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INSTITUTE OF GEOGRAPHY AND SPATIAL ORGANIZATION
POLISH ACADEMY OF SCIENCES
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# SPATIAL DIFFERENTIATION OF POLISH EXPORT LINKAGES

**Barbara Szejgiec • Tomasz Komornicki**

Institute of Geography and Spatial Organization
Polish Academy of Sciences
Twarda 51/55, 05-818 Warsaw: Poland
e-mails: b.szejgiec@twarda.pan.pl • t.komorn@twarda.pan.pl

## Abstract

The study presents a brief review of Polish regions' participation in the global economy in 2011 based on export linkages at the local level (LAU 1). It identifies both the key actors in the globalisation processes within the country and the types of territories that share common trends in geographic and product export structures. The paper deals with a delimitation of areas of export concentration. A total of 23 areas have been identified accounting for nearly 60% of Polish exports. Both the economic strength of the regions as reflected in their respective figures and the long-established position of industry in the national economy resulted in a wide range of areas discussed here.

## Key words

export linkages • geographic and export product diversification • areas of export concentration • geography of trade in Poland

The European economy, including Poland, is a relatively closed economy even though globalisation has considerably accelerated the process of trade in goods and services in recent years. However, despite limited relations with the rest of the world, many European regions are characterised by a high level of intra-European trade due to internal economic integration (ESPON 2013). From this perspective, regions in particular (as well as transnational firms) gradually become the main players in economic development in contrast to nation states whose role is no longer vital in the globalisation process (ESPON 2012). Thus, in the light of recent scientific studies of international economic relations at regional level, as well as in this study, regions are treated as small, open economies (e.g. Llop & Manresa 2007; Scott & Storper 2007; Umiński 2012).

Data on exports at local level (LAU 1) in 2011 obtained from the Ministry of Finance and including combined nomenclature (CN digit-2) and country names in the breakdown variables were utilised in this study. There are some constraints concerning the database. The most important restrictions relate to the headquarters method of registering enterprises and presenting data irrespective of whether export is undertaken directly by the producers, by intermediaries, or by both kinds of businesses. However, these limitations do not affect statistical analysis in the study of the spatial distribution of international trade as well as the geography of and regional product specialisation in exports.

Changing the economic system from a centrally planned economy towards a market economy had a significant impact in the sphere of foreign trade in Poland, in the organisational structures, the range of products exported, the intensity of exports and trade linkages. Currently the whole area of Poland is characterised by an uneven regional distribution of export activity. This means that major economic centres (metropolitan areas, large industrial districts) are the key actors in international cooperation (Komornicki 2003). The globalisation processes affect the intensification of international relations, causing spatial variation within the country. However the recent financial crisis is likely to increase the vulnerability of weaker or peripheral regions, changing the spatial distribution of exporting activities through the disappearance of less developed foreign relations, particularly with countries with struggling economies (Komornicki et al. 2015).

The opening of the economy to foreign capital inflow in the 1990s resulted in a growing interest of companies in obtaining access to the Polish market, firstly through investment in existing firms and then by greenfield investments (Śleszyński 2007). These processes were important for the development of foreign trade linkages due to the fact that transnational companies were interested in locating their headquarters in the highest levels of administrative-settlement hierarchy (in Warsaw and some other big cities such as Poznań, Wrocław, Katowice and Gdańsk) (Śleszyński 2007). Such a well-established structure of foreign investment is reflected in the regional export structure because entities with foreign capital account for a substantial part of international trade. Some of those which are significantly entrenched in the regional export linkage structure, particularly in medium-sized or smaller cities, dominate both in the geographic structure and commodity trade linkages (e.g. the rubber industry in Olsztyn, electronic production in Mława or the automotive industry in Bielsko-Biała).

Exports as a share of Polish GDP have increased gradually since the 1990s although many territories still have very little in the way of economic external relations (Fig. 1). Those regions, mostly peripherally located on the eastern external border of the EU, are characterised by a weak economic position based on low technology industries. Moreover, the metropolitan regions at NUTS 3 level show, in general, a diversified external trade of goods and high level of exports per capita. However, due to the substantial importance of the services sector in the regional economy of some metropolitan regions e.g. Warsaw, Krakow and Wrocław, it should be highlighted that their competitiveness is based on the trade of both goods and services.

The situation in exports varies greatly between Polish regions. The spatial distribution of export activity creates a hexagonal-shaped urban network with Trójmiasto (Tri-City), Warsaw, Krakow, the Upper Silesia conurbation, Wrocław and Poznań as its apices. This refers to the so-called central hexagon model of strong linkages among major metropolitan areas proposed in the expert study on the Polish Spatial Development Concept 2033 (Korcelli et al. 2010). Territories inside the hexagon, as well as outside it (along the borders of both eastern and western Poland), are characterised by a significantly lower value of exports in absolute terms.

Two typologies were prepared to provide information on variation in exports on a geographic and product basis in order to identify

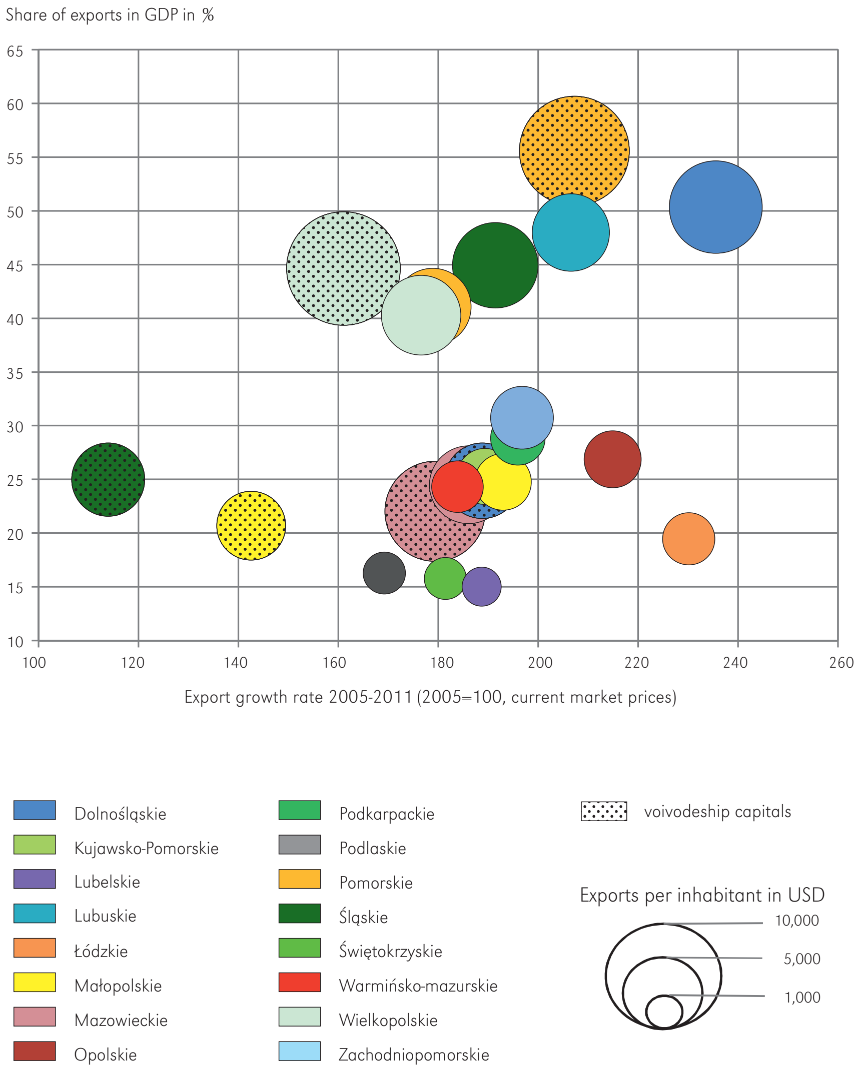


**Figure 1.** Relation between share of exports in GDP and export growth rates at NUTS 2 and NUTS 3 level in Poland

Source: based on Ministry of Finance and Central Statistical Office of Poland data.

patterns of external linkages in structures at the local territorial level (LAU 1) in Poland. We distinguished several types of territories based on the quantitative criterion of individual market share in total regional exports based on three main market zones, i.e. the EU (28 countries), the countries of the former Soviet Union (CIS), and other markets.

The main result identifies three broad types of territories:

1. Regions dominated by one market zone (>90% of main market zone in total);
2. Intermediate regions with a predominance of one market zone (50–90%);
3. Regions with a diverse geographic export structure (<50%).

Some subtypes were also developed depending on the share of the second market zone in total exports with a 20% threshold.

The typology gives a general view of existing trade patterns. Most parts of the country are dominated by trade with the countries of the European Union. In contrast to the historical relations with CIS countries, Germany is currently the leading recipient of Polish exports (which is clearly distinct in the western part of the country). The key factor enhancing trading between countries is mainly geographical proximity and the size of the market. Indications of the importance of trade with CIS countries are noticeable in the eastern part of the country (in particular that part directly neighbouring these regions). However, these relationships are weakening every year as a result of strengthening interactions with the EU or more distant markets.

Another methodology was applied to recognise regional trends in the diversification of export products. Two main types were identified:

1. Regions with high product concentration (>50% one of nine product groups), including 1a) regions with products mostly exported from one industry and 1b) regions with mixed exported products with a predominance of one industry;

2. Regions with a diversified product export structure.

The second typology relies on the indicator concerning industry structure distinguishing the most important industry sectors in Polish regional economies for defining subtypes.

The majority of local economies are dominated by products of the electro-engineering industry, ranging from low technology to technologically advanced goods. Some regions specialise in exporting goods from industries based on natural resources such as the agrifood industry (mostly central and eastern Poland) or the furniture industry. LAU 1 regions constitute a separate group in which specialisation of export products results from the strategic location of large enterprises mentioned above (e.g. petroleum industry in Płock or chemical industry in Puławy).

The delimitation of the areas of export concentration is based on the method used by Komornicki (2004). The area of export concentration is a spatially continuous area with a higher-than-average significance of exports to the local economy. LAU 1 units identified as areas of export concentration fulfil the following conditions: a value of exports per inhabitant as well as a ratio of the value of exports to the value of industrial output sold higher than the national average, accounting for more than 1% of total Polish exports and characterised by territorial continuity.

The method allowed the authors to identify 23 areas of export concentration which are responsible for nearly 60% of the country's exports. Generally the areas of export concentration are characterised by a high export dynamics and degree of product specialisation (Tab. 1). However, there is no clear trend in the concentration of geographical diversification of export linkages, but it should be underlined that the areas so defined tend to prefer countries geographically and culturally close to the Polish market, and in particular Germany.

The overall significance and concentration of exports is higher in western Poland. As compared to research carried out at the beginning of the twenty-first century, both the number and the spatial extent of export centres have increased. The spatial structure of export centres have also undergone changes, in particular the position of the Upper Silesian-Krakow region was again reinforced.

The areas of export concentration are mostly associated with industrial production carried out in the region, with exceptions: a) capital city export area, where the international enterprise headquarters mentioned above play an important role; b) an area of export concentration in eastern Poland (the Biała Podlaska region), which has formed in recent years but which is still small compared to other regions and where exports are based to a great extent on production from outside the region.

**Table 1.** Characteristic features of areas of export concentration in Poland in 2011

| Areas of export concentration | Exports per capita [thous. USD] | Exports in relation to sold industrial output [%] | Exports growth rate [%] | Herfindahl-Hirschman index* for | | Main trading partner | |
|---|---|---|---|---|---|---|---|
| | | | | product export structure | geographic export structure | country name | [%] |
| Wrocław | 11.0 | ** | 277.7 | 0.2844 | 0.2887 | Germany | 28.4 |
| Police-Goleniów | 15.6 | 73.9 | 252.3 | 0.4862 | 0.2200 | Germany | 22.4 |
| Gorzów Wielkopolski-Słubice | 10.5 | 72.2 | 253.2 | 0.3363 | 0.4586 | Germany | 49.6 |
| Żary | 6.4 | 56.2 | 141.9 | 0.3062 | 0.3895 | Germany | 43.2 |
| Poznań | 9.1 | 56.6 | 181.5 | 0.3406 | 0.3346 | Germany | 35.8 |
| Krotoszyn | 6.0 | 67.3 | 200.6 | 0.6157 | 0.2663 | Germany | 22.0 |
| Opole | 4.6 | 46.5 | 181.7 | 0.1982 | 0.3374 | Germany | 36.9 |
| Kędzierzyn-Koźle-Racibórz | 6.1 | 55.2 | 189.4 | 0.2929 | 0.2355 | Germany | 26.0 |
| Bielsko-Biała | 40.4 | 75.3 | 184.5 | 0.6040 | 0.3864 | Italy | 39.4 |
| Katowice | 10.3 | 32.8 | 116.5 | 0.3801 | 0.2876 | Germany | 29.1 |
| Częstochowa | 6.8 | 55.7 | 153.8 | 0.5067 | 0.3548 | Germany | 38.0 |
| West Małopolskie-Silesia | 8.7 | 45.2 | 254.6 | 0.2865 | 0.2817 | Germany | 29.3 |
| West-Podkarpackie | 6.1 | 52.8 | 187.4 | 0.2956 | 0.3426 | Germany | 37.9 |
| Puławy | 5.0 | ** | 159.1 | 0.5471 | 0.1707 | China | 15.8 |
| Biała Podlaska | 4.4 | 186.6 | 507.6 | 0.5688 | 0.4349 | The Netherlands | 46.1 |
| Grójec-Żyrardów | 6.4 | 82.5 | 242.4 | 0.2976 | 0.2724 | Germany | 23.8 |
| Warsaw | 8.4 | 48.5 | 172.8 | 0.1483 | 0.2060 | Germany | 20.4 |
| Płock | 22.2 | ** | 340.1 | 0.4534 | 0.2246 | Germany | 20.6 |
| Mława | 19.7 | ** | 172.3 | 0.9753 | 0.1898 | Spain | 15.4 |
| Olsztyn | 9.0 | 72.0 | 186.9 | 0.6578 | 0.2230 | Germany | 17.2 |
| Toruń | 4.7 | 54.8 | 191.6 | 0.2712 | 0.2145 | Germany | 18.9 |
| Kwidzyn-Tczew-Świecie | 7.8 | 44.8 | 137.3 | 0.4546 | 0.1802 | Germany | 16.7 |
| Tri-City | 11.2 | 52.6 | 209.2 | 0.5514 | 0.2634 | Norway | 27.8 |
| Poland average | 4.2 | 45.4 | 186.8 | 0.1563 | 0.2607 | Germany | 26.9 |

* The Herfindahl-Hirschman index is used to analyse the degree of market concentration of a particular industry or geographic market. The indicator is standardised, which means that a value of 1 indicates complete concentration of exports; whereas values approaching 0 identify high diversification of exports.

** Data not available due to statistical confidentiality.

Source: based on Ministry of Finance and Central Statistical Office of Poland data.

The rapid growth of these areas leads to a strengthening of the existing structure of export linkages within the country based on leading urban centres and industrial districts. The spatial distribution of areas of export concentration nevertheless differs from those traditional structures of industrial districts described in the literature due to the very different levels of international competitiveness of each industrial sector. The centre of gravity of regional export distribution is located in the west of Poland, whereas the key industrial potential is still concentrated to a greater extent in the south of the country.

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