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**THEORETICAL AND EMPIRICAL ANALYSIS  
OF POLISH EXPORTS OF SERVICES  
DURING GREAT TRADE COLLAPSE.  
SURVEY OF BEHAVIOURAL PATTERNS  
AMONG MAIN CATEGORIES OF SERVICES**

**Introduction**

The aim of the article is to describe and interpret some changes in value of Polish exports of services during recessionary conditions of the late international crisis and one of its major derivatives – the Great Trade Collapse. Changes in Poland's outward-bound trade in services between 2007 and 2009 are compiled in juxtaposition with data concerning analogous export flows of products. In addition to this, Polish exports are compared with world trends in order to determine Polish pattern of international activity. The final part of the article comprises a considerable set of explanations for dynamics of particular service categories. Conclusions are based on simple statistical inference.

Such analyses are crucial in order to fully understand the mechanisms of international trade's reactions to macroeconomic shocks. Obtaining knowledge on those mechanisms would in turn help to understand crises and prepare better for those, that are likely to occur in the future. Therefore the authors feel that the subject undertaken in their work is an important field of economic studies.

## 1. Great Trade Collapse – an outline of the problem

Among the consequences of the 2008 crisis one was particularly important for international trade flows – it was the Great Trade Collapse (GTC). The essence of this phenomenon was that trade flows of goods seemed to react more sensitively to crisis than other main macroeconomic indicators, i.e. GDP. In literature one could find a variety of possible explanations of this fact<sup>1</sup>, such as: structural factors, vertical integration of production chains, deterioration of finance accessibility or even protectionism escalation.

Compositional explanation, which occurs to have the greatest number of adherents among researchers, refers to the fact that trade flows differ in structure from the world's GDP. Global production incorporates large shares of basic goods which often are not subjects of international trade. Exports and imports focus on durable consumer goods. These could be described as postponeable, as their purchase could be easily transferred in time, especially during crisis periods. Because of this effect trade is ultrasensitive to crisis.<sup>2</sup> Another aspect of the structural explanations is the problem of inventory. Exporting companies need to keep greater reserves of semi-finished goods and materials in order to remain flexible. This means, that trade in materials and unfinished goods is as important as trade in final products. When demand on consumer goods falls, not only does trade in final goods suffer, but trade in materials as well and so the decrease multiplies.<sup>3</sup>

As for vertical integration, the substance of the matter is that many goods are now produced in vertically integrated international production chains. This means that obtaining one final product needs several international trade flows, which are all equally affected by falling demand for the final goods. Moreover, in each

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<sup>1</sup> A more detailed cumulative catalogue of these explanations can be found in: P. Gabrielczak, T. Serwach, *Załamanie światowych obrotów handlowych na przełomie 2008 i 2009 roku – przegląd potencjalnych przyczyn*, „Ekonomia Międzynarodowa, Zeszyty Naukowe SKN TIAL” 2010, No. 1 p. 50–66.

<sup>2</sup> Compare with: A. Levchenko, L. Lewis, L. Tesar, *The Collapse of International Trade during 2008–2009 Crisis: in Search of the Smoking Gun*, NBER Working Paper No. 16006, Cambridge 2010; R. Baldwin, D. Taglioni, *The Great Trade Collapse and Trade Imbalances*, in: *The Great Trade Collapse: Causes, Consequences, and Prospects*, ed. R. Baldwin, Centre for Economic Policy Research (CEPR), London 2009, p. 47–56.

<sup>3</sup> G. Alessandria, J. Kaboski, V. Midrigan, *The Great Trade Collapse of 2008–09: An Inventory Adjustment?*, NBER Working Paper No. 16059, Cambridge 2010.

element of the chain, except for the first and the last ones, decrease in demand induces decreases in both: exports and imports.<sup>4</sup>

Financial explanation arose from an observation that sectors normally enjoying a wider access to external finance (usually those would just be exporting branches) were most affected by crisis, thus a former competitive advantage turned into a morbid factor.<sup>5</sup> Companies, now unable to support their liquidity, are forced to increase prices, which may push them off foreign markets due to inability to cope with heightened transactional costs of export. Furthermore, international activities, opposed to productive stages, are mostly conducted by companies from developed countries with broad financial markets and greater dependence on financial services, which additionally contributes to trade's financial sensitivity.<sup>6</sup>

Theoretically, the most obvious explanation for GTC should be protectionism. However, governments quickly realised that protection measures could lengthen the crisis and that it would be wiser to focus on monetary and fiscal policies rather than withstand against the WTO system. Economists are generally unanimous that protectionism was the least important (if at all) reason for the international trade's sudden drop.<sup>7</sup>

## **2. Polish exports of services in comparison to the world exports of services and Polish exports of products**

According to the authors' previous research<sup>8</sup>, Polish export of goods was relatively resistant to the GTC phenomenon. Of course, it dropped in 2009 by

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<sup>4</sup> R. Baldwin, S. Evenett, *Introduction and Recommendations for the G20*, in: *The Collapse of Global Trade, Murky Protectionism, and the Crisis: Recommendations for the G20*, ed. R. Baldwin, S. Evenett, CEPR, London 2009, p. 1–9.

<sup>5</sup> J. C. Bricongne, L. Fontagné, G. Gaulier, D. Taglioni, V. Vicard, *Firms and the Global Crisis: French Exports in the Turmoil*, European Central Bank Working Paper No. 1245, Frankfurt am Main 2010.

<sup>6</sup> M. Haddad, A. Harrison, C. Hausman, *Decomposing the Great Trade Collapse: Products, Prices, and Quantities in the 2008–2009 Crisis*, NBER Working Paper No. 16253, Cambridge 2010.

<sup>7</sup> E. Gamberoni, R. Newfarmer, *Trade Protection: Incipient But Worrisome Trends*, in: *The Collapse...*, p. 49–53; C. Henn, B. McDonald, *Avoiding Protectionism*, „Finance and Development”, 2010 March, p. 20–22.

<sup>8</sup> P. Gabrićczak, T. Serwach, *Wielkie załamanie handlu a eksport Polski do krajów Unii Europejskiej*, in: *Ekonomia i zarządzanie w teorii i praktyce*, Wydawnictwo Uniwersytetu Łódzkiego, Łódź 2011.

17.47% (y/y), but the stability of Polish international activity consists largely in stiff parameters explaining the reaction of Polish exports to particular European countries depending on those countries' GDP and distance from Poland (trade flows were approximated via gravity equation model). In other words, although a significant decrease could have been observed, it had a strictly macroeconomic basis – it was in accordance with Poland's partners' GDP dynamics. The aim of the research is to determine whether Polish exports of services were similarly affected by crisis.

As one can notice in Table 1, dynamics of both, Polish product and services export trade flows, were not significantly dissimilar. Therefore it seems authorized to induce product-trade-based conclusions on Polish services exports in terms of their stable relation with basic macroeconomic fundamentals.

Table 1

Dynamics of Polish exports of products and services during the Great Trade Collapse

	Exports dynamics		
	2008/2007	2009/2008	2009/2007
Total products (%)	15.37	-17.47	-2.43
Total services (%)	15.81	-14.23	-0.34

Source: International Trade Centre database (data of access: 1 June 2011).

As regards Polish exports of services against world trends, one should consider structural composition of services flowing outward from Poland and other economies divided in two groups: major world economies, and economies of Central European countries, similar to Poland. In order to do so, one should get acquainted with the data presented in Table 2.

In general, a clear pattern of structural division may be observed. Most developed countries usually have higher shares of exports of financial and insurance services, whereas transitional countries of Central Europe are dominant in terms of transportation services. Poland seems to be fully coherent with that sectionalisation and can be presented as a typical Central Eastern European country.

Table 2

Shares of main kinds of services in 2008 exports of selected national economies (%)

	Transportation services	Travel services	Finance and insurance
Central European economies (%)			
Poland	30.9	33.2	1.6
Czech Republic	28.1	34.8	0.8
Slovak Republic	34.5	30.7	2.4
Hungary	20.0	30.3	1.3
Lithuania	59.6	28.2	1.1
Major world economies (%)			
Germany	24.4	16.6	5.4
France	25.1	34.4	1.2
United Kingdom	14.0	12.8	24.1
USA	17.5	26.0	11.6
Japan	31.9	7.4	3.7

Source: WTO Statistics Database (date of access: 1.06.2011).

### 3. A detailed view of Poland's exports of services during the crisis

Polish exports of services experienced a significant downturn during the 2008–2009 period. Exports of 2009 was 14.2% below the level from the previous year. This sudden and severe drop in exports of services is almost perfectly analogous with the decrease recorded in Polish exports of manufactures as shown in Table 1.

Having looked at the disaggregated data, one may observe variation in behavior of exports of particular services. It seems plausible to explain this fact by combination of base effect and heterogeneity in sensitivity of different services to factors being fundamental causes of GTC.

Most researchers claim that structural factor was the most important reason for GTC due to consumers' opportunity to postpone purchase of some goods. Applying this reasoning to Polish exports of services one may explain sudden drop in exports of travel (19% decline in 2009 y/y), personal, cultural and recreational services (28%) as well as construction services (17.5%). Declining incomes forced consumers to postpone purchases of services which satisfy more sophisticated needs like entertainment or home building. Reduced profits (or even losses)

in conjunction with increasing uncertainty obscured investment environment contributing to lower business demand for construction services. All these services added up to 43% of Polish services exports in 2007, hence declining demand caused downward shift of total exports of services.

One important feature of Polish exports of services during the turbulent crisis period was relative stability of structure of this trade flow. Using structure stability index one may find that structures of Polish exports in services in periods preceding and following the GTC alike, namely in 2007 and 2009, were almost perfectly matched, as the value of the aforementioned index exceeded 0.9. This suggests that the influence of crisis on Polish exports of services was almost strictly quantitative and no compositional transformations of outward trade were observed.

Although the structural factor is important in explaining GTC in services, it does not explain the whole phenomenon. Some researchers attributed decline in trade in manufactures to international fragmentation of production. Reduced demand on final goods contributed to adjustments along the whole supply chain. Bearing in mind the differences in measurement of trade and GDP (gross and value added measurement, respectively) one may consider vertically integrated international supply chains as the reason for excessive volatility of trade volume compared to GDP.

Interconnectedness of nations via these chains also increases volatility in trade in services. It can be especially observed in case of trade in transportation services – all adjustments caused by decline in demand on final goods lead to decreased demand for transportation since there is no need for movement of raw materials, components etc. Polish plants are important elements of European supply chains – both dynamics of FDI inflow and structure of Polish exports (components and simple materials constitute a sound part of exports as indicated in Table 3) demonstrate involvement of Poland in international fragmentation of production. That is why Poland is dependent on shifts in global final demand. In this context volatility of trade in transportation services seems obvious. Therefore, the supply-chains-based GTC had an adverse impact on Polish export of transportation services – it declined almost by 17% on a year-to-year basis.

Another sector potentially sensitive to changes in final demand is insurance. Lower consumer and business spending resulted not only in decline in Polish exports of transportation services but also in decline in insurance services. Adjustments along supply chains typically reduced the need to insure the shipments or even vehicles. Some of these insurance transactions could have been organized

by Polish financial institutions (or Polish branches of foreign institutions). Lower number of operations also decreased the need to insure transactions in case of contractual frictions. However, it may be reasonable to consider the decline in Polish exports of insurance services as a typically financial phenomenon. On the supply side, financial institutions were more risk-averse and took more conservative approach towards new contracts. Needless to say that this explanation can be only applied to general decline in supply of insurance, not to exports supply. On the demand side, customers and businesses were more risk-averse too, hence they avoided risky operations leading to need for transmission of risk. Other factors like increased home bias effect in insurance (tendency of customers to insure in domestic institutions) or lower value of insured objects (especially mortgage) also played an important role in declining Polish exports of insurance services. That category of services was hit the hardest – its exports declined by almost 80% in 2009 compared to the previous year. Other financial services dropped by 17% reflecting financial character of the recent crisis.

Table 3

## Main objects of Polish exports into EU

Product category	Share in Polish exports to EU (%)
2008	
Machinery and electrical equipment	25.1
Transportation equipment	16.3
Common materials and their products	13.1
Miscellaneous industrial products	6.5
Rubber and plastics	6.2
2009	
Machinery and electrical equipment	26.2
Transportation equipment	18.0
Common materials and their products	9.8
Miscellaneous industrial products	6.5
Rubber and plastics	6.2

Source: Rocznik handlu zagranicznego, GUS, Warszawa 2010.

Among potential causes of GTC protectionism is seen to be the least important. Many reasons contributed to avoidance of the surge in protection of domestic industries. It seems that the only significant way governments affected

international transactions was via direct support of certain businesses and domestic procurement. There is no reason to think that the case of trade in services was different (although measurement of barriers in this kind of trade is difficult). Increased tendency to support domestic companies during government procurement and especially low value of exports in 2008 resulted in 2009 in 7.8% decline in Polish exports of services connected with government procurement.

Two other features of Polish exports of services are worth stressing. The first one is relatively stable exports of IT services (modest decline in 2009) and communications services (maintained – although low – growth in 2009). Potential reasons may include tendency of foreign firms to gain competitive edge (via investment in innovative equipment and services) in the period of increased competition and constant technological progress (resulting in necessity to invest into new equipment and software even during crisis).

Another finding which raises the need for detailed explanation is severe drop (53% y/y) in exports of royalties and license fees. Base effect is not the whole explanation since other categories which recorded even lower values in 2008 experienced less dramatic decline in 2009. Possible explanations may include the role of FDI. In 2009 value of Polish FDI increased by almost 25% reaching 3.75 bln USD<sup>9a</sup>. Increased FDI activity could have reduced the tendency to use other modes of internationalization like joint-ventures or subcontracting with direct technology transfer based on license agreements. Because of internalization of certain key operations FDI could be seen as the best mode in the period of increased risk. It is also worth stressing that the decline in 2009 completely removed the growth from 2008 (105% y/y) leaving the value of Polish exports of royalties and license fees at the pre-crisis level.

## **Conclusion**

Exposed to recessional conditions, Polish trade in services reacted similarly to trade in products. The comparison of crisis-led changes in export flows of products and services proves that there is arguably no significant difference in elasticity levels of both considered values.

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<sup>9</sup> For more detailed data and information see: *Polskie inwestycje bezpośrednie w 2009 roku*, Dział Analiz i Prognoz Ministerstwa Gospodarki, Warszawa 2011.



Moreover, just like in case of exports of products, no dramatic compositional shift of exported services was noted. Export structure remained unchanged in over 90% during the GTC period and at all times it was typical for Central European countries, with relatively vestigial shares of financial and insurance sector and clearly noticeable domination of transportation and travel services (contributing to over 64% of Polish exports of services).

A majority of services on offer in Polish exports is strictly connected with business and international trade in goods. Transportation, IT and communications, financial and other business services are all very sensitive to changes in international flows, especially when a country is strongly engaged into vertically integrated production chains, which is a fact in case of Poland. That is why a downfall in Polish exports of services in 2008 should be in the authors' opinion mainly explained by compositional factors.

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**TEORETYCZNA I EMPIRYCZNA ANALIZA POLSKIEGO EKSPORTU  
USŁUG PODCZAS WIELKIEGO ZAŁAMANIA HANDLU.  
BADANIE WZORCÓW ZACHWAŃ  
W GŁÓWNYCH KATEGORIACH USŁUGOWYCH**

**Streszczenie**

Artykuł przedstawia zmiany w polskim eksporcie usług w odniesieniu do kryzysu światowego i zjawiska wielkiego załamania handlu. Jako tło dla dalszych rozważań zaprezentowane zostały główne wyjaśnienia teoretyczne wysokiej wrażliwości handlu międzynarodowego na zmiany fundamentalnych wielkości makroekonomicznych. Następnie dokonano analizy ewolucji struktury eksportu usług w trakcie kryzysu. W dalszej kolejności zbadano podobieństwo reakcji handlu usługami i handlu towarami. W artykule zawarto również badanie zmienności eksportu poszczególnych kategorii usług. Wskazano potencjalne przyczyny spadku eksportu różnych grup usług, wykazując współzależności między nimi.

*Tłumaczenie Piotr Gabrielczyk i Tomasz Serwach*