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Article

Beyond the initial export boost: The erosion of trade agreement benefits

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Beyond the Initial Export Boost: The Erosion of Trade Agreement Benefits

Abstract

Preferential trade agreements (PTAs) are widely acclaimed for their potential to mitigate market imperfections and expand export opportunities. However, in changing economic circumstances, these beneficial effects may only endure for a while and often gradually fade, affecting industries unevenly. This study delves into this overlooked phenomenon by exploring Poland's export performance in the Western Balkan (WB) region, where the implementation of Stabilization and Association Agreements (SAAs) has evidently generated export growth, primarily driven by tariff reductions, though these gains were manifested disproportionately across sectors. Employing survival analysis, the study validates the positive influence of SAAs on Polish export competitiveness within the WBs while uncovering its temporal erosion and sectoral discrepancies. On average, a 51% and 84% decline in Polish export competitiveness to WBs is observed after 5 and 10 years, respectively. Moreover, a unique dataset on non-tariff measures (NTMs) is employed to identify specific sectors encountering significant NTMs contributing to the reported diverse export patterns. These insights highlight the need for policies that acknowledge the diminishing benefits of trade agreements and mitigate the trade imbalances caused by NTMs.

Keywords

Export competitiveness | Non-Tariff Measures | Survival analysis | Trade agreements

JEL Codes

C41, F13

1. Introduction

Preferential trade agreements (PTAs) have emerged as a cornerstone of international trade policy, aiming to mitigate market imperfections and foster cooperation among nations and economic growth. Markedly, PTAs focus on tariff reductions that translate into economic opportunities for exporters to gain market access and enhance their competitiveness, which would otherwise be limited. However, despite their initial positive impact, PTAs appear to lose their effectiveness over time, similar to consumable goods with limited shelf life. While this decline is attributed to various factors related to changing economic landscapes, it seems that the increasing prevalence of non-tariff measures (NTMs) plays a pivotal role in eroding the benefits of PTAs. This study delves into this under-researched topic of the longevity and distributional effects of PTAs by examining the evolution of Poland's export competitiveness in the Western Balkan (WB) market during the post-Stabilization and Association Agreements (SAAs) era.

The trade scenery between the European Union (EU) and WB nations exhibits distinct characteristics. Notably, Poland has witnessed a substantial expansion in export volumes and a transformation in its export composition towards WBs over the past two decades. These changes can be attributed to factors such as the economic development of the WB region, geographical proximity, and the SAA agreements between the parties that played a pivotal role in facilitating trade by reducing tariffs. Nevertheless, these trade agreements have failed to adequately address a significant impediment for EU exporters: the incidence of NTMs in the WB market, which can distort market competition and hinder export competitiveness (Ilahi et al., 2019). This phenomenon necessitates a deeper examination of the factors contributing to the differential speed of competitiveness erosion across exporting sectors under the SAAs and the specific NTMs that hinder the competitiveness of particular Polish export industries.

Drawing upon the New Trade Theory and Revealed Comparative Advantage (RCA) concepts, this research seeks to identify the export sectors that have preserved

their competitive edge. Within the new trade theory framework, PTAs are seen as mechanisms to mitigate market failures, such as imperfect competition and the lack of economies of scale, by enhancing cooperation among firms within a trade bloc, leading to greater competitiveness through preferential market access (Krugman, 1979, 1980). While the current study supports this theoretical argument by providing empirical evidence for the economic benefits of PTAs, it also makes a distinctive contribution by underscoring a declining trajectory for these gains as time elapses. Notably, it asserts that the rising prevalence of NTMs hampers the positive impact generated by PTAs. Moreover, the study challenges the static nature of the RCA theory (Balassa, 1965), which posits that nations should specialise in producing goods and services where they hold a comparative advantage by employing a survival analysis approach. By examining the duration of export performance, the study aims to unravel the dynamic and evolving nature of comparative advantage across various economic sectors over time.

The objective of this study is twofold: first, it seeks to identify the export sectors that managed to preserve their competitive edge better than others; second, it aims to explore whether certain Polish export industries face more NTMs that distort their competitiveness compared to their counterparts, considering that trade agreements primarily address tariff-related barriers.

The study comprises six sections. Following the introduction, it delves into Poland's export ties with the WBs, the benefits of SAAs, and the challenges faced by Polish exporters. The third section reviews the relevant literature on PTAs and export competitiveness, Poland's trade with the WBs, and studies employing duration analysis techniques to examine trade longevity. The subsequent section outlines the methodology underpinning the framework, while the fifth section presents key findings from the economic analysis. The conclusion summarises the study's outcomes and offers insights for policymakers to enhance Poland's export competitiveness in the region.

2. Economic Background

In the past two decades, the WBs has emerged as a crucial economic partner for Poland. Since joining the

EU in 2004, Poland's exports to the WBs quadrupled to over €1.4 billion, significantly outpacing the EU average. Yet, substantial export growth characterised the initial period, followed by a gradual moderation as time evolved (Figure 1). Among WB countries, Serbia holds the largest share of Poland's exports, accounting for approx. 56%, with an annual growth rate of nearly 15%. North Macedonia and Bosnia and Herzegovina follow, though with slower export growth.

Poland's exports to the WBs are highly concentrated in specific sectors. Machinery and equipment, prepared foodstuffs, vehicles, resins, plastics and base metals together account for 60% of exports to the region. Interestingly, the share of base metals exports has declined significantly in recent years, from almost 20% to 9.6% (Figure 2). Poland's imports from the region are more diversified, suggesting that Poland's reliance on WB imports is lower than its dependence on exports. The WBs mainly supplies materials and semi-finished goods used in Polish manufacturing. Also, Polish firms have made significant investments in this region, particularly in manufacturing, retail and services, which contributed to job creation and economic growth both in Poland and the WB.

Nonetheless, Polish exporters still face challenges in the WB region. At the outset, it is acknowledged that the SAAs are insufficiently comprehensive, even compared to Deep and Comprehensive Free Trade Agreements (DCFTA) the EU has with countries like Ukraine, Georgia and Moldova. Notably, SAAs do not cover the existence of NTMs in the WB market, which are trade restrictions that don't involve tariffs. Examples of NTMs include technical barriers to trade, sanitary and phytosanitary measures and various custom and administrative procedures. These troublesome measures and required trade facilitation practices in Central European Free Trade Agreement (CEFTA) members were recently identified by 238 firms as trade distorting and a hindrance to trade competitiveness (GIZ, 2021). Additional challenges for EU's exporters include political instability and insufficient governance standards in WBs (Weiss, 2020).

In summary, a dynamic transformation has characterised Poland's exports to the WB since the early 2000s, with the SAAs playing a pivotal role in shaping the competitiveness of Polish industries within this region. This study employs a survival analysis approach to assess how tariff reductions stemming from SAAs have impacted the longevity

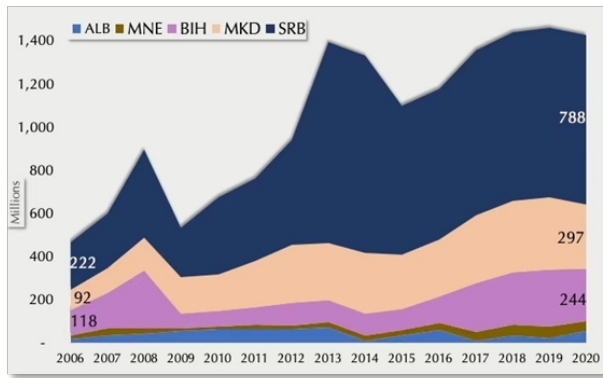


Figure 1. Polish Exports to WB region: Evolution over the years, by destination

of Polish export competitiveness across diverse sectors. Additionally, it utilises a unique dataset of NTMs expressed as ad valorem equivalents of tariffs to examine the extent to which these NTMs affect different Polish industries when exporting to the WB. This analysis reveals the variations in export trends and potential disparities driven by these NTMs.

Literature Review

The “New” trade theory suggests that preferential trading agreements (PTAs) can mitigate market failures, such as imperfect competition and the lack of economies of scale, by fostering cooperation among firms within a trade bloc, resulting in increased competitiveness in specific industries (Krugman, 1979, 1980). A broader historical context on the evolution of the theory of preferential trade agreements is provided by Bhagwati & Panagariya (1996), while Foster et al. (2011) highlights the positive contribution of PTAs in increasing exports, particularly through the extensive margin.

With regards to the **impact of PTAs on Poland’s export competitiveness**, the economic literature identifies several factors that have contributed to its success in some sectors as well as challenges that may hinder its long-term performance. For example, Brodzicki (2015) indicates that after EU accession, Poland’s comparative advantage shifted, with gains in machinery and dairy products but losses in electric motors, oils, and clothing production. Hagemeyer et al. (2021) simulated the potential impact of a Transatlantic Trade and Investment Partnership (TTIP) agreement on Poland’s agri-food sector, suggesting that a 45% rise

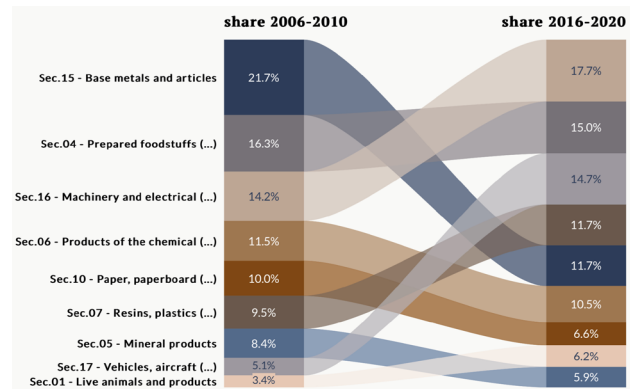


Figure 2. Polish Exports to WB region, by Section, Changes over time (2006-2010 vs. 2016-2020)

in trade with the US could be achieved through tariff elimination and partial non-tariff barrier reduction.

Nazarczuk et al. (2018) stress specialisation’s role in county-level export success, while Gajewski and Tchorek (2017) challenge regional stereotypes, highlighting unique strategies for international competitiveness in Eastern and Western Poland. Radło & Szarek-Piaskowska (2022) acknowledge Poland’s competitive advantages but note a lack of breakthroughs and recommend targeted interventions for advanced industries. Other studies acknowledged Poland’s export comparative advantage in specific industries across various markets and their determinants (Szczepaniak, 2018; Gilbert & Muchova, 2018; Jarosz-Angowska et al., 2020; Wosiek & Visvizi, 2021; Bajan et al., 2021; Pawlak & Smutka, 2022).

Specifically, on **trade links with the WB region**, Dragutinović-Mitrović, & Bjelić, (2015) discovered a significant impact of the SAAs on Poland’s trade with the region. Jusufi & Bellaqa (2019) asserts trade barriers are a hindrance to trade with WBs. Reiter & Stehrer (2018) advocate for liberalisation of trade regulations to enhance WB integration with the EU. Uvalić (2019) underlines the importance of EU financial and technical help to expedite full WB integration.

Survival analysis has emerged as a valuable tool for examining the longevity of trade relationships, export competitiveness and their interdependence. Several illustrative applications include Bojnec & Fertő (2009) and Bojnec & Fertő (2018), which examine the longevity of trade relationships and comparative advantages in the agri-food export value chain. Both trade relationships and comparative advantages are found to be relatively short-lived, with varying survival rates based on

product processing levels and country-specific factors. Markowicz & Baran (2022) find that Polish vehicle and automotive parts exporters maintain long-lasting trade relationships with key EU partners, likely due to quality and cost considerations. Lastly, Ronen & Benizri (2018) show that FTAs have positively impacted Israel's export competitiveness, particularly through technology-driven exports and preferential market access.

Data and Methodology

This chapter outlines the economic methodology employed to investigate the competitive position of Polish exports to the Western Balkans for the years spanning from 2006 to 2020. The selection of this time span is predicated on the initiation of SAAs with the WBs during this timeframe. The analysis primarily relies on EU export data concerning WB nations, with a specific focus on Poland. The data sources utilized encompass the World Bank's World Integrated Trade Solution (WITS) database, UNCTAD, and Eurostat. It is imperative to acknowledge that the Western Balkan region consists of the following nations: Albania, Bosnia and Herzegovina, Croatia, Kosovo, Montenegro, North Macedonia, and Serbia. Notably, Croatia is excluded from the analysis due to its EU membership, and Kosovo is omitted due to a lack of data.

The initial analytical step involves the computation of the Revealed Comparative Advantage (RCA) index for the EU exports to the WB countries. The RCA index helps estimate a country's specialisation in a particular product or sector relative to its trading partners. This study uses the Balassa index to calculate the RCA index (Balassa, 1965). This index assesses comparative export advantage through the lens of Ricardian trade theory, utilising the following equation:

$$RCA_{ij} = \left(\frac{X_{ij}}{X_{it}} \right) / \left(\frac{X_{nj}}{X_{nt}} \right) \quad (1)$$

Following the application of the Balassa index, the analysis proceeds by estimating the Revealed Symmetric Comparative Advantage (RSCA) index. This step aims to ensure the distribution is symmetric around zero, thereby mitigating potential bias in the subsequent regression coefficients (Dalum et al., 1998). The equation utilised for this purpose is

$$RSCA_{ij}^t = \frac{RCA_{ij}^t - 1}{RCA_{ij}^t + 1} \quad (2)$$

The Relative Share of Comparative Advantage (RSCA) index is bounded within the range of -1 to 1, where values within the interval of $0 < RSCA < 1$ signify a comparative export advantage, while negative values indicate a comparative export disadvantage.

Subsequently, an examination of the stability of the RSCA index is undertaken. This analysis involves the application of a regression model to assess the relationship between the dependent variable, the RSCA index at time t (pertaining to sector i in country j), and the lagged operator of the RSCA at the preceding time $t-1$. In this context, the parameters α and β denote standard linear regression estimators, with ε representing the residual term. The equation characterising this analysis is as follows:

$$RSCA_{ij}^t = \alpha_i + \beta_i RSCA_{ij}^{t-1} + \varepsilon_{ij} \quad (3)$$

If $\beta=1$, the unchanged pattern of RSCA between periods $t-1$ and t , indicates no change in the overall degree of specialisation in the export of a sector i . If $\beta>1$, which is also called β divergence, the existing specialisation is strengthened, meaning that a low level of specialisation in the initial period leads to less specialisation in the future. If $0<\beta<1$ (convergence), sectors with initial low RSCAs increase over time on average, while sectors with initial high RSCAs decrease their values. Moreover, when $\beta=R$ (the sign R represents the correlation coefficient of the regression), the pattern of a given distribution is unchanged. When $\beta>R$, then the degree of specialisation has grown, leading to divergence. If $\beta<R$, the degree of specialisation has fallen, i.e., more convergence has developed.

Next, Kaplan-Meier (KM) survival analysis is used to estimate the duration of the mean values of the $RCA>1$ index for Polish exports to WB countries. Survival analysis is a statistical method used to estimate the probability of survival over time. In this context, it estimates the probability of a Polish exporter maintaining its RCA in the WB region. The temporal extent of the mean values associated with the $B>1$ index may indicate the duration during which Poland's export competitiveness maintains its position above a predetermined threshold, denoted as $B>1$ in

this context. An extended temporal span indicates heightened competitiveness and the enhanced sustainability of exports within the specified sector.

The reference parameters for evaluating the dynamics are the start and end years. Survival function estimates, in this case, focus on the RCA index across various product groups. The survival function, $S(t)$, is estimated non-parametrically using the Kaplan-Meier product limit estimator. It is assumed that a sample contains n independent observations denoted $(t_i; c_i)$, $i = 1, 2, \dots, n$, where t_i is the survival time, while c_i is the censoring indicator variable C (take the value of 1 if failure occurred, and 0 otherwise) of observation i . Furthermore, it is assumed that there are $m < n$ recorded times of failure. Then, the rank-ordered survival times are denoted as $t(1) > t(2) > \dots > t(m)$. Also, n_j denotes the number of subjects at risk of failing at t_j , while d_j denotes the number of reported failures. The KM estimator of the survival function is:

$$\hat{S}(t) = \prod_{t(i) < t} \frac{n_j - d_j}{n_j} \quad (4)$$

with the convention that $S(t)=1$ if $t < t(1)$. Many observations are censored but note that the KM estimator is robust to censoring and uses information from both censored and non-censored observations.

Finally, the analysis builds on a dataset that Ghodsi et al. (2016) constructed that estimated the ad-valorem equivalents of non-tariff measures at the 6-digit level of the Harmonized System from 2002-2011. The dataset is used to identify the levels of TBTs imposed by WB countries on Polish exports, aggregated by sector. Also, it allows the identification of how significant these impacts are on Polish export competitiveness relative to traditional tariffs.

Main Findings

The subsequent section presents the key findings of the economic analysis. It allows for exploring the impact of SAAs on the survival of Polish export competitiveness in the WB region at the sector level. Initially, the analysis delves into Poland's RCA in exports to WBs, offering a better perception of the hierarchical positioning of Polish exporters in terms of their contribution to relative export performance in the WB market between 2016 and 2020 (Figure 3). Markedly, despite constituting the largest share of

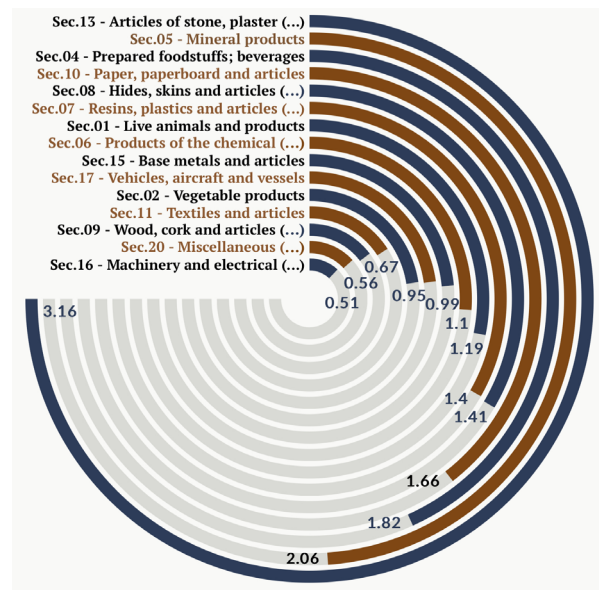


Figure 3. Poland's RCA 2016-2020 (Exports to WB Region)

Poland's exports to WBs, machinery and electrical equipment exhibit a relatively disadvantaged position in terms of RCA, with a score of only 0.51. The figure highlights Poland's comparative solid advantage in stone, plaster, and ceramic products (RCA of 3.16) and mineral products (2.06) but also identifies disadvantages in miscellaneous manufactured articles (0.56), wood, cork, and associated articles (0.62), textiles, vegetable products, and transportation equipment (RCA of 0.67, 0.95, and 0.99, respectively).

The SAAs between the EU and WBs facilitated European exports to the region by reducing tariffs and enabling smoother penetration to this market. However, not all EU countries navigated these new opportunities with equal success. Poland, for instance, capitalised on the agreement, witnessing a surge in exports and significant shifts in its RCA compared to the EU within specific WB sectors. Figure 4 highlights the evolution of Poland's RCA values relative to the EU between the periods 2006-2010 and 2016-2020. Values exceeding 1 signify a comparative advantage, while values below 1 indicate a disadvantage. The highest increase in RCA values was observed in the stone, plaster, and ceramic sector, from 0.7 to 3. Poland also improved its RCA values for vegetable products, vehicles, aircraft and vessels, and live animals and products sectors. Despite RCA value declines in sectors like paper, paperboard, and articles, base metals and articles, and prepared foodstuffs and beverages, Poland still maintains a comparative edge over the EU.

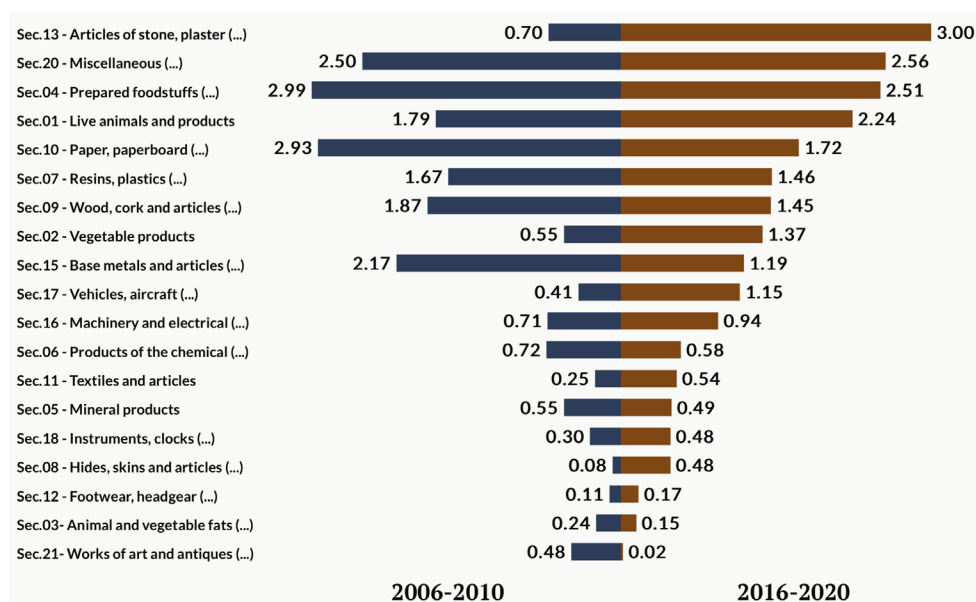


Figure 4. Share of Exports to WB (Poland relative to EU)

Table 1. Survival Analysis, Poland RCAs to WBs, SAAs contribution, by Section

Sections	The Kaplan-Meier Survival Rates After 5 Years		The Kaplan-Meier Survival Rates After 10 Years	
	SAAs	No Trade Agreement	SAAs	No Trade Agreement
Sec.01 - Live animals and products	50.94%	31.32%	18.07%	3.74%
Sec.02 - Vegetable products	51.07%	28.93%	17.02%	5.35%
Sec.03 - Animal and vegetable fats, oils and waxes	47.67%	26.67%	16.43%	1.82%
Sec.04 - Prepared foodstuff; beverages,	51.73%	36.02%	18.40%	6.00%
Sec.05 - Mineral products	47.51%	27.85%	15.50%	3.71%
Sec.06 - Products of the chemical and allied industries	48.55%	46.08%	16.98%	9.75%
Sec.07 - Resins, plastics and articles;	50.94%	39.13%	18.13%	9.97%
Sec.08 - Hides, skins and articles; saddlery and travel goods	49.18%	39.12%	17.38%	9.33%
Sec.09 - Wood, cork and articles; basketware	49.11%	27.61%	16.52%	5.12%
Sec.10 - Paper, paperboard and articles	49.79%	35.59%	17.39%	8.14%
Sec.11 - Textiles and articles	50.73%	36.61%	18.56%	8.59%
Sec.12 - Footwear, headgear; feathers, artif. flowers, fans	48.76%	36.64%	16.14%	11.26%
Sec.13 - Articles of stone, plaster; ceramic prod.; glass	49.79%	33.77%	17.05%	7.11%
Sec.14 - Pearls, precious stones and metals; coin	46.71%	54.69%	15.30%	20.31%
Sec.15 - Base metals and articles	49.99%	35.56%	17.64%	7.65%
Sec.16 - Machinery and electrical equipment	49.51%	38.87%	17.36%	10.26%
Sec.17 - Vehicles, aircraft and vessels	50.32%	42.26%	17.47%	13.52%
Sec.18 - Instruments, clocks, recorders	49.28%	49.09%	17.69%	14.03%
Sec.19 - Arms and ammunition	44.48%	66.67%	3.73%	
Sec.20 - Miscellaneous manufactured articles	50.80%	37.42%	17.67%	9.82%
Sec.21 - Works of art and antiques	46.50%	51.85%	11.86%	7.41%

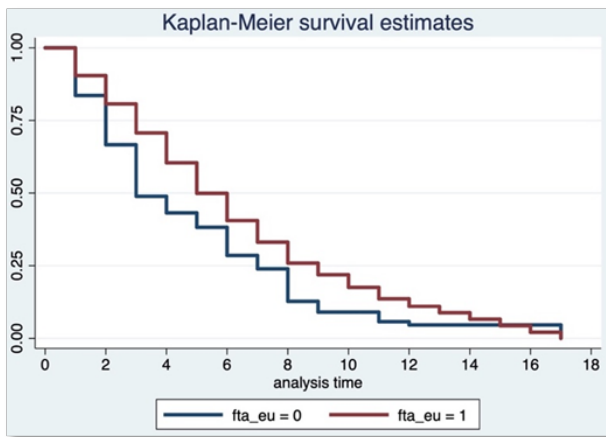


Figure 5. Kaplan Meier Survival Export RCAs Estimations, Poland compared to the EU

Next, the study validates the favourable influence of SAAs on Polish export competitiveness to the WBs within 5-10 years. Specifically, the survival analysis explores Polish exports to WBs compared with exports to nations without preexisting trade accords with Poland. The results shown in Table 1 display temporal and sectoral variations in survival probability influenced by trade agreements. SAAs significantly boost 5- and 10-year survival rates, highlighting their positive impact on Polish export performance. However, an erosion in Polish export competitiveness to WBs of 51% and 84% is observed after 5 and 10 years, respectively, compared to 61% and 91% when no trade agreements exist. The analysis also shows how different sectors experience varying levels of declining survival rates over time. Overall, these outcomes highlight the importance of trade agreements to Poland's exports whilst revealing challenges in long-term competitiveness.

The survival analysis of Poland's exports exhibits different trends in comparison to all other EU member states. Figure 5 depicts the trajectories of the probability of maintaining an RCA for all exports, which diminishes over time for both cases, highlighting the gradual erosion of the SAAs' benefits on competitiveness. Poland exhibits dominance over the EU in the initial years following the implementation of these agreements. Survival rates between Poland and the EU experience a time-dependent convergence, eventually resulting in comparable survival rates after 14 years. It implies that the SAA agreements have had a limited enduring impact on the competitiveness of Poland's exports to the WB region. Notably, the most pronounced gap in survival rates between Poland and the EU is observed during the nascent four-year

period following the initiation of the SAA agreements, indicating a substantial and relatively immediate influence on Poland's competitiveness in those initial years.

The next step compares Poland's sectoral export performance to that of other EU Member States at the sector level. The results indicate a higher probability of Poland maintaining its RCA exports compared to the EU across most sectors, and this trend is consistent in both the 5-year and 10-year survival rates (Table 2). Chiefly noteworthy is the gap in survival rates in sectors like animal, vegetable fats and oils, as well as machinery and electrical equipment, while the EU holds a stronger position in footwear and headgear, and mineral products. This suggests Poland's relative weakness in these areas within the WB market despite the SAAs.

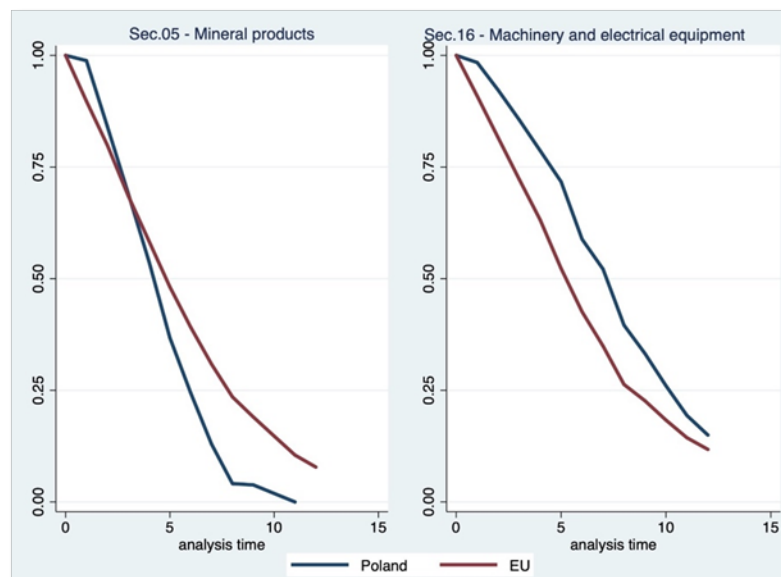
Poland is more likely to retain an RCA in the WB in many sectors than the EU. Notably, it identifies an average of 42% and 77% erosion in Polish export competitiveness after 5- and 10-years, respectively. The differences between the likelihood of staying competitive after 5-years in Poland and other EU member states show that the gap is most pronounced in the fields of animal and vegetable fats, hides, skins and articles, as well as chemical products (the gap stands at 6.1%, 4.1% and 3.9%, respectively). In contrast, the discrepancy is least notable in the paper and paperboard sector (2%). It is necessary to note that the magnitude of this differential likelihood between Poland and the EU varies over time, contingent upon the prevailing economic conditions in both the WB and the EU.

Although Poland's export sustainability has declined overall, the difference in survival rates between Poland and the EU has persisted. This implies that the factors driving Poland's competitiveness in the WBs have remained relatively consistent throughout time. These factors likely include lower labour costs and geographic proximity to the WB region. The persistence of this gap implies that these determinants are likely to stay the same in the near future.

An illustration of the KM survival analysis export estimations of two distinct sectors is presented to exhibit the evolution over time (Figure 6). In both cases, the probability of retaining a competitive advantage decreases over time. In the mineral products sector, Poland initially had a higher probability of maintaining an RCA after SAA implementation, but this trend reversed after four years, with the EU

Table 2. Survival Analysis, Export RCAs to WBs, Poland vs. EU, by Section

Sections	The Kaplan-Meier Survival Rates, After 5 Years		The Kaplan-Meier Survival Rates, After 10 Years	
	Poland	EU	Poland	EU
Sec.01 - Live animals and products	56.5%	52.6%	24.9%	18.2%
Sec.02 - Vegetable products	55.9%	52.2%	19.0%	17.3%
Sec.03 - Animal and vegetable fats, oils and waxes	55.1%	49.0%	26.6%	16.5%
Sec.04 - Prepared foodstuff; beverages,	55.9%	53.2%	21.4%	18.6%
Sec.05 - Mineral products	50.1%	48.7%	16.6%	15.7%
Sec.06 - Products of the chemical and allied industries	54.4%	50.5%	19.8%	17.5%
Sec.07 - Resins, plastics and articles;	53.9%	52.7%	19.2%	18.7%
Sec.08 - Hides, skins and articles; saddlery and travel goods	54.9%	50.9%	21.0%	17.8%
Sec.09 - Wood, cork and articles; basketware	51.4%	50.6%	16.7%	16.9%
Sec.10 - Paper, paperboard and articles	52.5%	51.7%	17.7%	18.0%
Sec.11 - Textiles and articles	52.7%	52.7%	19.3%	19.2%
Sec.12 - Footwear, headgear; feathers, artif. flowers, fans	53.1%	50.3%	18.2%	16.6%
Sec.13 - Articles of stone, plaster; ceramic prod.; glass	54.7%	51.2%	19.7%	17.4%
Sec.14 - Pearls, precious stones and metals; coin	93.4%	88.5%	87.8%	79.8%
Sec.15 - Base metals and articles	54.6%	51.5%	19.1%	18.1%
Sec.16 - Machinery and electrical equipment	54.0%	51.4%	19.3%	17.9%
Sec.17 - Vehicles, aircraft and vessels	53.5%	52.1%	19.2%	18.0%
Sec.18 - Instruments, clocks, recorders	53.6%	51.2%	20.9%	18.2%
Sec.19 - Arms and ammunition	88.9%	81.7%		81.7%
Sec.20 - Miscellaneous manufactured articles	54.2%	52.7%	20.2%	18.2%
Sec.21 - Works of art and antiques	66.6%	70.0%	13.3%	40.0%

**Figure 6.** Kaplan Meier Export RCAs Estimations, Sections 5 & 16, Poland vs. the EU

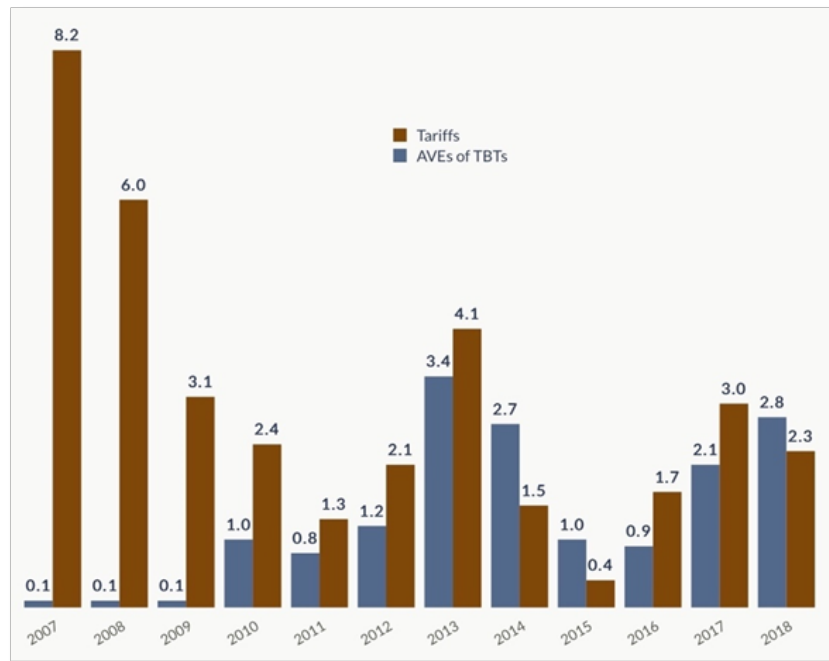


Figure 7. Tariffs vs. TBTs in the WBs on Polish Exports

displaying a higher likelihood of survival. On the right part of the figure, the probabilities to survive for section 16 (machinery and electrical equipment) are shown. Poland initially exhibits a higher probability of maintaining an RCA compared to the EU, but this gap narrows over time.

Subsequently, this section exposes the evolution of trade measures imposed on Polish exports by the WBs during the years 2007 to 2018. Figure 7 depicts the tariff rates in red and the ad valorem equivalents of technical barriers to trade (TBTs) denoted in blue. Over this timeframe, tariff rates applied to Polish exports by WBs have dropped from 8.2% in 2007 to just 2.3% by 2018. In contrast, TBTs exhibited an upward trend, increasing from a modest 0.1% to a level of 2.8%.

Despite the decline in tariff rates, the overall level of protection remains largely unchanged due to the escalation of TBTs (annual mean of approximately 4.4%). This suggests that TBTs have effectively replaced tariffs as trade barriers, posing new challenges for Polish exporters. The decline in tariffs is primarily due to the original objective of SAAs, but the rise of TBTs casts doubt on the sustained competitiveness of Polish exporters in the WB market.

The application of TBTs on Polish exports to the WB region varies across sectors and over time (Figure 8). TBTs are mainly prevalent in sectors

like base metals and related articles (7.7%), mineral products (3%), stones, plaster, and related products (2.8%), and machinery and electrical equipment (2.6%). In contrast, the lowest levels of TBT are found in exports of vegetable products, prepared foodstuffs and beverages, and live animals (0.2%). However, it is important to note that these latter sectors are also subject to additional Sanitary and Phytosanitary (SPS) requirements.

The rising prevalence of TBTs poses a significant challenge for Polish exporters, who face increasing trade barriers compared to exporters from other countries. This highlights the persistent obstructive nature of TBTs, which encompass a wide range of measures, such as product standards, testing and certification requirements, labelling obligations, and more. Collectively, these measures create burdensome and costly hurdles for exporters seeking to penetrate WB markets.

Conclusion

This study employs survival analysis techniques to validate the beneficial yet diminishing impact of preferential trade agreements on export performance. It reveals that Poland's export competitiveness to WBs, initially enhanced by SAAs, has gradually eroded

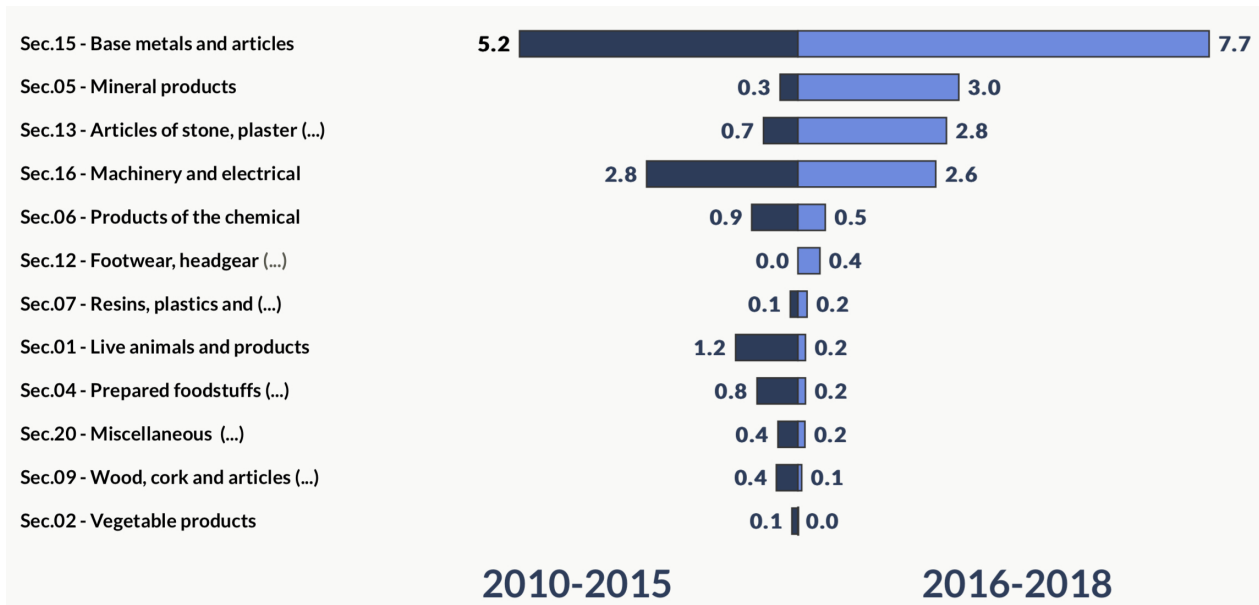


Figure 8. TBTs on Polish Exports to the WB Region, by Sections

over time, highlighting the time-dependent nature of SAAs benefits. Notably, it identifies a 42% and 77% erosion in export competitiveness after 5 and 10 years, respectively. With regard to specific industries, the research underscores the uneven impact of SAAs across different sectors, with certain industrial sectors exhibiting a more enduring competitive advantage compared to others. In other words, SAAs have indeed produced a positive effect on the competitive standing of Polish exports within certain sectors. However, this advantage contracted disproportionately over time.

Moreover, it demonstrates that the overall trade barriers faced by Polish exporters have largely remained unchanged, despite the decline in tariff rates due to the escalation of TBTs, at an annual average of approx. 4.4%. Particularly, it shows the variation and development of TBT levels that each Polish sector faces over time when exporting to WBs. It asserts that by offering incentives to reduce these often unnecessary obstacles, there is an opportunity to unlock export potential for Poland. This research underscores the need for a comprehensive policy approach to address the erosion of PTA benefits and enhance export competitiveness in the long term. Policymakers should focus on reducing trade barriers and supporting industries that are not gaining from PTAs. Furthermore, potential avenues for future research include investigating alternative market access strategies and industrial policy measures that could enhance the competitiveness of Polish industries, both within the WBs and in other export markets.

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