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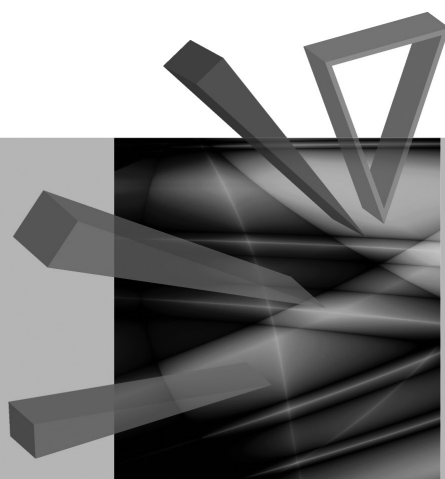
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Elżbieta Sobczak

Andrzej Raszkowski



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Contents

Introduction	9
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Part 1. Theoretical aspects of regional economy

Ryszard Brol: Innovation vs. regional development	13
Ewa Glińska, Anna Kononiuk: The concept of regional strategy of smart specialization	27
Hanna Kruk: Resilience, competitiveness and sustainable development of the region – similarities and differences	35
Andrzej Sztando: Regional innovation strategy implementation – system model covering the results of the analysis of the Polish experiences	43
Andrzej Raszkowski: Creativity in the context of regional development – selected issues	52
Yuliya Melnyk: Regional peculiarities of the global art market	62
Elżbieta Załoga, Dariusz Milewski: The impact of transport on regional development	71
Alina Kulczyk-Dynowska: Diversified spatial neighbourhood – a metropolis and a national park	79

Part 2. The results of European regional space research and analyses

Malgorzata Markowska, Danuta Strahl: Polish regions against the background of European regional space with regard to smart growth – aggregate perspective	89
Beata Bal-Domańska: Does smart growth enhance economic cohesion? An analysis for the EU regions of new and old accession countries	100
Elżbieta Sobczak: Typology of European regions vs. effects of workforce changes by the level of research and development activities intensity ...	111
Malgorzata Karczewska: Gross domestic expenditures on research and development in GDP of European Union countries – changes in trends	121
Marzena Grzesiak, Anita Richert-Kaźmierska: Educational engagement of the elderly – the experiences of selected Baltic Sea Region countries	133
Ewa Coll: The classification of EU and Eastern Partnership countries regarding economic development level – a dynamic approach	144
Anetta Waśniewska: The potential of the population in the Baltic Sea Region in the years 2001–2011	157
Alla Melnyk: Modernization of regional structural policy mechanisms in Ukraine in the process of its EU integration	169

Part 3. Selected problems of Polish regions functioning and development

Dariusz Głuszczyk: Barriers to innovation activities in industrial enterprises by Polish regions in 2004–2006 and 2008–2010	181
Piotr Hajduga: Special economic zones as stimuli to regional development during a crisis	191
Adam Przybyłowski: Sustainable transport development prerequisites in selected Polish regions	199
Mariusz E. Sokołowicz: The impact of transnational corporations' activity on regional human capital. Case study of the Łódź metropolitan area ...	210
Anna Jasińska-Biliczak: Interregional cooperation as the stimulation of proinnovation actions – the casual analysis	222
Franciszek Adameczuk: Cross-border cooperation of Lower Silesia and Saxony – current results and prospects	230
Agnieszka Barczak: Managing the production process of a group of agricultural farms of the Pomorze and Mazury Region and their economic development	240
Tomasz Dorożyński, Wojciech Urbaniak: Experiences of county employment agencies in the use of EU structural funds to promote employment. The case of the Łódź voivodeship	249
Małgorzata Golińska-Pieszynska: Contemporary innovative practices in a regional context of the Łódź region	260

Streszczenia

Część 1. Teoretyczne aspekty gospodarki regionalnej

Ryszard Broł: Innowacyjność a rozwój regionalny	26
Ewa Glińska, Anna Kononiuk: Koncepcja regionalnej strategii inteligentnej specjalizacji	34
Hanna Kruk: Rezyliencja, konkurencyjność i rozwój zrównoważony regionów – podobieństwa i różnice	42
Andrzej Sztando: Wdrażanie regionalnej strategii innowacji – model systemu stanowiący rezultat analizy polskich doświadczeń	51
Andrzej Raszkowski: Kreatywność w kontekście rozwoju regionalnego – wybrane zagadnienia	61
Yuliya Melnyk: Regionalna specyfika globalnego rynku sztuki	70
Elżbieta Załoga, Dariusz Milewski: Wpływ transport na rozwój regionalny	78
Alina Kulczyk-Dynowska: Zróżnicowane sąsiedztwo w przestrzeni – metropolie i park narodowy	86

Część 2. Rezultaty badań i analiz nad europejską przestrzenią regionalną

Małgorzata Markowska, Danuta Strahl: Polskie regiony na tle europejskiej przestrzeni regionalnej w kontekście inteligentnego rozwoju – ujęcie agregatowe	99
Beata Bal-Domańska: Czy inteligentny rozwój sprzyja spójności ekonomicznej? Analiza dla regionów państw Unii Europejskiej nowego i starego rozszerzenia	110
Elżbieta Sobczak: Typologia regionów europejskich a efekty zmian liczby pracujących według poziomu intensywności prac badawczo-rozwojowych	120
Małgorzata Karczewska: Udział nakładów na badania i rozwój w PKB krajów Unii Europejskiej – tendencje zmian	132
Marzena Grzesiak, Anita Richert-Kaźmierska: Zaangażowanie osób starszych w edukację – doświadczenia wybranych państw regionu Morza Bałtyckiego	143
Ewa Coll: Klasyfikacja państw UE i krajów Partnerstwa Wschodniego ze względu na poziom rozwoju gospodarczego – ujęcie dynamiczne	156
Anetta Waśniewska: Potencjał ludności regionu Morza Bałtyckiego w latach 2001-2011	168
Alla Melnyk: Modernizacja mechanizmów regionalnej polityki strukturalnej Ukrainy w procesie integracji z Unią Europejską	177

Część 3. Wybrane problem funkcjonowania i rozwoju polskich regionów

Dariusz Głuszczuk: Przeszkody działalności innowacyjnej przedsiębiorstw przemysłowych według regionów Polski w latach 2004–2006 i 2008–2010 .	189
Piotr Hajduga: Specjalne Strefy Ekonomiczne jako stymulator rozwoju regionalnego w dobie kryzysu	198
Adam Przybyłowski: Przesłanki zrównoważonego rozwoju transportu w wybranych polskich regionach	209
Mariusz E. Sokolowicz: Wpływ korporacji transnarodowych na rozwój kapitału ludzkiego w regionie. Przykład łódzkiego obszaru metropolitalnego	221
Anna Jasińska-Biliczak: Współpraca międzyregionalna stymulantem działań proinnowacyjnych – przykład województwa opolskiego	229
Franciszek Adamczuk: Współpraca transgraniczna Dolnego Śląska i Saksonii – aktualne wyniki i perspektywy	239
Agnieszka Barczak: Zarządzanie procesem produkcji grupy gospodarstw rolnych regionu Pomorze i Mazury z uwzględnieniem poziomu rozwoju gospodarczego	248

Tomasz Dorożyński, Wojciech Urbaniak: Doświadczenia powiatowych urzędów pracy w zakresie wykorzystywania funduszy strukturalnych UE w celu promocji zatrudnienia. Przykład województwa łódzkiego	259
Małgorzata Golińska-Pieszyńska: Współczesne praktyki innowacyjne w kontekście regionalnym w oparciu o region łódzki	267

Anetta Waśniewska

Gdynia Maritime University

THE POTENTIAL OF THE POPULATION IN THE BALTIC SEA REGION IN THE YEARS 2001–2011

Summary: The Baltic Sea Region comprises an area of approximately 1,676,024 km², which in 2011 was inhabited by 146,953,922 people. Thus 87.7 people lived in one square kilometre. The purpose of this article is a demographic analysis of selected aspects of the socio-economic situation of the population in the BSR in 2001–2011, as well as the presentation of the index of the study area potential based on the Human Development Index.

Keywords: potential, human capital, Baltic Sea Region (BSR).

1. Introduction

The concept of the potential may be expressed in various aspects. In the article, this term has been discussed in terms of the economy including the human factor. Selected elements of the socio-economic situation in the countries belong to the Baltic Sea Region 2001–2011 on the basis of the data published by EUROSTAT were presented.

The purpose of this article is to present the potential population of the Baltic Sea Region based on the available statistical data and the index of potential, whose construction was based on the Human Development Index

The following BSR countries were considered: Denmark, Estonia, Finland, Lithuania, Latvia, Germany, Poland and Sweden. The study does not include the Kaliningrad region, due to the inability to obtain data for analysis.

2. Human capital and its potential

The term “potential” refers to the various areas and spheres of life. The same concept commonly means the resource capabilities, power, generation capacity inherent in structures, machinery or equipment. Today, the term also refers to the possibilities inherent in the communities or individually in each person. Then, the potential of a single person means human capital.

The concept of human capital to economics was introduced in the mid-20th century by T.W. Schultz (Nobel Prize 1979) and G.S. Becker (Nobel Prize 1992). However, the theoretical basis relating to the concept of human capital can be discerned already in the work of W. Petty and A. Smith. Currently, the possible impact of human capital on the growth and economic development of countries is being analysed.

The concept of human capital may be analysed in a narrow definition as it relates to the level of education and in broad terms – natural ability, knowledge resources, health, education and vital energy. Human capital in a wider sense, is also professional experience, innovation, level of cultural, socio-economic activity and worldviews of every person, but also society as a whole.

Mostly in economic terms, human capital is considered as a resource of knowledge, skills, health and vital energy. It should be emphasized that these resources can be enlarged by investing in people. In microeconomics terms, human capital is characterized by stability, and the period of its life is defined and determined by the natural death of the owner or the moment of retirement (cessation of labour). In this case, the owner of human capital, as the manager who has time and specific resources (skills, experience) is trying to maximize his/her objective function, which may be usefulness or income level. Human capital is immortal (eternal) in terms of macroeconomics, because the profession does not die with the death of its representatives. In this case, one can analyse the problem of depreciation of human capital, which cannot be analysed by the human life cycle [Domański 1993, pp. 92–93].

A person is characterized by dichotomy in economic terms. On the one hand, he/she is a producer of goods and services, but on the other hand, a consumer. Therefore, the potential for people living in the area is affected by the condition and structure of the population considered, by the production capacity of the region, as well as the structure and size of the desired amount of final goods. This depends, among other things, on [Latuch 1985, pp. 300–301, Holzer 2003, pp.163]:

- the distribution of productive forces,
- principles of distribution of national income,
- the investment,
- the employment and social benefits,
- the technical and technological progress,
- the level of education,
- the quality of health care.

Numerical population change occurring in a given area depends on the size of natural increase and migration. These processes are different in terms of time and space. Also, the development of the population in numbers and their distribution is influenced by these factors [Holzer 2003, pp. 19–23]:

- natural and geographical: climate, soil type, topography, mineral and energy resources;
- socio-economic: the degree of socio-economic development, forms of social organization, the development of technology, government policy;

- demographical: population growth, migration.

The population of the country is a factor that affects the development and economic growth, and so is its potential. Then the human factor can be considered by the opportunities for economic and demographic area (see Figure 1).

The concept of the economic potential of the population is ambiguous and complex. To the economic potential belong the elementary potentials [Gazińska 2003, pp. 19–23]:

- the life potential (otherwise demographic): concerns the length of life of the individual and is associated with age, gender, place of residence, marital status, etc.;
- the physical potential: refers to the physical entity which is highly influenced by genetic factors, individual work and external factors;
- intellectual potential: referred to as intelligence, which equally affect the genetic and environmental factors, such as the ability to inherit the social and economic status of parents, home, furnishings, library, etc.;
- emotional potential: to a large extent determines the success in life, as a person characterized by high self-confidence, strong motivation, resistance to stress, diligence and perseverance in the pursuit of the goal they are able to achieve more than is consistent with their physical or intellectual potential.

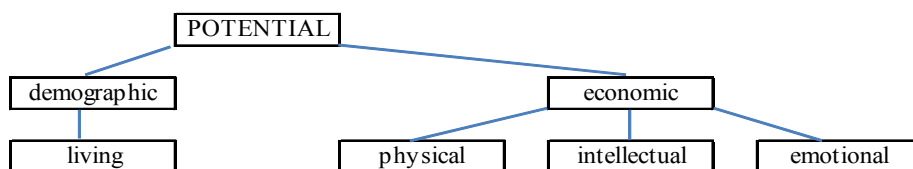


Figure 1. Assigned elementary human potential

Source: own elaboration based on [Gazińska 2003, p. 20].

Demographic potential is strongly correlated with the population of the area and the possibilities of its reproduction and development. The regions which are home to a small number of people, may have a large stock of human capital and vice versa. Countries and regions investing in labour and education resources are characterized by a more dynamic growth and achieve a higher level of national income [Gawlikowska-Hueckel 2003, p. 81].

The author of the potential demography is L. Herach, who in the 1940s suggested a method of analysis. According to this concept, individuals have a significant impact on future reproduction, participation in work or length of life that they had before them. Differences between people are significant.

Therefore, in the potential demography, each person has a certain importance corresponding to, for example, his/her age, period of employment. People of different ages have different relation to the further long life expectancy, that is, each person has a different potential in life.

The life potential of the group depends on the number of the members of this group, age structure, the average life expectancy for different generations.

Changes of the life potential can be caused by such factors as the number of births, number of deaths, the age structure of people who died, the average life expectancy for different generations, aging people, migration [Holzer 2003, p. 264].

The economic potential of the population is determined by such factors as:

- the economic age of the population,
- the share of the working age population in the total population,
- the level of education of the population.

The population living in the area can also be divided based on the age of the people. In this arrangement, the population is divided into the population in pre-, production and post-production stage. If the proportion of people of working age decreases, the available labour force will be more rationally used, for example, by: raising the retirement age, extending the employment of women, increasing the number of odd jobs, the effective management of the unemployed to work and retrain, greater use of volunteers, increasing pressure on teaching young people skills that can be used in the labour market [McRae 1996, p. 154].

The rapid development of human potential is possible in the area of a region by the inflow of educated people, who have the qualifications, experience or skills. However, the growth of the population by increasing the number of births does not provide the opportunities for development, because human resources must be first invested in (educated, provided with medical care and social security), and in the future used to improve the socio-economic development.

3. The demographic situation in the BSR

The Baltic Sea Region was inhabited by 147,144,825 people in 2001. In 2011, compared to 2001, the population decreased by 190,903 people. The population grew until 2003, after which there has been a decrease in the number of people living in that area.

The largest population decline in 2011, compared to 2001, was recorded in Germany (down by 507,938 persons), Latvia (a decrease of 289,649 persons) and in Lithuania (a decrease of 242,397 people). The increase in the number of people affected Sweden (an increase of 532,778 persons), Denmark (an increase of 202,825 people) and Finland (an increase of 194,161 people). The population in BSR is shown in Figure 2.

The most densely populated country is Germany. For one square kilometre there are about 230 people. Whereas the smallest share of the population per square kilometre occurs in Finland, where in one square kilometre live 17 people (see Figure 3).

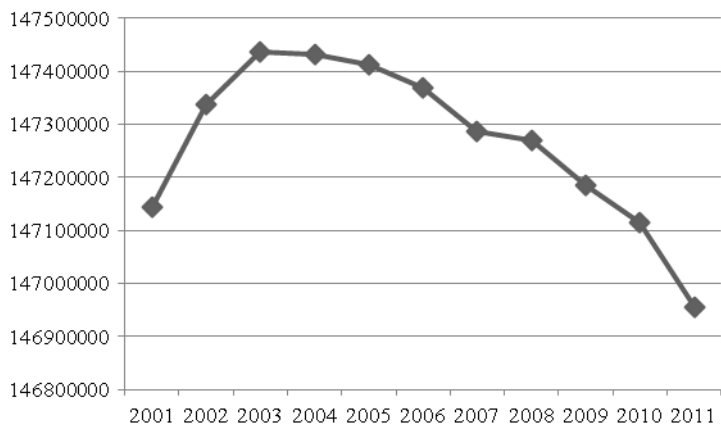


Figure 2. Number of population in 2001 to 2011 in the BSR

Source: based on EUROSTAT data.

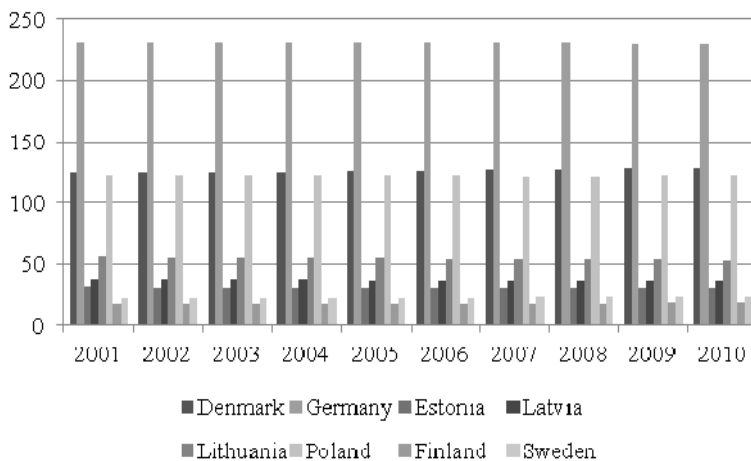


Figure 3. Population density in 2001–2010 in the BSR

Source: based on EUROSTAT data.

In the numerically analysed area women dominated (see Figure 4). The highest values of the feminization index were recorded in Latvia and Estonia, where in the analysed period, for every hundred men, there were 117 women. The lowest values were recorded in Sweden in 2011 and amounted to 100.7.

The natural increase in the BSR is presented in Figure 5. Only Denmark and Finland recorded a positive growth rate in 2001–2011. Countries such as Germany, Estonia, Latvia and Lithuania in the analysed period recorded a negative growth

rate. The highest negative rate was recorded in Latvia in 2001 (-5.7), and the largest positive value in Sweden in 2010 (2.7).

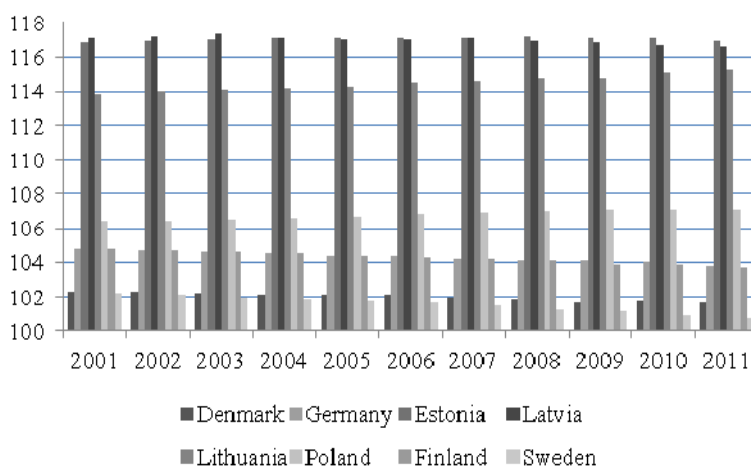


Figure 4. Women per 100 men in 2001–2010 in the BSR

Source: based on EUROSTAT data.

The negative values of the natural increase are alarming. The values of this ratio translate into the number of people living in the area affected, the BSR, and a decline in its population.

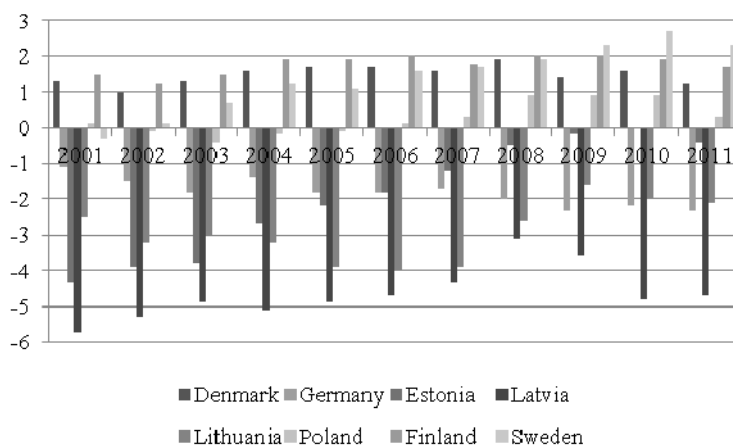


Figure 5. Natural population change in 2001–2010 in the BSR

Source: based on EUROSTAT data.

The socio-economic situation in the BSR and its potential can also provide the economic share of the population according to age groups. The declining share of the total population of pre-production age people (0–14 years), as shown in Figure 6. The largest decrease in the number of people in this age range were recorded in Lithuania, Poland and Latvia. The smallest decline in the share of the population in the pre-production occurred in Denmark.

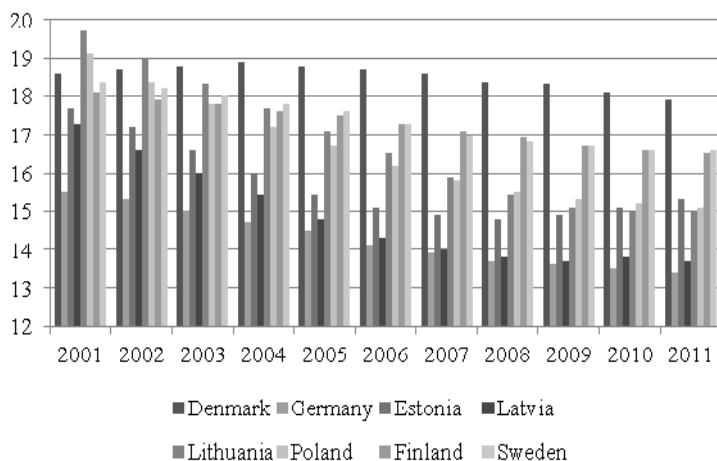


Figure 6. Share of the population aged 0–14 years in 2001 to 2011 in the BSR (%)

Source: based on EUROSTAT data.

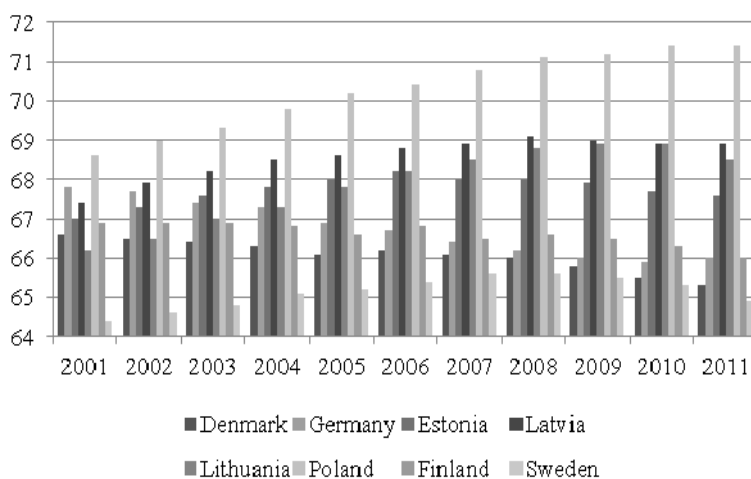


Figure 7. Share of the population aged 15–64 in 2001 to 2011 in the BSR (%)

Source: based on EUROSTAT data.

The high percentage of people of working age (15–64 years) living in Poland and in the BSR shows an increase from 68.6% in 2001 to 71.4% in 2011. Only in the three analysed countries the working age population shows a downward trend (Finland, Denmark and Germany).

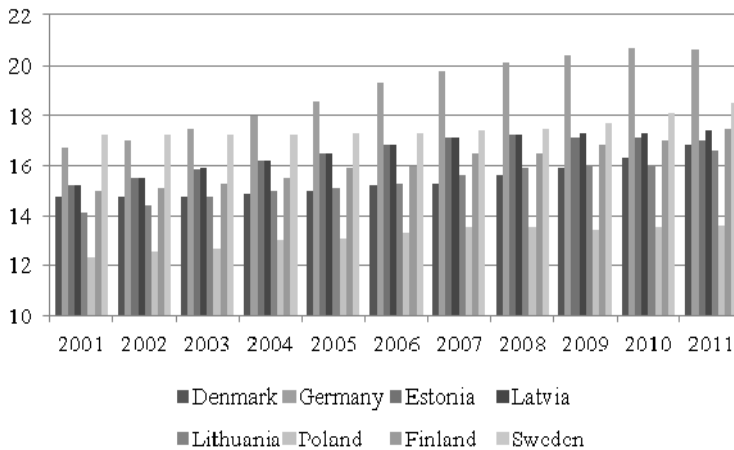


Figure 8. The share of the population aged 65 + years in 2001 to 2011 in the BSR (%)

Source: based on EUROSTAT data.

The largest population increase in the retirement age group was recorded in Germany in the given period. All countries in the BSR during the discussed period reported an increase in the percentage of people in the retirement age group. This trend is very unfavourable. There is evidence of an aging population and the increasing costs associated with the payment of benefits for the elderly. People of working age are supporting a growing number of people in the retirement age group.

4. Potential of the BSR

The demographic potential of the BSR may also involve the rate of potential, which was built based on the Human Development Index (HDI). The indicator of the potential in this case will determine the possibility of development of a country based on data collected in the area of human resources. The indicator obtained in this way is characterized by the relative simplicity of the calculations. The general form of the potential indicator for a given country in a given year can be represented by the formula:

$$H_j = \frac{1}{3} \sum_i^3 H_{ij},$$

wherein

$$H_{ij} = \frac{x_{j-\min_k \{x_{tk}\}}}{\max_k \{x_{tk}\} - \min_k \{x_{tk}\}},$$

j – the country and has a value from 1 to 8,

i – an index calculated rate,

H_{ij} – the specific value of the i -th factor achieved by the j -th country in a given period of time.

The article presents calculation using normalization with fixed parameters.

The factors included in the rate of capacity based on:

- employment rate – which represents the percentage of people employed in the total working-age population during the years between 2001 and 2011 (see Table 1),
- total population having completed at least upper secondary education – which shows the share of people aged 25–64 who have achieved at least upper secondary education or higher (see Table 2),

Table 1. Employment rate of the BSR in 2001–2011 (%)

Total	Employment rate										
geo/time	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Denmark	78.3	77.7	77.3	77.6	78.0	79.4	79.0	79.7	77.5	75.8	75.7
Germany	69.1	68.8	68.4	68.8	69.4	71.1	72.9	74.0	74.2	74.9	76.3
Estonia	67.8	69.2	70.0	70.6	72.0	75.8	76.8	77.0	69.9	66.7	70.4
Latvia	65.1	67.0	68.9	69.3	70.3	73.5	75.2	75.8	67.1	65.0	67.2
Lithuania	64.2	67.2	68.9	69.0	70.6	71.6	72.9	72.0	67.2	64.4	67.2
Poland	59.4	57.4	57.1	57.3	58.3	60.1	62.7	65.0	64.9	64.6	64.8
Finland	72.6	72.6	72.2	72.2	73.0	73.9	74.8	75.8	73.5	73.0	73.8
Sweden	78.7	78.5	77.9	77.4	78.1	78.8	80.1	80.4	78.3	78.7	80.0

Source: based on EUROSTAT data.

Table 2. Share of the population with at least secondary education in the BSR in 2001–2011 (%)

Total	Total population having completed at least upper secondary education										
geo/time	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Denmark	80.7	81.1	80.5	81.2	81.0	81.6	74.3	73.8	74.8	75.6	76.9
Germany	82.5	83.0	83.5	83.9	83.1	83.2	84.4	85.3	85.5	85.8	86.3
Estonia	87.1	87.6	88.5	88.9	89.1	88.5	89.1	88.5	88.9	89.2	88.9
Latvia	79.6	82.2	83.2	84.6	84.5	84.5	85.0	85.8	86.8	88.5	87.7
Lithuania	84.2	84.9	86.1	86.6	87.6	88.3	88.9	90.6	91.3	92.0	92.9
Poland	80.2	80.9	82.3	83.6	84.8	85.8	86.3	87.1	88.0	88.7	89.1
Finland	73.8	75.0	76.0	77.6	78.8	79.6	80.5	81.1	82.0	83.0	83.7
Sweden	80.5	81.4	82.1	82.9	83.6	78.9	79.4	80.0	80.7	81.6	82.0

Source: based on EUROSTAT data.

- proportion of population aged 25–64 – which represents the share of the working age population to the total population under the assumption of educational opportunities of at least average and/or higher education (Table 3).

Table 3. Share of the population aged 25–64 in 2001–2011 in the BSR (%)

Total	Proportion of population aged 25–64										
geo\time	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Denmark	55.3	55.4	55.3	55.3	55.1	55.0	54.7	54.3	53.8	53.3	52.8
Germany	56.5	56.3	55.9	55.6	55.2	54.9	54.7	54.6	54.6	54.6	54.8
Estonia	52.4	52.5	52.5	52.4	52.4	52.6	52.6	52.8	53.3	53.7	54.2
Latvia	53.0	53.1	53.1	53.1	53.0	53.1	53.2	53.5	53.9	54.4	55.0
Lithuania	51.8	51.8	52.0	52.0	52.4	52.6	52.8	52.9	53.2	53.6	53.8
Poland	51.7	52.1	52.5	53.1	53.7	54.2	54.9	55.6	56.3	57.0	57.6
Finland	54.2	54.3	54.4	54.3	54.2	54.3	54.0	54.2	54.1	54.0	53.7
Sweden	52.9	53.0	53.1	53.1	53.0	53.0	52.9	52.6	52.3	52.0	51.6

Source: based on EUROSTAT data.

Based on the data in Tables 1–3, the index potential was calculated, presented in Table 4.

Table 4. Index value potential in 2001–2011 in the BSR

Total	Potential factor										
geo\time	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Denmark	0.749	0.749	0.726	0.745	0.724	0.760	0.348	0.507	0.438	0.352	0.306
Germany	0.719	0.725	0.714	0.708	0.659	0.659	0.458	0.645	0.639	0.625	0.626
Estonia	0.527	0.572	0.583	0.589	0.564	0.604	0.603	0.574	0.493	0.443	0.517
Latvia	0.334	0.438	0.475	0.505	0.458	0.495	0.491	0.572	0.430	0.436	0.467
Lithuania	0.350	0.417	0.458	0.458	0.492	0.525	0.528	0.518	0.466	0.440	0.508
Poland	0.160	0.178	0.211	0.279	0.349	0.462	0.309	0.597	0.600	0.604	0.588
Finland	0.402	0.425	0.447	0.458	0.462	0.499	0.395	0.556	0.509	0.484	0.456
Sweden	0.585	0.592	0.590	0.588	0.560	0.379	0.453	0.456	0.453	0.455	0.440

Source: based on EUROSTAT data.

The lowest values of the potential index were obtained for Poland in the period from 2001 to 2005, and in 2007. This was primarily the result of the partial lowest values on the level of employment in the period 2001–2011 (with the exception of 2010). In 2010, the value of the lowest employment rate occurred in Lithuania.

In 2006 and 2008, the lowest rate of capacity occurred in Sweden. The lowest level of the ratio, decided by the lowest value of the partial factor for the share of people with at least a secondary education (2006), was the lowest for people aged 25–64 in the population of Sweden (2008). It is worth noting that the partial participation rate of people aged 25–64 in Sweden remained low until 2011, although the index has risen to a higher potential.

In 2010, the index reached the lowest value of the potential in Latvia. Its low value primarily affected the low values of partial employment and participation rate of the population aged 25–64 in the population of Latvia.

For 2010–2011, Denmark obtained the lowest potential index values. This was due to the lower value of the partial factor for the participation of people with at least a secondary education and to obtaining low values of the partial rate of the population aged 25 to 64.

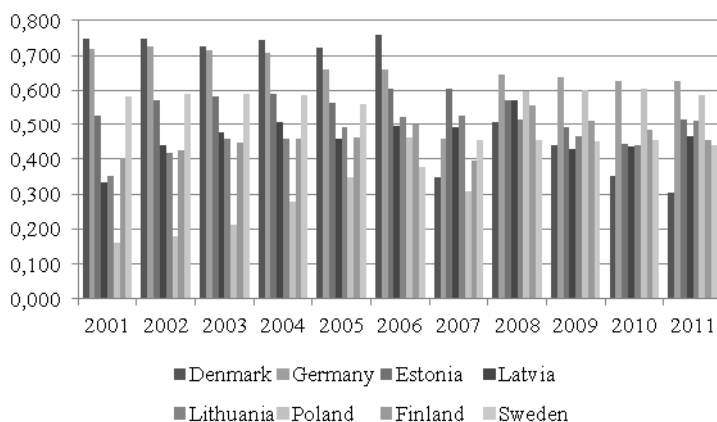


Figure 9. Index value potential in 2001–2011 in the BSR

Source: own calculations based on data contained in Tables 1–3.

The highest value of the potential index in 2001–2006 was obtained by Denmark. Its value was mainly due to the highest values of partial employment.

In 2007, the maximum value of the potential index was obtained by Estonia. In this case, the high value was caused by the sub-factor of the share of educated people.

From 2008 to 2011 the highest values of the potential index was obtained by Germany. This result was mainly due to the high value of the coefficient of partial employment and participation of people with at least a secondary education population.

5. Summing-up

The obtained values of the potential index indicate that there is no clearly defined leadership in the region which could directly affect the development of other countries.

However, there are significant disparities between countries, which is especially visible in Figure 9. It is encouraging that Poland has received increasingly higher values of the index. It is a pity that the increase in Poland owes

its importance mainly due to the high proportion of people aged 25–64, and not the increase in the employment rate, which in Poland, throughout the period remained at a low level, or the lowest of all the analysed countries.

The trend of the partial factor relating to the share of people with at least a secondary education is also beneficial for Poland, because there is a relationship between the educational system and economic development. Human capital created by the system of education, is becoming an important factor in growth and economic development while improving the competitiveness of the country in the international arena.

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POTENCJAŁ LUDNOŚCI REGIONU MORZA BAŁTYCKIEGO W LATACH 2001–2011

Streszczenie: Region Morza Bałtyckiego obejmuje obszar około 1 676 024 km², który w 2011 roku zamieszkiwały 146 953 922 osoby. Jeden kilometr kwadratowy zamieszkiwało 87,7 osoby. Celem artykułu jest analiza demograficzna wybranych aspektów dotyczących sytuacji społeczno-ekonomicznej ludności zamieszkującej RMB w latach 2001–2011, jak również prezentacja indeksu potencjału analizowanego obszaru w oparciu o Indeks Rozwoju Społecznego.

Słowa kluczowe: potencjał, kapitał ludzki, Region Morza Bałtyckiego.