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Patryk Toporowski

RESTRUCTURING POLISH EXPORTS:

LESSONS FROM THE ECONOMIC CRISIS

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Author:

Patryk Toporowski

researcher at PISM, PhD candidate at Warsaw School of Economics

email: patryk.toporowski@gmail.com

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Restructuring Polish Exports: Lessons from the Economic Crisis[*]

Patryk Toporowski[**]

Abstract

This paper provides new evidence of the changes in the Polish export since the beginning of the crisis. The emerged economic instability in the European Union since 2008 encouraged the exporters to seek the markets in third countries. Additionally, the Polish government stressed the promotion of domestic goods abroad as part of the country's development strategy and support exports towards extra-EU markets. This paper investigates how export patterns changed during the crisis and compare it with Poland's promotion policy. I used UN COMTRADE data for the analysis. The results show that export trends during and after the crisis were only moderately correlated with the government's policy.

Introduction

Poland's export is, due to the geographic, political and historical conditions, dependent on Western Europe's markets. It is an important market, relatively easy to enter by Polish firms due to the single market rules. Yet, since the beginning of the crisis, when the demand in the EU was weakened, the producers in Poland started considering

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[**] Patryk Toporowski is a PhD candidate at Warsaw School of Economics, researcher at PISM

expansion to other – more difficult – markets. This happened in hand with government's policy to back Polish business outside the EU. A support of Polish external trade became one of the important state activities, especially as the trade balance remained persistently negative (until 2013). This change in development strategy, based on general empirical evidence saying that export promotion (if managed correctly) produces more foreign sales,[1] sounds optimistic to the Polish government.

Poland, since the beginning of the transformation, noted a sustainable negative trade balance, witnessing strongly growing domestic demand not balanced with exports. Since then, this unwelcome Polish trait became a topic in discussions among the academia[2] as well as the policymakers. The negative trade balance as a part of the current account may be a source of an external debt in long-term. The scientists pointed to the sustainability problem of the so-called twin deficits (negative current account and fiscal balance) observed in Poland for 25 years. According to the Polish government, a trade balance marks the competitiveness of the country in the global scale.[3]

However, the latest data show a substantial improvement in trade balance (See: figure 1). In 2009, the trade gap narrowed by around 23.2 billion USD. This was the consequence of the reduction of import value via lower demand, via weakened currency rate and via significantly lower oil prices compared to pre-crisis period.[4] In 2013, Poland had a trade surplus first since the beginning of the transformation. In 2015 this surplus reached 7.4 billion USD and Poland became the 24th biggest exporter in the world.

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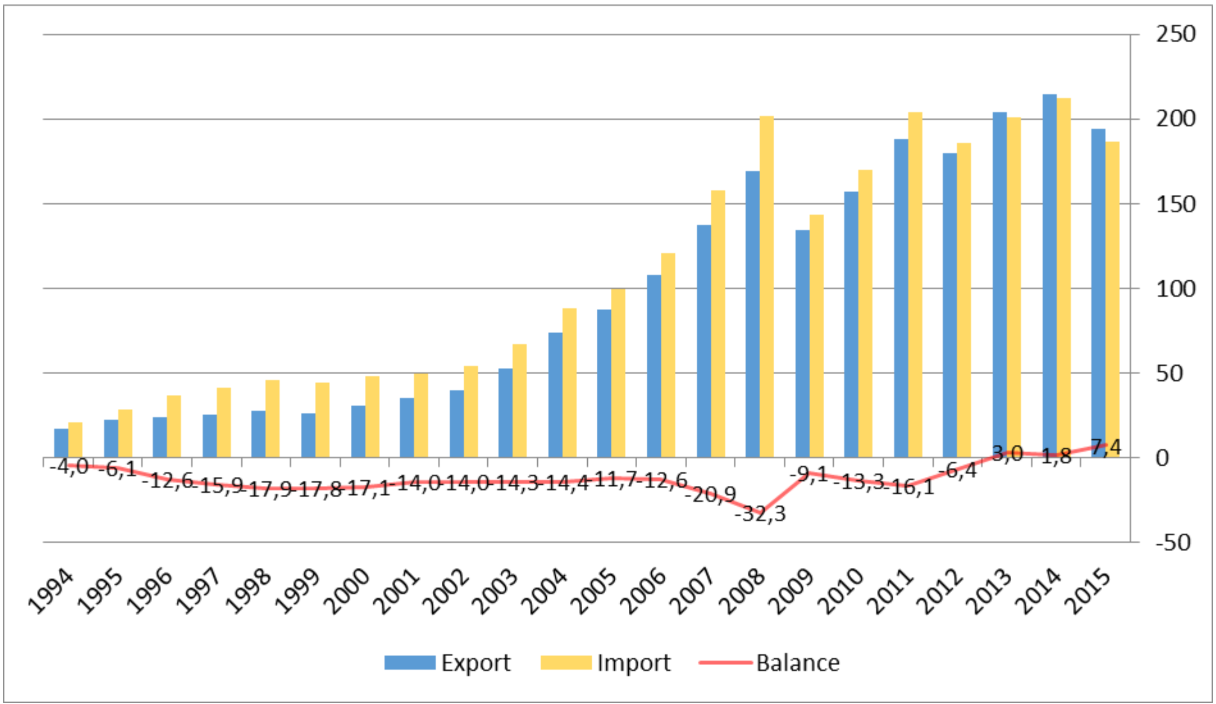
[1] For evidence, see e.g.: Lederman D. et al. (2010), *Export Promotion Agencies: Do they work?* Journal of Development Economics.
[2] Jasiński L. J. (1997) *Deficyt handlowy. Zmienić instrumenty*, Gazeta Bankowa, Warsaw.
[3] Miszczyk K. et al. (2015), *Poland 2015. Report on Foreign Trade*, Ministry of Economy, Warsaw 2015 (https://www.mr.gov.pl/media/15721/ROHZ2015.pdf) (accessed 14.09.2016)
[4] According to Quartz website, Poland is one the biggest beneficiaries of falling oil price. See: Karaian J. et al. (2014), *Here's who should be happiest about falling oil prices*, Qz.com, October 20 2014 (http://qz.com/282666/heres-who-should-be-happiest-about-falling-oil-prices/) (accessed 14.09.2016)

Figure 1. Poland's external trade value in billion USD, 1994-2015



Source: UN Comtrade database (via WITS), accessed 02.09.2016

Poland's experience in export assistance

The export promotion strategy during the crisis consisted of four main elements: promotion of POLSKA brand, economic missions of the high level officials, assistance to the Polish firms with knowledge about the foreign markets, financial instruments.[5] The POLSKA brand was managed by several institutions and agencies (i.e. PAIiIZ – designed to support foreign investment, KUKE – designed to give insurance credits to exporting firms) coordinated by the Council of Poland's Promotion.[6] The economic missions (mostly coordinated by former Ministry of Economy) with high level officials before the crisis were extremely rare, however the businesses valued them highly, as they generally ended up with new contracts for the Polish firms. Since the beginning of the crisis the missions were organized more frequently.

The administration recognized the firms' need of information about the foreign markets and continued to offer data on specificity of a particular country. A practical

[5] Gradziuk A. et al. (2014), *Promocja Polskiej Gospodarki Za Granicą*, Raport PISM, Warsaw, June 2014.
[6] Ibidem.

knowledge about the markets was offered by the Trade and Investment Support Divisions (29 out of 48 located in Europe and controlled by the former Ministry of Economy),[7] while the Economic Divisions in embassies (controlled by the Ministry of Foreign Affairs) provided more general information about the country. The information (and training for entrepreneurs) was also provided by the Polish Agency for Enterprise Development.

The authorities also supported Polish export with financial instruments. The firms could take financial assistance in form of export insurance from i.e. Bank of National Development or from KUKE (Export Credit Insurance Corporation Joint Stock Company), provided the products have at least a certain degree of Polish components. According to regulation no. 1978 (2014) by the former Minister of Economy the possible share of foreign component in most cases was set at 70%.[8]

Poland's strategy included the utilization of the EU structural funds to boost foreign trade. A specific goal of the export promotion strategy was the increase of sales of high-tech products.[9]

The EU membership and thus a free access to the internal market enabled the entrepreneurs to sell their product westwards more efficiently than before 2004. The weakening demand, however, in the EU encouraged the government to reorient its export strategy towards East and South as well as overseas. Thus three programs: Go China[10] (in 2011), Go Africa (in 2013)[11] and Go India[12] (in 2015) aiming at intensifying business links between Poland and selected prospective non-EU countries (as the destinations increasingly attractive) were launched. Apart from them such countries as:

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[7] Ibidem. Interestingly, the Supreme Audit Office pointed to 29 out of 49 such divisions. (see: *Promocja gospodarcza Polski. Informacja o wynikach kontroli*, Report no. 161/2016/P/15/023/KGP, 13 October 2016; https://www.nik.gov.pl/plik/id,12132,vp,14514.pdf (accessed 14. 10. 2016)).

[8] See: *Rozporządzenie Ministra Gospodarki*, 31 December 2014, Dz. U. Poz. 1978.

[9] According to the Operational Programme Intelligent Development (POIR) financed through EU funds, a share of high tech products in exports should significantly increase – from 6.3% in 2013 up to 13% in 2023. For more see: *Program Operacyjny Inteligentny Rozwój 2014-2020,* https://www.poir.gov.pl/media/1867/ost_POIR_19_01_dokument_21012015_okladka.pdf (accessed: 25.09.2016).

[10] Go China website, See: http://www.gochina.gov.pl/ (accessed: 19. 09. 2016)

[11] Go Africa website, See: http://www.goafrica.gov.pl/ (accessed: 19. 09. 2016)

[12] Malinowski D. (2015), *Jak podbić Indie – rusza program Go India*, Wirtualny Nowy Przemysł, http://www.eecpoland.eu/2016/pl/wiadomosci/jak-podbic-indie-rusza-program-go-india,248649.html (accessed 19 09. 2016)

Canada, Brazil, Algeria, Turkey, Kazakhstan, Mexico, Russia became prospective markets[13] on which the administration focused.[14]

Although the government has been implementing the promotion strategy for several years, POLSKA brand is still not recognized abroad. The firms rarely mark their products with logo identifying as the Polish ones, which means, that they do not perceive that this logo would be much valued by the foreign clients.

Apart from this, in October 2016 an internal governmental audit conducted by the Supreme Audit Office (NIK) highlighted an inefficiency of promotion of Polish exports, by stating that there is an extensive number of dispersed institutions in Poland and abroad which did not coordinate their activities regarding the support of exports. Similar conclusions were earlier included in a report produced by the Polish Institute of International Affairs.[15] According to the NIK audit report, 2.2 billion złoty (around €500 million) dedicated to promotion of Poland's economy abroad, if more orderly spent, could have given considerably better results. The office highlighted the problem of unclear division of competences between the Ministry of Economy and PAIiIZ, which caused an overlap of expenditures designed for the same purpose. Similarly, there was an insufficient coordination of activities between the agencies controlled by the Ministry of Economy and Ministry of Foreign Affairs (i.e. restricted flow of information). Additionally, NIK stated, that promotion of Poland's business abroad could not have been efficient, as it was not a single definition of promotion in legal acts.[16]

The strategy on support of the Polish enterprises abroad is under heavy reform in 2016 and develops in line with suggestions proposed by NIK. A most noticeable change is a systemic one: support of Polish firms abroad became one of the five pillars of the

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[13] But the group of prospective countries highly varied over time. The former Vice-Minister of Foreign Affairs responsible for economic diplomacy in 2012 pointed at different prospective markets: Russia, Brazil, Mexico, Chile, Peru, Argentina, Colombia (See: Stelmach B., (2012), *Ekonomiczny wymiar nowoczesnej dyplomacji*, Presentation of the former Vice-Minister of Foreign Affairs Beata Stelmach).
[14] Antoniszyn-Klik I. et al. (2014), *Promocja gospodarcza i wsparcie przedsiębiorstw na rynkach zagranicznych 2013-2014*, A joint presentation of the promotion of the Polish economy delivered by Ilona Antoniszyn-Klik – former Vice-Minister of Economy and Katarzyna Kacperczyk – former Vice-Minister of International Affairs.
[15] *Promocja Polskiej Gospodarki Za Granicą...,* op. cit.
[16] *Promocja gospodarcza Polski. Informacja o wynikach ..., op cit.*

new general growth strategy.[17] The authorities launched a new administration structure to support exports. The trade chambers are to be replaced by less diplomatic and more goal-oriented trade offices. But there is also a fundamental change in government: instead of the previous dispersed institutions and agencies controlled by different Ministries (i. e. of Economy or of Foreign Affairs), one greater umbrella-type agency – The Polish Development Fund has been founded. Its assets are estimated at the level of 15 billion euro[18] and are controlled by the Ministry of Economic Development. In the strategy it is assumed, that the magnitude of financing of the exporting and POLSKA brand promotion will increase.

The consolidation – in plans – may accumulate a knowledge about state assistance in one source, thus facilitating the decision-making process within firms about foreign expansion. It is also announced to deliver financial solutions more tailored to the needs of the Polish enterprises. This new agency would implement the still general export support strategy. Alongside to this concentration of competences in one super-agency and one ministry[19] the rules to promote Polish products will be unified.[20]

The strategy also assumes a slight reorientation of prospective markets, arising from the changing global economic settings: Vietnam and Iran have joined a basket of such promising destinations, while Brazil, Turkey, Russia and Kazakhstan stepped out. The expected overall effect of all the reforms by the authorities is an acceleration of exports from 5% to 7% a year and a rise of high-tech products' share in Polish exports to 15.8%. Yet, for now it is difficult to ex-ante assess the direction of changes in 2016. There are some possible obstacles linked with the reform during the first months of the implementation, arising from the fact that the administration need to adjust to the new requirements and the new framework. Also the firms need to seek new ways to gain assistance from the authorities.

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[17] *Plan na Rzecz Odpowiedzialnego Rozwoju*, Ministry of Economic Development, draft of document disseminated to public consultations, 29 July 2016 (See: https://www.mr.gov.pl/media/23749/SOR_29072016_projekt.pdf) (accessed: 29. 09. 2016).

[18] Ramotowski J., (2016), *Polski Fundusz Rozwoju – na każdy temat*, An Interview with Paweł Borys, Director of Polski Fundusz Rozwojowy, Obserwator Finansowy, 3 August 2016.

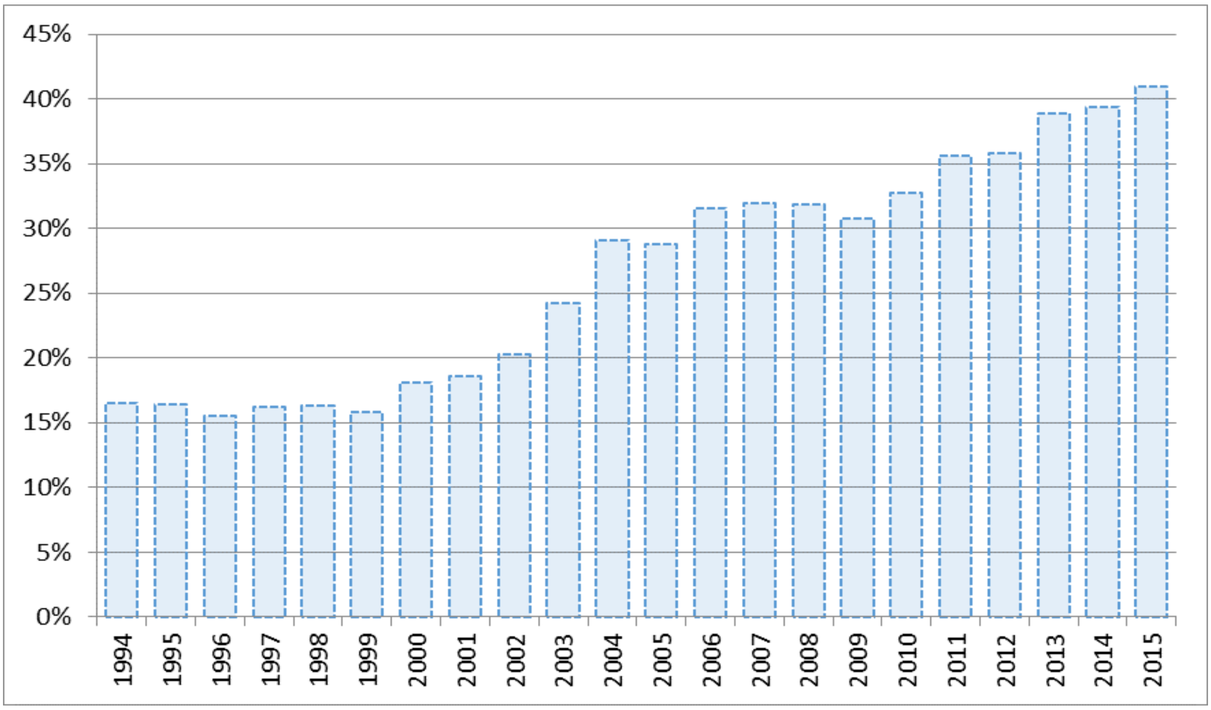
[19] Which managed by Mateusz Morawecki, would gain additional power. This is because Minister Morawiecki under first reconstruction of the government, September 2016, extended its influence on economic portfolio, by becoming a head of two ministries: of Economic Development and Ministry of Finance. In the past both these Ministries often presented contradictory approaches to the economic issues, thus delaying or softening the economic projects initiated by the government. The coordination of them with one person may ease such tensions and help execute the Responsible Development Strategy.

[20] *Plan na Rzecz Odpowiedzialnego…*, op cit., p. 86.

Any effect on intensity of exports?

The relative export performance was rather moderate at the end of 20th century and amounted to 16.5% of GDP in 1994 (see: figure 2). The trade openness was constantly increasing since then up to 2006 (31.5% GDP). Since 2011, the export share in GDP (35.6%) started sustainably rising up to 2015 (40.9%).[21] This is partly a result of the inflow of foreign investment (resulting in FDI position in Poland from 28% of GDP in 2005 to even 44% in 2013, but dropped to 38% of GDP in 2014)[22]. FDI inflows were due to the relocation of production facilities from Western Europe (incl. Italy, Germany or Great Britain), as Poland proved to be more cost-competitive to the highly developed countries. This also means, that the decision making on aggregated Poland's exports is increasingly dependent on the transnational mother corporations at the cost of local decision-makers (firms and domestic authorities).

Figure 2. Export as % of GDP, 1994-2015 (2015 estimate)



Source: own calculations based on UN Comtrade database (via WITS) and IMF World Economic Outlook database, accessed 02. 09 .2016

[21] But in fact, most countries during this period have also intensified their export performance. See: *Plan na Rzecz Odpowiedzialnego…*, op cit., p. 17.

[22] According to the OECD data on Foreign Direct Investment BMD4 FDI aggregates. See: http://stats.oecd.org/# (accessed: 19. 09. 2016)

Still, export intensity that is exceeding 40% of GDP for the first time since the beginning of transformation shows that firms increasingly seek clients abroad. Moreover, during the crisis a significant rise of export intensity took place, when the consecutive elements of the former strategy had their effect. This may point to a correlation between the launch of a strategy and export performance. Yet, this correlation is not sufficient to positively prove, that the strategy affected Poland's trade patterns.

Geographic distribution of export

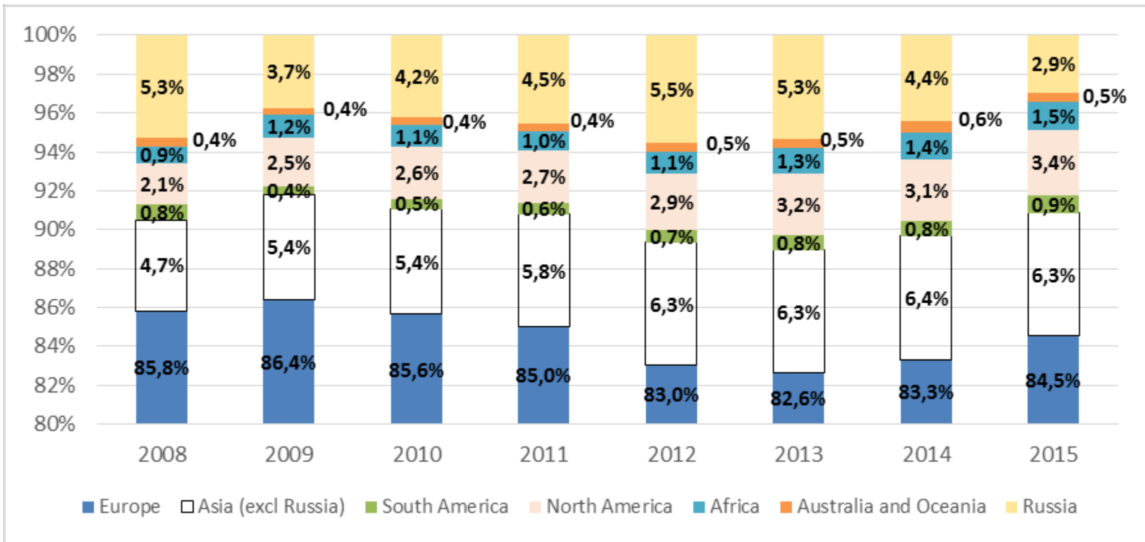
The share of EU countries in Polish export had been increased far before Poland's EU membership, at the end of 20th century. In the 21st century up to EU 2004 enlargement the EU countries stood for around 82% (in value) of foreign Polish sales.[23] This was the effect of Poland's openness policy and EU was a natural trading partner. Additionally, in the period of signing the Association Agreement (in 1991 by Poland, in 1994 by the European Communities) Poland enjoyed gradual trade liberalisation with its Western neighbours,[24] which boosted export. Interestingly, the trend did not continue in 2000-2004, as most of the trade liberalisation took place earlier (i.e. one of the latest liberalisation package was in the automotive industry and was mainly conducted up to 2002).[25] Even more interestingly, the EU's share in Polish export dropped to around 78% after the 2004 enlargement and oscillated slightly around this level up to 2015.

During the crisis Europe (with the prevalence of EU's market), notably Germany, remained the main recipient of Polish goods (see Figure 3). The Europe's share in Poland's export was relatively stable around 83-86% during this period, yet the noted decrease to 83% occurred in 2012 and 2013 and then the Europe increased its importance as a destination market (up to 84.5% share in 2015). One continent clearly became more important market during the crisis: North America (from 2.1% share in 2008 to 3.4% in 2015). Africa, though being small market, also became increasingly

[23] Own calculations based on UN COMTRADE database via Worldbank's WITS client.
[24] See: Kawecka-Wyrzykowska E. et al. (2001), *Unia Europejska: przygotowania Polski do członkostwa*, Instytut Koniunktur i Handlu Zagranicznego, Warsaw.
[25] See: Czarny E. et al. (2009), *Polska w handlu światowym*, PWE, Warsaw.

important destination: while in 2008 only 0.9% goods moved to Africa, in 2013 (when Go Africa programme launched) this share amounted to 1.3%, and in 2015 it increased to 1.5%. Asia's share remained stable during the crisis, however within a continent there was a substantial geographical shift in Polish exports. Poland's foreign sales to Russia, due to the cooling Russian political relations with Ukraine and the EU, dropped from 5.3% in 2013 to 2.9% in 2015. The other Asian markets gained much more importance (from 4.7% in 2008 to 6.3%), yet this change of pattern has already occurred before the Russia-Ukraine conflict.

Figure 3. Geographic composition of Polish exports, by continents and selected countries, 2008-2015



Source: UN Comtrade database (via WITS), accessed 02. 09. 2016

When considering the most prospective markets mentioned in the strategies, there was only a small increase in their shares in Poland's export. Among the ones with growing share of export is China –the third biggest destination – (from 0.76% in 2008 via 0.99% in 2011 – when Go China program was launched – to 1.04% in 2015) and there are good prospects to accelerate growth in share of exports. Both countries perceive each other as an attractive business partner in trade and investment. In 2016 these relations were even strengthened by an official visit of the President of China, Xi

Jinping arrived to Poland to make new partnership and encourage Polish and Chinese firms to do business together.[26]

Also, Canada's share in the Polish export, albeit small, has been sustainably rising during the crisis. It grew from 0.39% in 2008 to 0.64% in 2015. In 2014, when Canada was included in a list of prospective markets its share amounted to 0.6%. Poland's government's positive attitude towards EU-Canada's negotiated Comprehensive Economic and Trade Agreement is in line with the inclusion of Canadian market on the list of priority destinations. Similarly, Mexico's share considerably and steadily increased, from 0.15% in 2008 via 0.23% in 2014 to 0.34% in 2015.

Some of the priority markets did not attract the Polish exporters, as it was expected by the authorities. The reasons are twofold. First, some of them are not really attractive due to growing economic or political uncertainty. Second, the authorities' activities towards supporting export to the priority market were either insufficient or late.

The biggest one, the Russian market is rapidly decreasing due to political reasons and will not be on a list of prospective markets for long. A second biggest such market (with share equal to 1.6% in 2015) is Turkey, which similarly (in 2016) left the list of priority markets due to rising political uncertainty of the country. Brazilian market, due to the aggravation of domestic economic problems, also exited the list of priority destinations and noted a decline in share in Polish export (from 0.28% in 2013 to 0.2% in 2015). Similarly, Kazakhstan's share, instead of continuing a rising trend from the 2008, decreased from 0.27% in 2014 to 0.21% in 2015, due to deterioration of the country's economic prospects.

Regarding India, its share in Polish exports has risen from 0.18% in 2008 to 0.24% in 2013, and then dropped. In 2015, when Go India program was launched its share amounted to 0.24%. Perhaps still the effects of introduction of this new dedicated program have not yet materialized. Also, albeit Algeria was classified as the priority market in the strategies it did not corresponded with the growing share of this country in the Polish export. Algerian market fluctuated around 0.17% of Polish export during the crisis (with the exception of 0.32% reached in 2014).

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[26] *Xi Jinping Arrives in Warsaw for State Visit to the Republic of Poland*, Ministry of Foreign Affairs of the People's Republic of China, 20. 06. 2016;
http://www.fmprc.gov.cn/mfa_eng/zxxx_662805/t1374297.shtml (accessed 5. 10. 2016).

Table 1. Poland's export to the (remaining and outgone) priority and the most prospective markets, share in %, 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
Algeria	0.15%	0.16%	0.15%	0.19%	0.18%	0.17%	0.32%	0.17%
Brazil	0.28%	0.15%	0.23%	0.20%	0.27%	0.28%	0.25%	0.20%
Canada	0.39%	0.47%	0.59%	0.42%	0.52%	0.49%	0.60%	0.64%
China	0.76%	1.09%	1.04%	0.99%	0.97%	1.04%	1.05%	1.04%
India	0.18%	0.25%	0.21%	0.28%	0.37%	0.24%	0.26%	0.24%
Kazakhstan	0.26%	0.33%	0.26%	0.26%	0.32%	0.29%	0.27%	0.21%
Mexico	0.15%	0.12%	0.17%	0.23%	0.32%	0.26%	0.23%	0.34%
Russia	5.28%	3.73%	4.22%	4.54%	5.52%	5.31%	4.39%	2.94%
Turkey	1.05%	1.31%	1.58%	1.75%	1.73%	1.49%	1.46%	1.60%

Source: UN Comtrade database (via WITS), accessed 02. 09. 2016

This geographic data covering the crisis period point to the changing economic environments in the priority markets. But it also points to little effectiveness of Poland's export promotion strategy that assumed an increase in geographic diversification of exports. It is the effect of too slow (or lack of) implementation of the strategy. Though it assumed a geographic diversification of support, in fact it was not supported by money i.e. for Trade and Investment Support Divisions located in priority markets. There was no significant shift of financing from the non-priority market divisions to the priority ones, which hindered them to sufficiently increase support of Polish business abroad.

The commodity-specific structure of exports

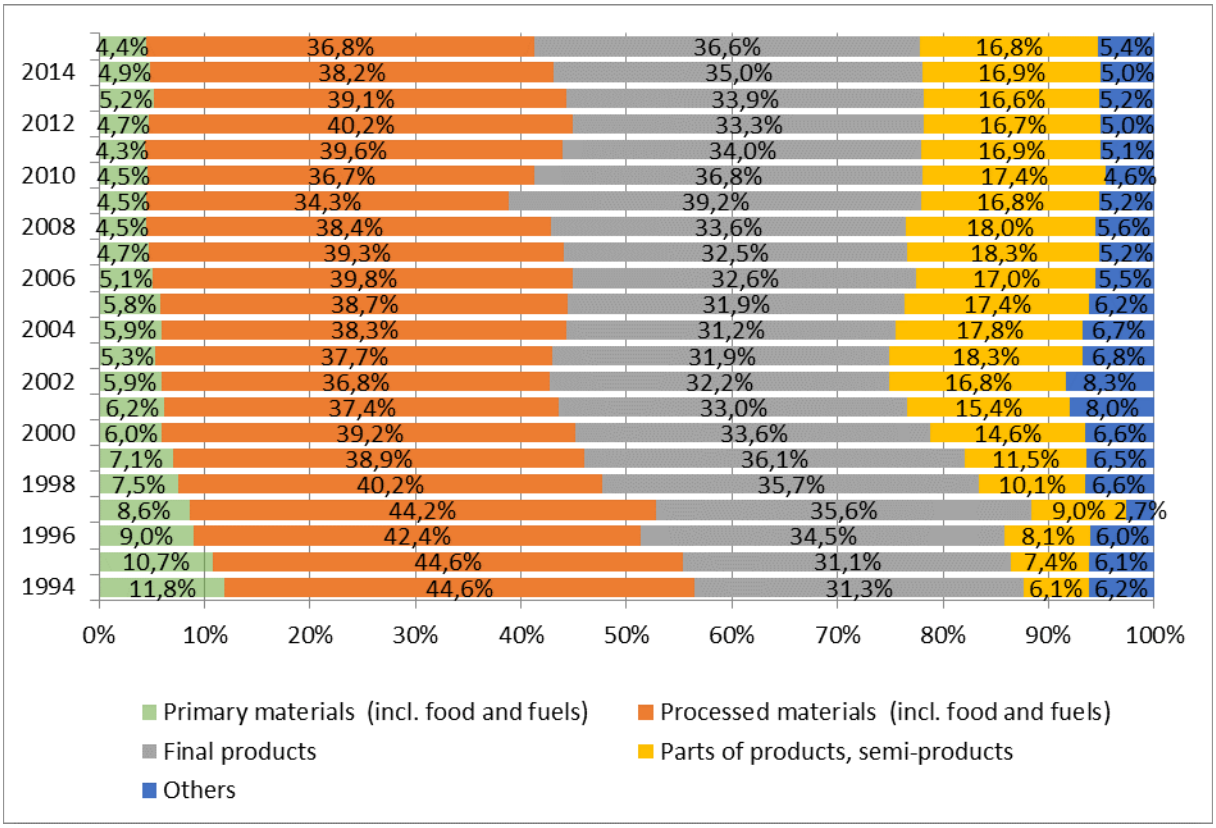
Poland's exporting profile was mainly shaped during the EU negotiations and afterwards, when a considerable amount of FDI was allocated in Central and Eastern Europe.[27] Since then Poland became an important exporter of electric goods, including consumer durables (i.e. TV sets), automobiles, parts of machinery for production of energy. As seen in figure 3, the structure of exports systematically evolved over time towards more sophisticated products,[28] yet since the beginning of the crisis, the trade pattern remained stable. Primary materials stated for 4.5% in 2008 and 4.4% of exports

[27] It is estimated that around 60% of Polish exports arises from the foreign capital. (See: Stelmach B., (2012), *Ekonomiczny wymiar nowoczesnej dyplomacji*, Presentation of the former Vice-Minister of Foreign Affairs Beata Stelmach)

[28] This may be seen in rising high quality vertical industry trade share. See e.g.: *Polska w handlu światowym…*, op. cit.

in 2015 and there was a slight decrease of the processed materials (from 38.4% in 2008 to 36.8% in 2015). But during the crisis there is also some continuation of the increasing trend in exporting final industrial goods (from 33.6% in 2008 to 36.6% in 2015), the possible effect of FDI influx resulting from relocation of capital in the Western Europe. This overall result coincides with the consecutive trade strategies of Poland that assumed an increased share of sophisticated commodities in total export.

Figure 4. Structure of Polish export, based on BEC classification, 1994-2015



Source: UN Comtrade database (via WITS), accessed 02. 09. 2016

Interestingly, since the nineties there was a sharp increase in intermediate goods (from 6.1% in 1994) up to 18.3 in 2007. This clearly shows, the growing involvement of Poland in regional cooperation within specific clusters (like automotive industry) and into global value chains. More interestingly, since the beginning of the crisis this share remained at the level slightly below 17%, which means that Poland's position within these chains was stable.[29]

Poland's export specialisation is based on machinery and transport equipment, notably motor cars or their parts. Basing on three-digit SITC nomenclature, both these groups cumulatively stood for 7.34% of total Polish export in 2015 (see table 2). Yet, the share of cars in the Polish goods sold abroad diminished from 4.69% in 2008 to 3.09% in 2015, while the share of sales of car parts moderately risen from 4.15% of total Polish export in 2008 to 4.23% in 2015.

Table 2. The biggest exported items, three-digit SITC rev. 4, 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
784 (Car parts)	4.15%	4.00%	4.13%	4.08%	3.82%	3.95%	4.01%	4.23%
781 (Cars)	4.69%	5.17%	4.29%	3.71%	3.15%	2.96%	2.91%	3.09%
821 (Furniture)	2.74%	2.92%	2.72%	2.70%	2.66%	2.74%	2.96%	3.02%
764 (Telecommunications equipment)	3.01%	2.93%	3.22%	2.23%	2.65%	3.00%	3.13%	3.02%
333 (Petroleum oils)	3.89%	2.95%	3.71%	4.57%	5.33%	4.49%	4.06%	2.59%

Source: UN Comtrade database (via WITS), accessed 29. 09. 2016

Furniture remained a strong selling group during the entire crisis, and it even became increased in importance over time. While in 2008, furniture stood for 2.74% of total Polish export, in 2015 it risen to 3.02%. The share of telecommunication equipment fluctuated around 3% during the crisis, reaching from 2.7% (minimum) in 2011 up to 3.22% (maximum) in 2010. The fifth biggest exporting group was petroleum oils, which lost its share in 2015 to 2.59%, while it stood for even 4.57% in 2011.

The analysis of more detailed data (five-digit SITC rev. 4 nomenclature) brought relatively similar conclusions. The biggest product group in Polish export was "other parts and accessories of the motor vehicles (…)" (SITC code 78439) that in 2015 gave 3.92% of total export. Poland also had a comparative advantage in selling items within

[29] This study is thus different to a Czarny E. et al. (2016) research, conclusions of which stated that the final products were crowded out by the intermediaries. The discrepancy derives from different datasets and the fact, that the authors motivated this hypothesis with providing RCA for specific intermediaries (i.e. parts of turbo-jets), while in this study the conclusion bases on analysis of raw data of all products. For comparison see: Czarny E. et al. (2016), *How Polish is Export from Poland?*, Preliminary Version presented at European Trade Study Group in Helsinki, September 2016.

this product group, witnessing RCA[30] value 2.43 in 2015 (which is general stable during the crisis). This also refers to the fourth biggest export item with SITC code 71323, which stands for "Compression-ignition internal combustion piston engines (diesel or semi-diesel engines) of a kind used for the propulsion of vehicles" and amounts to 1.57% of total export in 2015. The share of this group has, however, decreased during the crisis almost by half. In 2008 it amounted to almost 3% of the Polish exports. This also refers to RCA for this category: in 2015 the index amounted to 5.42, which points to Poland's comparative advantage in producing such engines, but over this advantage decreased (from RCA equal to 8.18 in 2008).

Another significant (but smaller by a half of product group 78439) group is "other vessels for the transport of goods (including vessels for the transport of both passengers and goods)" meaning the ships and floating structures (code 79327), amounting to 1.89% of total export. Poland has also a revealed comparative advantage in producing this goods, as RCA for this item reached 4.39 in 2015 and it substantially improved since the beginning of the crisis (2.24 in 2008).

Also the technologically advanced medicaments have become increasingly important export category during the crisis. A product group with code 54293, which stands for "medicaments, n. e. s., put up in measured doses or in forms or packings for retail sale" was the third biggest export item in 2015 (in 2008 it was 15th). Yet, Poland is still not a significant producer of pharmaceuticals as the RCA for this category amounts only to 0.68 in 2015 (but it improved since the beginning of the crisis – from RCA equalled to 0.38 in 2008).

Poland still remains strong exporter of furniture, which is witnessed by a fifth biggest spending category, "parts of seats (other than for medical purposes or for i.e. barbers), whether or not convertible into beds" (SITC 82119) that stands for 1.46% of total export (and this share is persistent during the crisis). Poland has a comparative advantage in exporting this commodity, with RCA at the level of 5.75 in 2015. During the crisis this comparative advantage has however weakened over time. For comparison in 2008 this

[30] Revealed comparative advantage was calculated as follows: $RCA_a = \frac{x_a^{PL} / X^{PL}}{x_a^{W} / X^{W}}$, where: x_a^{PL} denotes for Poland's export in commodity a; X^{PL} denotes for Poland's total export; x_a^{W} denotes for world's trade in commodity a; x^{W} denoted for total world's trade.

index amounted to 6.65. This weakening of RCA is rather positive, as this points to the gradual replacement of the commodities with lower technology intensity is with the ones of with higher technology intensity.

Table 3. The biggest exported items, five-digit SITC rev. 4, 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
78439 (car parts)	3.58%	4.02%	3.99%	3.65%	3.51%	3.48%	3.66%	3.92%
79327 (ships)	1.15%	1.35%	1.14%	1.43%	1.27%	1.63%	1.43%	1.89%
54293 (medicaments)	0.99%	1.33%	1.55%	1.30%	1.32%	1.54%	1.76%	1.65%
71323 (engines)	2.97%	2.46%	2.38%	2.51%	2.00%	1.87%	1.77%	1.57%
82119 (parts of seats)	1.48%	1.58%	1.48%	1.55%	1.46%	1.34%	1.40%	1.46%

Source: UN Comtrade database (via WITS), accessed 29.09.2016

Regarding the commodities in which Poland has the biggest comparative advantage, surprisingly none of them was main exported good. Also, during the crisis there was a shift towards products with highest comparative advantage in Poland. While in 2008, the products with the biggest RCA values were: "other coal" (SITC code 32122), possibly lignite, that noted RCA value 30.4; "swivel seat with variable height adjustment" (code 82115) used in the automotive industry with RCA reaching 28.1; "artificial monofilament", that is a yarn (code 65177) with RCA reaching 25.1; "safety razor blades" (code 69635) with RCA at the level of 23.5 and "clothes drying machines" (code 77512). Neither of these goods (apart from to some extent clothes drying machines) were technology intensive. In 2015, only two of these commodities remained in the group of goods with highest comparative advantage: "other coal" (with decreased RCA to 25 in 2015, but with significantly lower RCA below 10 during 2010-2014) and "swivel seat with variable height adjustment" (with RCA reaching 22.5).

During the crisis, a slight improvement took place towards more technology intensive goods in export, by appearing a new product group with the biggest comparative advantage. This product group – "refrigerated vessels (ships other than tankers)" that have a code 79326 (RCA in 2008 amounted to 14.9) gained the highest comparative advantage in 2015 (RCA equaled to 40.2). Additionally, this commodity group was characterized with a highest RCA increase in 2008-2015 – by 25.32 points. The other new group with the highest RCA value in 2015 was "high tenacity yarn with viscose rayon" (code 65173) that increased to 21.1 from 14.2 in 2008. The group with the fifth biggest RCA was "windows, French windows and their frames" (code 63531), that in 2008 the index reached 15.5, while in 2015 it reached 19.7.

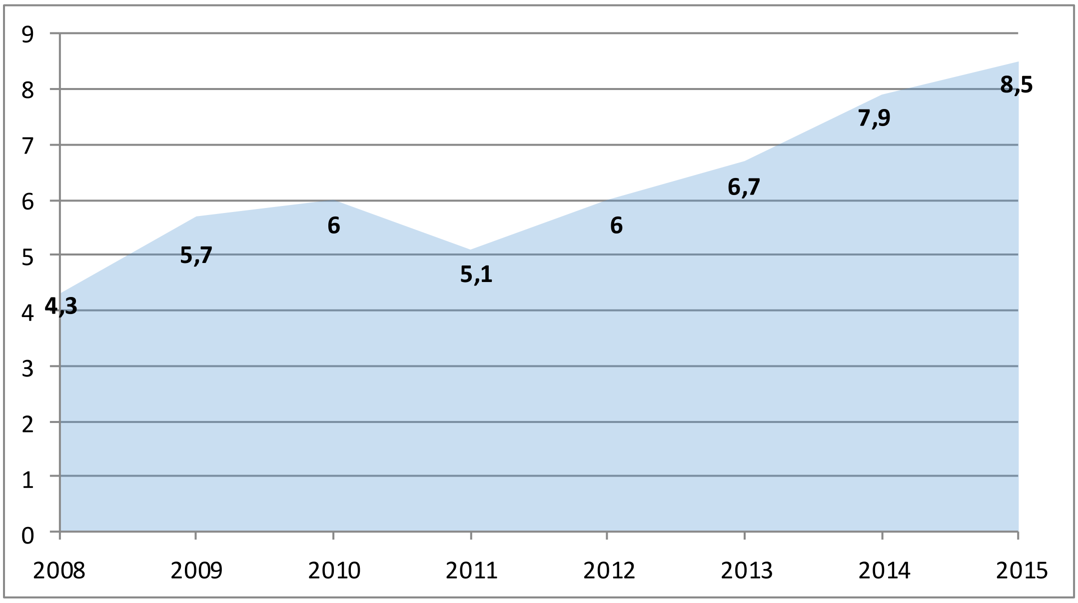
Table 4. Commodities with the highest RCA, five-digit SITC rev. 4, 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
79326 (refrigerated ships)	14.9	6.2	5.9	2.5	48.0	24.9	22.1	40.2
32122 (other coal)	30.4	25.8	8.0	4.0	3.8	5.1	4.2	25.0
82115 (swivel seats)	28.1	29.9	30.5	28.0	24.8	23.8	23.6	22.5
65173 (artificial yarn)	14.2	10.1	12.5	22.5	25.9	22.2	21.6	21.1
63531 (windows)	15.5	16.1	19.1	19.9	20.5	20.4	19.1	19.7

Source: UN Comtrade database (via WITS), accessed 29.09.2016

The other empirical evidence shows, that since the beginning of the crisis, there is a sharp rise in exports of high-tech products. While in 2008, a share of technologically advanced goods[31] in total export amounted to 4.3% (see: figure 5), compared to the EU-27 similar share amounted to 15.4%. The only year that turned the rising trend was 2011, when the high-tech share dropped to 5.1%. Afterwards the share started rising again, and in 2015 amounted to 8.5% of total export.

Figure 5. High tech products in Polish export, in % of total export, 2008-2015



Source: Eurostat, high-tech exports, basing on SITC rev.4; code: tin00140

[31] The group of high tech products is defined by Eurostat services with SITC Rev.4 and consists of: Aerospace, Computers-office machines, Electronics-telecommunications, Pharmacy, Scientific instruments, Electrical machinery, Chemistry, Non-electrical machinery, Armament. See: http://ec.europa.eu/eurostat/tgm/web/table/description.jsp (accessed 30. 09. 2015).

To put together the conclusions from this evidence, there is a slight but stable improvement in technology intensity of goods exported from Poland. Yet, still there is no proof, that there is causal link between Poland's trade strategy and it requires further investigation to clarify this relation.

A possible effect of GVCs on export pattern?

As noted in the previous parts of this paper, Poland's export performance was improving since 2011. Possibly this is not the effect of the government pro-export strategy, but rather a consequence of long-lasting inflow of foreign capital. Poland was a country with high need for capital in the EU, which was demonstrated by a continuous negative net international investment position reaching -62.9% of GDP in 2015 (in 2014 reaching even -69.1% of GDP). Foreign investment located in production had substantial influence on export.

This impact of TNCs on export patterns is clear from the destination of Polish export. EU remains the main market, despite the government efforts to diversify foreign sales of goods produced in Poland. The TNCs – mostly risk-avoiders – prefer a mix of stabilisation and efficiency within the global value chains which they constitute. Moreover, for the investors proximity and the lack of trade barriers with the Western European markets combined with low local costs were the advantages to locate production in Poland. Because of this, the government efforts to increase shares of the other markets is inefficient, as these efforts are designed only for domestic firms. But not even they are fully responsive to government plans.

Poland's participation in GVCs, measured by the OECD was at the level of 48% in 2009[32], and it was also visible in context of structure of export. A share of semi-finished products (used further in production process) in exported goods remained relatively stable during the crisis and exceeded 16% of total sales.

[32] *Global Value Chains: Poland*, a complimentary publication to "*Interconnected Economies: Benefiting from Global Value Chains*", OECD, May 2013 http://www.oecd.org/sti/ind/GVCs%20-%20POLAND.pdf

Conclusions

The collected data in this paper shows slight changes in Poland's export patterns. Apart from a rise of export share in GDP, the commodity structure moderately evolved during the crisis towards products with more technology intensity.

Despite Poland's government strategies on supporting the domestic exporters, there is little evidence, that they could influence trade patterns during the crisis. This mixed result is a consequence of the growing participation of Poland in the global supply chains. Europe, notably the EU as a stable market, remained the main export destination. Africa and North America gained importance as destination markets, which was in line with assumptions of the trade promotion strategies including the geographic diversification of the Polish export.

On the country-level data, the evidence showed a growth of export shares only in selected priority markets. The mixed results reflected the aggravation of economic and political problems of the destination countries that did not increased their share in total Polish exports. But it also pointed to the low effectiveness of the strategies, caused by inertia or inefficient allocation of resources (too strong dispersion of units supporting trade and little coordination of activities, too little flow of information). In 2016, a new strategy to support Polish export was released and was designed to address the shortcomings, yet the more data are required to assess the possible results.

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