

FACTORS DETERMINING POLAND – SOUTH KOREA TRADE IN SUGAR CONFECTIONERY¹

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Abstract: The paper aimed to analyze factors that can have an impact on the volume of trade between EU and South Korea. The main point of the research was that the Free Trade Agreement (FTA) between the EU and the Republic of South Korea entered into force in July 2011 (first trade deal with an Asian country). In the focus of the paper was one of the product's sector, namely sugar confectionery. Within the conducted case study Poland is the investigated country. The value indices were used for analyzing changes occurring within the EU – South Korea trade before and after FTA entered into force.

Keywords: agricultural trade, sugar confectionery, EU, South Korea, Free Trade Agreement (FTA)

JEL classification: F13, F53, F55

INTRODUCTION

Trade agreements are a form of cooperation between two (bilateral trade agreements) or more countries (multilateral trade agreements) that agree on the terms of trade between them. Thanks to these kinds of cooperation, the following benefits can be realized: market access, time savings, cost reduction, economies of scale, access to know-how, risk reduction, and increasing competences (see [Porter,

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Fuller 1989; Vizjak 1990; Rupprecht-Däullary 1994]). A characteristic feature of cooperation is that it arises from explicit contractual agreements and that it exists only when both or more partners expect benefits [Jarzębowski 2013].

The Free Trade Agreement between the EU and the Republic of Korea (the EU-Korea FTA) is the first of a new generation of FTAs. The decision to launch negotiations on such FTAs with third countries was based on robust economic criteria with the objective of enhancing market access for European companies in the highly dynamic and competitive markets of Asia [The European Commission Trade 2011]. The EU-South Korea free trade agreement eliminates duties for industrial and agricultural goods in a progressive, step-by-step approach. The majority of import duties had been removed in 2011. The remaining ones – except for a limited number of agricultural products – were removed after five years on 1 July 2016.

There are various FTAs and trade negotiations worldwide that to some extent influence each other. Concerning the FTA between the EU and South Korea, there are two different FTAs that might affect this agreement or even vice versa. One is the Korea-US FTA (Korus) and the second is the Korea-China FTA. These FTAs are of particular interest as South Korea and one further big trading nation, more detailed USA and China, are involved in these agreements. Both countries can be perceived as competitors of the EU and Poland.

Having witnessed a virtual explosion in the number of FTAs among nations over the past two decades, one can expect that trade flows became higher thanks to them. However, international trade economists can claim small firm empirical support for reliable quantitative estimates of the average effect of an FTA on bilateral trade [Baier, Bergstrand 2007]. Tinbergen [1962] found that membership in the British Commonwealth [Benelux FTA] resulted only in a five percent increase in trade flows. Since then, research results have been mixed. For example, Aitken [1973], Abrams [1980], and Brada and Mendez [1985] stated that the European Community had a statistically and economically significant effect on members' trade flows. Baier and Bergstrand [2007] found that an FTA approximately doubles two members' bilateral trade after ten years. Nonetheless, Bergstrand [1985] and Frankel, Stein and Wei [1995] found insignificant effects on trade flows.

This research focuses on sugar confectionery trade. Sugar confectionery is defined as “sugar confectionery, including white chocolate, but not containing cocoa”. Sugar confectionery is mainly based on sugar as the primary raw material. The world sugar production amounts to 187.6 million tonnes, whereas the global sugar confectionery market trade reached 55.5 million tones in 2017 [FAO 2019]. The EU is responsible for 24 % of global sales [KPMG]. The international trade of sugar confectionery is highly dominated by the U.S., whereas Germany is the leading sugar confectionery exporter in the world [UN Comtrade]. Europe shares nearly 70% of the global sugar beet production with Poland representing the third most important country for sugar beet production in the EU

(7th place in world ranking). Poland produces over 10 million tonnes of sugar beets per year putting the basis for a successful sugar confectionery production [FAOSTAT]. This symbolizes a basis for a successful sugar confectionery production. Since the Polish consumption and international trade (export) are rapidly increasing, primarily due to the FTA, the outlook for actors of the agricultural and food chain seems promising.

Since the Polish sugar confectionery market is continuously growing, it could be expected that more jobs will be available with increasing production and increasing exports to South Korea within the FTA. However, mechanization and robots are two of the most antagonists. The agricultural and food industry sectors are influenced more deeply by these two factors. The more technically educated farmers there are more and more investments in advanced technical machinery. As a consequence fewer farmers are needed. This leads to an agricultural intensification process.

METHODOLOGY AND DATA

The data used in the empirical analysis covered the period from 2004 to 2017 and presented the export/import dynamics of sugar confectionery trade between Poland and South Korea was obtained from UN Comtrade. The data were acquired from UN Comtrade in June 2018. Within the framework of the research the values, such as single-based indices, chain indices, and average rates of change have been evaluated to describe the dynamics of the analyzed phenomena.

Let y_t denote the level (value) of the analyzed phenomenon (variable) at successive moments of time $t \in T_0$, where $T_0 = \{0, 1, \dots, n-1\}$ is a set of time numbers. The value string $y_t (t \in T_0)$ creates a time series. The variable y_{t^*} denotes the level of the analyzed phenomenon at the base period [Sobczyk 2011]. The single-base index defines the ratio of absolute increment in the period considered (t) to its level in the period taken as the basis for the comparison (t^*). A single-based index is defined by

$$d_{t,t^*} = \frac{y_t - y_{t^*}}{y_{t^*}}.$$

The chain index is an index number in which the value of any given period is related to the value of its immediately preceding period (resulting in an index for the given period expressed against the preceding period = 100); this is distinct from the fixed-base index, where the value of every period in a time series is directly related to the same value of one fixed base period. A chain index is defined by

$$d_{t,t-1} = \frac{y_t - y_{t-1}}{y_{t-1}}.$$

The average rate of change of phenomena in time, which is expressed by the following equations:

$$r(0, n - 1) = \bar{t}_g - 1$$

$$\bar{t}_g = \sqrt[n-1]{\frac{y_{n-1}}{y_{t^*}}}$$

where:

r – average rate of change,

n – number of observations,

\bar{t}_g – geometric mean of chain index values in the analyzed period.

The second part of the analysis aimed at evaluating the positive and negative impacts of the FTA on the sugar confectionery market. A survey was conducted within the framework of the study on the impact on EU agriculture and agricultural trade of EU concluded Bilateral Trade Agreements². The survey aimed to find out and assess the main areas for improvement of cooperation between Poland and South Korea. The method for data collection included personal interviews, email interviews, and telephone interviews. The respondents evaluated i.a. the importance of non-tariff barriers or the impact on European and Polish sugar confectionery regarding rising employment, income, production, and investments.

The respondents, involved in the sugar confectionery market (e.g. Producers/exporters of sugar confectionery in Poland, The Ministry of Development in Poland), have indicated if they agree with the statements presented in the survey or not, or if they see any improvement or no changes in the processes connected with the FTA's implementation. The survey was conducted in 2016.

EMPIRICAL RESULTS

The purpose of the study was to present the situation regarding exports/imports of sugar confectionery between Poland and South Korea, highlighting the dynamic changes before and after the FTA implementation. Furthermore, the questionnaire, conducted among the entities involved in the sugar confectionery market, is an undeniable added value of the research.

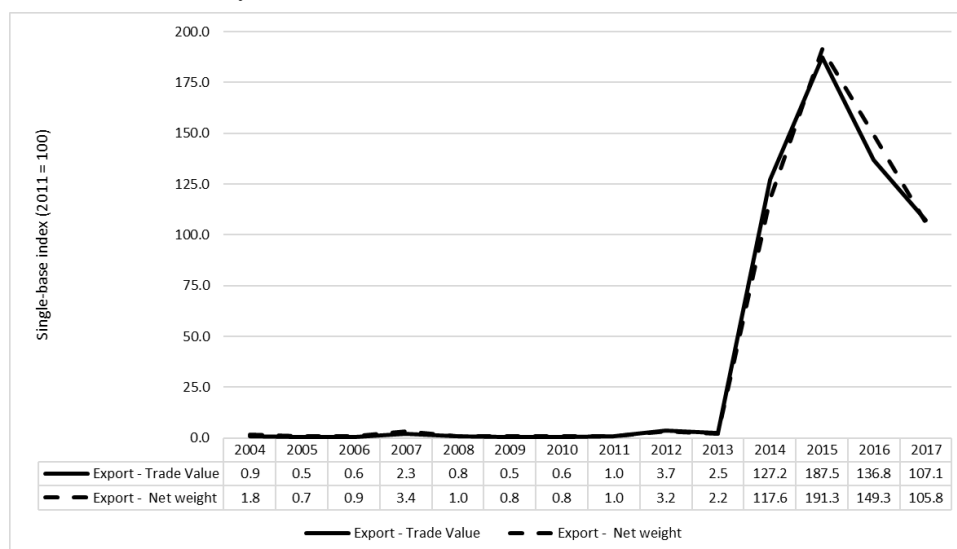
Within the framework of the research, the Polish export/import trade value and net weight with South Korea were analyzed and evaluated using statistic indices.

Figure 1 presents the single-based indices with the year 2011 as a reference³. It can be stated that before the FTA was implemented the international trade value with South Korea was stable. The first changes were noticed in 2014 when the trade value increased by 27.2% and net weight by 17.6%. In 2015 the export trade value and net weight reached the highest level in comparison to 2011, they increased respectively by 87.5% and 91.3%.

² European Commission, No. AFC PN 4289, 2016.

³ The FTA between EU and South Korea has been implemented in 2011.

Figure 1. Single-based indices for export trade value (US\$) and net weight (kg) of sugar confectionery from Poland to South Korea within 2004-2017 (2011 = 100)



Source: own work based on UN Comtrade

- According to the data included in Table 1 the chain index had the highest value in 2014 for the analyzed variables. In 2014 in comparison with 2013, the export trade value increased by over 5000%, from the level of almost \$40 thousand to over \$2 million.

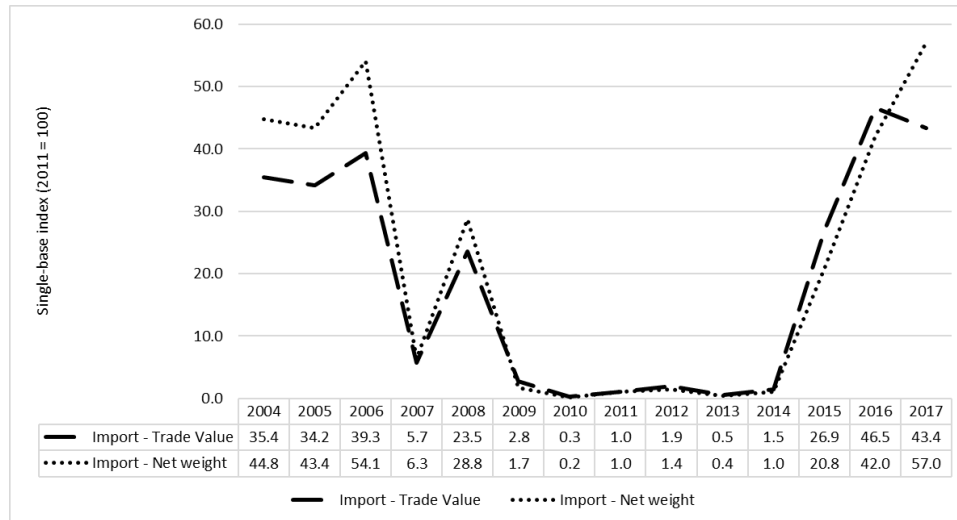
Table 1. Chain indices for export trade value (US\$) and net weight (kg) of sugar confectionery from Poland to South Korea within 2004-2017

| Year | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|-------------|------|------|------|------|------|------|------|------|------|-------|------|------|------|
| Trade Value | 0.49 | 1.26 | 5.04 | 1.44 | 0.23 | 0.79 | 0.44 | 3.67 | 0.68 | 50.67 | 1.47 | 0.73 | 0.78 |
| Net weight | 0.42 | 1.28 | 4.62 | 1.09 | 0.22 | 0.79 | 0.29 | 3.16 | 0.69 | 54.05 | 1.63 | 0.78 | 0.71 |

Source: own work based on UN Comtrade

Figure 2 illustrates the dynamics of the import trade value and net weight of sugar confectionery from South Korea to Poland. Between 2011 and 2014 there was a stagnation in imports. In comparison to 2011, the import trade value significantly increased in 2015 and 2016, respectively by 26.9% and 46.5%. The trade value remained at a high level of over \$14 thousand in 2017.

Figure 2. Single-based indices for import trade value (US\$) and net weight (kg) of sugar confectionery from South Korea to Poland within 2004-2017 (2011 = 100)



Source: own work based on UN Comtrade

- According to the data included in Table 2 the chain index had the highest value in 2016 for the analyzed variables. In 2015 in comparison with 2014, the export trade value increased by over 1800%, from the level of almost \$500 to \$9 thousand.

Table 2. Chain indices for import trade value (US\$) and net weight (kg) of sugar confectionery from South Korea to Poland within 2005-2017

| Year \ Chain Index | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|--------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Trade Value | 1.0 | 1.1 | 0.1 | 4.2 | 0.1 | 0.1 | 3.8 | 1.9 | 0.3 | 2.8 | 18.3 | 1.7 | 0.9 |
| Net weight | 1.0 | 1.2 | 0.1 | 4.5 | 0.1 | 0.1 | 5.8 | 1.4 | 0.3 | 2.4 | 20.8 | 2.0 | 1.4 |

Source: own work based on UN Comtrade

In order to compare the dynamics of changes before and after the FTA implementation, the average rate of change in the value of exports and imports was analyzed (Table 3). In 2004-2010 a downward trend for all analyzed values was noticed. For example, the exported net weight of sugar confectionery decreased on average by 60% from year to year. However, after the FTA implementation, the same variable increased on average by 96% year to year. A similar relationship was noticed in the case of imports to Poland. The trade value of imported sugar confectionery diminished by 21% on average in 2004-2010, whereas the value

decreased by 88% on average in 2011 – 2017. These results strongly support the hypothesis that the FTA influenced positively trade flows between Poland and South Korea.

Table 1. Average rate of change of the Polish export and import of sugar confectionery from South Korea in given periods

| Periods | Export | | Import | |
|-------------|-------------|------------|-------------|------------|
| | Trade value | Net weight | Trade value | Net weight |
| 2004 - 2010 | -0.56 | -0.60 | -0.21 | -0.46 |
| 2011 - 2017 | 0.87 | 0.96 | 0.88 | 1.46 |
| 2004 - 2017 | 0.02 | 0.02 | 0.24 | 0.18 |

Source: own work based on UN Comtrade

In order to find out the main areas for improvement of cooperation between Poland and South Korea, a survey has been conducted. The survey aimed at evaluating the impacts of the EU-Korea Free Trade Agreement on the Polish (European) export and production of sugar confectionery, as well as to analyze barriers, obstacles, opportunities, lessons, etc. Different types of stakeholders have been interviewed, such as producers/exporters of sugar confectionery in Poland, KOTRA - Commercial Section of the Embassy of the Republic of Korea in Warsaw (hereinafter abbreviated as KOTRA), The Ministry of Development in Poland, Advisory companies, Chambers of Commerce uniting the producers of sugar confectionery, Chief Inspectorate of Plant and Seed Protection – Agenda of Ministry of Agriculture in Poland, and Embassy of the Republic of Poland in Seoul. The summary of the survey is presented in Table 4 and 5.

One objective of the expert interviews conducted within the case study was to investigate the development of export due to FTA (see Table 4). Questions focused on the increase of exports directly after the implementation of FTA as well as barriers and opportunities for increasing export of sugar confectionery to South Korea in the future. The majority of the respondents stated that exports would rise in the long run as a result of the FTA. However, the interviewed exporters and Chambers of Commerce, as well as the advisor companies, assume that there will be no export increase in the short run. Furthermore, barriers such as restrictions on the quality and purity of products, and stringent health regulations were mentioned by KOTRA.

Table 2. Summary of the survey (part 1)

| Questions from the survey | | KOTRA, Embassy of the Republic of Korea | Ministry of Development | Producers / Exporters | Advisor companies | Chambers of Commerce | Chief Inspectorate of Plant and Seed Protection | Embassy of the Republic of Poland |
|--|---------------------------|--|----------------------------|--------------------------|----------------------|----------------------------|---|---|
| Historical impact (2011- 2015) on: | Increased export (volume) | Yes | Yes | No | No | No | Yes | |
| | Increased export (value) | Yes | Yes | No | No | No | | Yes |
| | Reduced import tariffs | | | No | No | No | | Yes |
| Export increase as a result of the FTA | In the short run | Yes | Yes | No | No | No | | Yes |
| | In the long run | Yes | Yes | Yes | Yes | Yes | | Yes |
| Major barriers for increasing export of sugar confectionery to Korea (in relation to FTA) | | Yes | Yes | Yes | Yes | Yes | | Yes |
| Major opportunities for increasing export of sugar confectionery to Korea (in relation to FTA) | | Yes | No | Yes | Yes | Yes | | |

Yes – “I agree with the statement”; No – “I do not agree with the statement”

Source: own work based on UN Comtrade

Table 3. Summary of the survey (part 2)

| Questions from the survey | | KOTRA, Embassy of the Republic of Korea | Ministry of Development | Producers / Exporters | Advisor companies | Chambers of Commerce | Chief Inspectorate of Plant and Seed Protection | Embassy of the Republic of Poland |
|---|---|--|----------------------------|--------------------------|----------------------|----------------------------|---|---|
| Changes in economic transactions due to the FTA | Business environment | ↑ | → | ↑ | ↑ | ↑ | | ↑ |
| | Administrative formalities required? | ↑ | → | ↑ | ↑ | ↑ | | ↑ |
| | Relationship with the local administration/bureaucracy | ↑ | → | ↑ | ↑ | ↑ | ↑ | → |
| | Advantages vis-à-vis exporters from third countries | ↑ | ↑ | → | → | → | | |
| Other specific changes due to the FTA | Product specific rules (PSRs)? | ↑ | → | → | → | → | → | → |
| | Cumulation rules | | | → | → | → | | |
| | Standards harmonization including harmonization of SPS standards and alignment with international standard bodies provision | → | → | ↑ | ↑ | ↑ | → | |
| | Administrative alignment | ↑ | → | ↑ | ↑ | ↑ | → | |
| | Simplification of import procedures and controls | ↑ | → | → | → | → | → | → |
| | Cooperation mechanisms | → | → | → | → | → | ↑ | |
| | Dispute settlement mechanisms | → | → | → | → | → | | |

↑ - improved; → - unchanged

Source: own work based on UN Comtrade

Producer/exporters, Advisor companies, Chambers of Commerce and KOTRA share the point of view that the FTA has had an impact on European and Polish sugar confectionery industry (see Table 5). According to their answers employment, income, production, and investments increased. Beyond KOTRA pointed out that if exports increase, production and employment increase as well, thus these changes are dependent on each other.

Further evaluation was investigated regarding FTA policies in general. The Ministry of Development recommends that more attention might be paid on the details when new agreements will be negotiated – for instance, regionalization (in some cases embargo should be imposed on the product for some region and not on the whole country). Producers/exporters, advisor companies and Chambers of Commerce propose further that the European Commission could support exporters and give them information on requirements on a given market.

CONCLUSIONS

This paper contributes to the evaluation of the impact of the Free Trade Agreement between South Korea and the EU on the example of the Polish sugar confectionery market. The FTA between South Korea and the EU has a substantial impact on the trade of different goods. The strength of the influence is dependent on the European country and its overall economic situation. Regarding Poland's sugar confectionery trade, after a first stagnation and adaptation period, the Polish sugar confectionery market started to overgrow.

It became evident that the immense increase of both, trade value and net weight of exported and imported sugar confectionery from Poland, results from the FTA between Korea and EU. The estimated average rates of change indicated undeniably a significant acceleration in trade of sugar confectionery between Poland and South Korea. The considerable increase of the Polish sugar confectionery exports and imports in 2014 and 2015 was caused by the fact that the Polish confectionery market came out of stagnation and started to grow. Polish companies have been actively looking for new markets and prepared for foreign expansion. This phenomenon was proved by the successful Polish accession to the EU implying a long-time preparation period.

The survey carried out as a part of this study suggest that there is a range of factors that are likely to impact the sugar confectionery market to benefit from the FTA. All respondents stated that exports would increase in the long run as a result of the FTA. The advantageous development is reflected by an increased sugar confectionery production that is followed by increased employment. The implementation of the FTA was aimed at an improvement in the economic transactions, decreasing trade barriers and abolishment of tariffs.

Significant influences in sugar confectionery production are political decisions made by European politicians such as sugar quota abolition in 2017. Sugar prices will have an impact on sugar confectionery production. Severe

forecasts, however, cannot be made since sugar prices are influenced by energy politics as well. It is questionable if bioethanol production will continue to grow thus decreasing the available amount of sugar or if new biofuels are preferred, and sugar that was used for bioethanol production is then available for white sugar production. Respondents of the survey fear that sugar production factories will move to Germany and France.

To sum up, the FTA has mainly a positive impact on the trade relation between Poland and South Korea regarding the sugar confectionery market. The export and import values might be further increased, political relations are stabilized, and innovations and product growth are successful. Nevertheless, it is essential for export-oriented companies to strengthen their competitiveness in sharing and improving knowledge and skills on foreign trade [Pietrzyck, Petersen, Jarzębowski 2018].

REFERENCES

- Abrams R. K. (1980) International Trade Flows under Flexible Exchange Rates. Federal Reserve Bank of Kansas City. *Economic Review*, 65(3), 3-10.
- Aitken N. D. (1973) The Effect of the EEC and EFTA on European Trade: A Temporal Cross-Section Analysis. *American Economic Review*, 5, 881-892.
- Baier S. L., Bergstrand J. H. (2007) Do Free Trade Agreements Actually Increase Members' International Trade? *Journal of International Economics*, 71(1), 72-95.
- Bergstrand J. H. (1985) The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence. *Review of Economics and Statistics* 67(3), 474-481.
- Brada J. C., Mendez J. A. (1985) Economic Integration among Developed, Developing and Centrally Planned Economies: a Comparative Analysis. *Review of Economics and Statistics*, 67(4), 549-556.
- Euromonitor (2017) Confectionery in Poland.
- FAO (2018) Food Outlook. Biannual Report on Global Food Markets. Food and Agriculture Organization of the United Nations.
- Frankel J. A., Stein E., Wei S. J. (1995) Trading Blocs and the AMERICAS: the Natural, the Unnatural, and the Super-Natural. *Journal of Development Economics*, 47(1), 61-95.
- Jarzębowski S. (2013) Integracja łańcucha dostaw jako element kształtowania efektywności sektora przetwórstwa rolno-spożywczego. Wydawnictwo SGGW, Warszawa (in Polish).
- KPMG (2014) KPMG in Poland – Confectionery Market in Poland.
- Pietrzyck K., Petersen B., Jarzębowski S. (2018) The Role of Quality Management in the Context of the Transatlantic Trade and Investment Partnership (TTIP): The Case of the Polish Agri-Food Sector. *Problems of Agricultural Economics*, 3(356), 94-110.
- Porter M. E., Fuller M. B. (1989) Koalitionen und globale Strategien. [in:] Porter M. E.: *Globaler Wettbewerb: Strategien der neuen Internationalisierung*. Gabler, Wiesbaden.
- Rupprecht-Däullary M. (1994) *Zwischenbetriebliche Kooperation*. Gabler, Wiesbaden.
- Salkind N. J. (2015) *Excel Statistics. A Quick Guide*. Age Publications Ltd.

- Sobczyk M. (2011) Statystyka. Wydawnictwo Naukowe PWN, Warszawa (in Polish).
- The European Commission Trade (2011) The EU-Korea Free Trade Agreement. Publications Office of the European Union.
- Tinbergen J. (1962) Shaping the World Economy. The Twentieth Century Fund, New York.
- Vizjak A. (1990) Wachstumspotentiale durch strategische Partnerschaften. B. Krisch, Herrsching.
- FAOSTAT <http://www.fao.org/faostat/en/#home> (acquired on 10.10.2018).
- UN Comtrade <https://comtrade.un.org/> (acquired on 10.10.2018).