	26
Turkey.	2	4	4	1	3	4	4	4	26
Uzbekistan.	4	2	2	3	4	4	4	3	26
Gergia.	4	2	2	4	3	4	4	3	26
Hungary.	4	3	2	3	2	4	4	3	25
Agentina.	3	1	2	3	4	4	4	3	24
Bulgaria.	3	2	2	4	3	4	2	3	23
Iran.	3	2	2	3	2	4	4	3	23
Moldova.	2	3	2	4	2	4	4	2	23
New Zealand.	4	1	1	4	4	4	4	1	23
Macedonia.	3	4	4	1	3	2	2	4	23
Ukraine.	2	4	4	1	2	1	4	4	22
Brazil.	4	1	1	4	4	4	3	1	22
Spain.	2	2	2	4	3	4	1	3	21
Romania.	2	3	3	1	3	4	2	3	21
Austria.	2	2	2	3	2	4	4	2	21
Netherlands.	3	1	4	1	2	4	3	2	20
Swiss.	2	1	2	3	1	4	4	2	19
Canada.	1	3	2	2	2	4	4	1	19
Ireland.	1	1	2	2	1	4	4	2	17
Italy.	1	3	2	2	1	4	3	1	17
South Africa.	2	1	1	4	3	2	3	1	17
Germany.	3	1	2	2	1	4	1	2	16
Belgium.	1	2	2	2	1	2	4	1	15
France.	1	3	2	1	1	2	4	1	15
USA.	1	1	2	2	1	2	3	2	14
Belarus.	1 *	*	*		4	4	3 *		12
Russia	3 *	*	*		2	2	4 *		11
	1 *	*	*		1	4	4 *		10

Chart 9: Competitiveness ranking of the main 32 JCM exporting countries.

Importing countries	Imported value (MUSD)	Chile's share of imports (%)	Potential market (MUSD)
Russia	88	0	88
Netherlands	79	0.1	78
Canada	78	5	74.1
South Africa	64	0	64
Spain	26	4.9	25
India	18	0.3	17.5

Table 11: Optimal countries, imported quantity, share of imports and potential market.

CONCLUSIONS

It was determined that Poland, Chile, Serbia, China, Portugal and Uzbekistan are highly competitive countries in the international market, being among the top six in the competitiveness ranking for the period 2015-2019.

Also, it was identified that none of the 10 main exporting countries shows an increase greater than the unit price worldwide, in the period 2015-2021, which indicates that they are not efficient in the export of JCM. In the case of Chile, it was observed that its exports are concentrated in three countries, making it convenient to explore and develop other markets. Indeed, 66% of JCM's exports go to the United States, 11% to Japan and 6% to the United Kingdom, while the rest have smaller quotas.

Regarding the identification of JCM's potential markets and how to guide the marketing strategy, it was determined that there are 6 countries with optimal qualification in terms of growth in the level of imports and market share. These are Russia, the Netherlands, Canada, South Africa, Spain and India, which together represent a potential market of USD 352 million. However, they allocate less than 3% of their purchases to Chilean products, which suggests that they can become potential buyers.

It is essential to keep in mind that in the case of the JCM, the trade agreements signed by Chile do not provide greater competitiveness, because competitors sell at lower prices and/or are located at a closer distance from the destination than Chile. Consequently, the fact that the Chilean supply is not taxed with tariffs is not a sufficient argument to boost the export business.

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APPENDIX

Exporting countries	Revealed Comparative Advantage Index
Georgia	7994.67
Moldova, Republic of	7454.47
North Macedonia	3090.08
Serbia	1061.49
Belarus	607.14
Bulgaria	586.06
New Zealand	483.86
Ukraine	411.57
Argentina	293.14
Portugal	281.84
Chili	266.96
Romania	251.30
Iran, Islamic Republic of	250.83
South Africa	203.09
Hungary	156.55
Ireland	121.56
Türkiye	111.31
Austria	107.45
Brazil	83.38
Poland	78.64
Swiss	57.94
Spain	56.66
Russia, Federation of	48.32
Canada	41.48
Belgium	41.09
Italy	35.02
Netherlands	33.61
France	33.35
Germany	12.31
United States of America	11.25
China	7.54
Uzbekistan	0.00017513

Table 1: Main 32 exporting countries of concentrated apple juice and their revealed comparative advantage index (RCIV).

Exporting countries	Tradability
China	3.52
Germany	0.35
Argentina	0.97
Austria	-0.13
Belarus	*
Belgium	1.89
Brazil	0.86
Bulgaria	0.71
Canada	-0.88
Chili	-14.77
Spain	1.90
United States of America	*
France	-0.97
Georgia	1.88
Hungary	2.04
Honduras	0.11
Ireland	1.87
Italy	-5.03
North Macedonia	3.01
Moldova	-6.38
New Zealand	4.77
Netherlands	-0.69
Poland	3.59
Portugal	2.56
Romania	0.29
Russia	*
Serbia	4.07
South Africa	-0.78
Swiss	1.96
Türkiye	1.58
Ukraine	-2.06
Uzbekistan	0.45

Table 2: Main 32 exporting countries of concentrated apple juice and their Tradability index (T).

Exporting countries	Degree of export openness
China	18.78104256
Germany	0.288664992
Argentina	1.097729976
Austria	14.26782942
Belarus	*
Belgium	0.301751852
Brazil	0.687799723
Bulgaria	1.698852294
Canada	0.107570234
Chili	-6.423427307
Spain	2.406274599
United States of America	*
France	0.104099064
Georgia	3.051158424
Hungary	1.65951553
Iran	0.088433635
Ireland	0.124814839
Italy	-1.994736536
North Macedonia	22.23879537
Moldova	-4.361366835
New Zealand	21.93718926
Netherlands	0.425877112
Poland	276.3330371
Portugal	27.37227236
Romania	0.504491819
Russia	*
Serbia	11.50542147
South Africa	0.238649559
Swiss	0.165133093
Türkiye	4.078052792
Ukraine	-1.859593421
Uzbekistan	-1.366418662

Table 3: Main 32 exporting countries of concentrated apple juice and their degree of export openness.

Exporting countries	Degree of import penetration
China	0.0138
Germany	1.2674
Argentina	0.0052
Austria	8.0342
Belarus	*
Belgium	1.3256
Brazil	0.0255
Bulgaria	0.3207
Canada	1.1346
Chili	-0.1821
Spain	1.7887
United States of America	*
France	1.0651
Georgia	0.2948
Hungary	0.2203
Iran	0.0035
Ireland	1.1832
Italy	-1.3889
North Macedonia	13,533
Moldova	-0.0284
New Zealand	5.4535
Netherlands	1.4212
Poland	15,094
Portugal	2.2245
Romania	0.2025
Russia	*
Serbia	1.1293
South Africa	1.3508
Swiss	1.0774
Türkiye	0.6158
Ukraine	-0.1222
Uzbekistan	0.0002

Table 4: Main 32 exporting countries of concentrated apple juice and their degree of import penetration.

Exporting countries	Market specialization index
China	0.3199
Germany	-0.0916
Argentina	0.0092
Austria	-0.0038
Belarus	-0.0011
Belgium	-0.0081
Brazil	0.0108
Bulgaria	0.0014
Canada	-0.0203
Chili	0.0377
Spain	0.0030
United States of America	0.0211
France	-0.0434
Georgia	0.0011
Hungary	0.0260
Iran	0.0027
Ireland	-0.0070
Italy	0.0171
North Macedonia	0.0001
Moldova	0.0259
New Zealand	0.0046
Netherlands	-0.0284
Poland	0.1349
Portugal	0.0029
Romania	0.0011
Russia	-0.049
Serbia	0.0035
South Africa	-0.0210
Swiss	-0.0065
Türkiye	0.0363
Ukraine	0.0457
Uzbekistan	0.0035

Table 6: Main 32 exporting countries of concentrated apple juice and their degree of market specialization index for the lost (2015-2019).

Exporting countries	Lafay index
China	4.52
Germany	1.46
Argentina	1.97
Austria	0.87
Belarus	*
Belgium	1.45
Brazil	1.86
Bulgaria	1.71
Canada	0.12
Chili	-13.77
Spain	2.90
United States of America	*
France	0.03
Georgia	2.88
Hungary	3.04
Iran	1.11
Ireland	1.67
Italy	-4.03
North Macedonia	28.48
Moldova	-5.38
New Zealand	29.79
Netherlands	0.31
Poland	81.10
Portugal	33.62
Romania	1.29
Russia	*
Serbia	5.07
South Africa	0.22
Swiss	1.32
Türkiye	2.58
Ukraine	-1.06
Uzbekistan	1.45

Table 7: Main 32 exporting countries of concentrated apple juice and their Lafay Index.