

# Supply of labour and its changes in Poland in 1990-2017

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## Abstract

The aim of research is to identify the main directions of changes in the size and structure of labour supply. In macroeconomic works the problem of quantitative labour engagement in GDP production is still important on a given country. Therefore, the labour resources analysis is extremely important for economists. The spatial range includes Poland, and the time period – years 1990–2017. The basis of the research is the statistical material published by the Main Statistical Office, which was presented using descriptive statistics methods. Elements of cause and effect analysis of economic phenomena were also used. The study presents conclusions from research and recommendations further demographic, migration and economic policy that can be undertaken in the interest of improving the quality of labour supply and its productivity.

**Keywords:** economics, labour market, labour supply

**JEL Classification:** J21

## 1. Introduction

The study of the determinants influencing the supply of labour is the issue that needs constantly adapted research. The scale of phenomena which have an impact on the Polish labour market is unprecedented; changes in this area are caused by transformation, integration, fluctuations in the economic condition, and globalization. All these changes have their own dynamics and scope in Poland, which is worth diagnosing. The analyses conducted as part of this study may be a stimulus to address the other elements of the labour market, such as demand of labour, wages or unemployment, which are also, to a certain extent, linked with changes in the supply. In this study, we would like to perform in-depth analyses which may become the foundation for examining the other elements and phenomena in the Polish labour market.

## 2. The concept of labour supply

In the literature, the supply of labour is defined in accordance with the market approach to supply, as an element of the market. The market, in turn, is defined as the

place where supply meets demand and where, under the influence of market mechanisms, the market price is determined. Hence, supply is the amount of a product or service available for sale at any specified price. Thus, we may analogically refer to the supply of labour and define it as the amount of labour available in the labour market (Jarmołowicz, Knapińska, 2005, p. 23). The supply of labour is particularly defined as labour force resources, i.e. all people who are of the right age to work and who are physically and mentally able to work (Kotlorz, 2007, p. 11). It is generally assumed that people over the age of 18 are classified as employed, job-seekers or inactive (Borjas, 2013, p. 23). Thus, labour resources refer to people who work or seek jobs, or those who are registered as unemployed. That is why the term labour resources is often used to refer to both employed and unemployed people, which has become universally accepted in the existing body of literature (Kwiatkowski, 2001, p. 534; Jarmołowicz, 2010, p. 127; Krugman, Wells, 2012, p. 83).

### 3. Amount of labour supply

Measuring the amount of labour resources in the economy consists in taking into consideration the whole population and its structure in terms of the age and number of people in the working age.

In Poland the population structure according to age as laid out by the GUS shows that the model of the so-called inverted demographic pyramid has been strengthened. It means that a decrease in the share of young people in the society is accompanied by the growing percentage of elderly people (GUS, n.d.). At the same time, since 2012 we have observed a higher number of deaths than births. This trend was also temporarily evident in the early 2000s. It is thus forecast that, in the next dozen years, the population will decrease by about a million of people, and by half a million in another ten years (Gubernat, 2009, pp. 31–32). Statistical data published by the Main Statistical Office (GUS – Główny Urząd Statystyczny) shows that by 2050 the population of Poland will have shrunk by nearly 4.5 million people in comparison to 2017 (*Small Statistical Yearbook of Poland*, 2017, p. 110). A similar trend is also anticipated for the world population (Bloom, Canning, Fink, 2011, p. 3), although a number of forecasts prepared by international institutions indicate that the global population will actually rise until 2050 and 2100 (Lutz, Butz, Kc, 2014, p. 10). This will obviously be determined by the fertility rate, the migration balance, and the death rate over the period covered by this forecast.

Let us look at the age structure of the population, which may be examined within the boundaries of the productive age. As Figure 1 shows, the number of people in the pre-productive age is decreasing, while there is an increasing number of people in the productive and post-productive age. In the period under study, the share of people

in the post-productive age doubled, while the percentage of those in the pre-productive age almost halved. This is a global trend, which has been addressed in a number of studies of the supply of labour in the aspect of forecasting its size and structure (Balliester, Elsheikhi, 2018, p. 5).

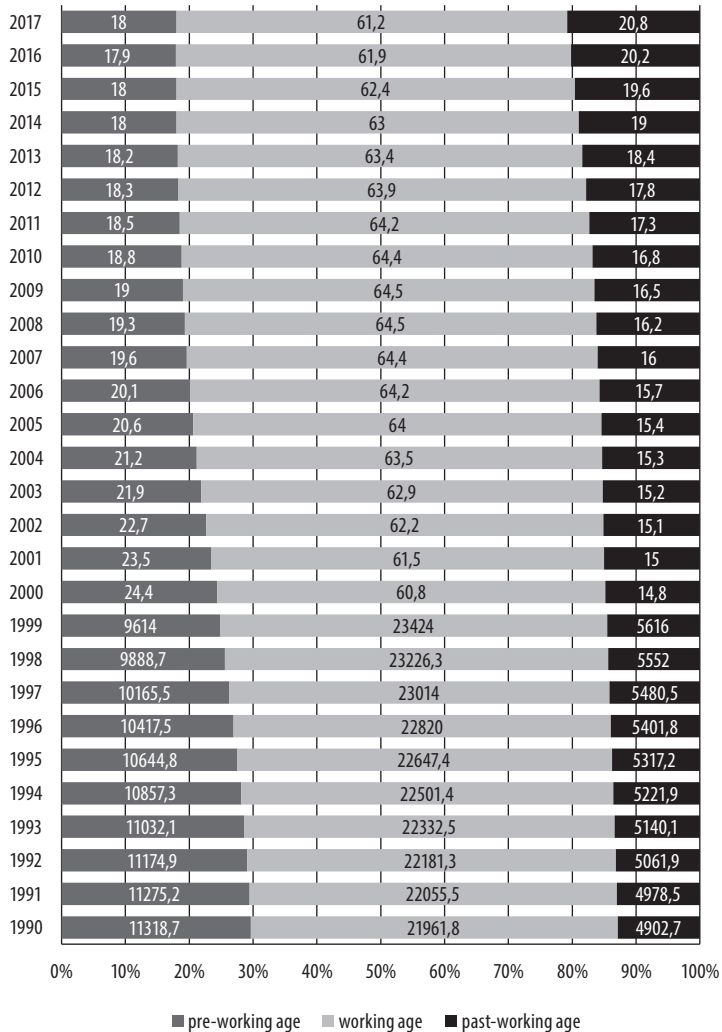


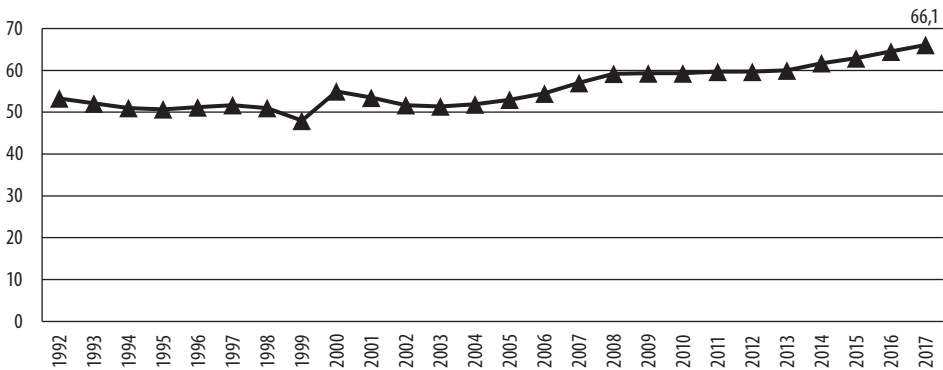
Figure 1. The age structure of the population of Poland in the years 1990–2017 (in %)

Source: Bank Danych Makroekonomicznych, n.d.; *Statistical Yearbooks of the Republic of Poland* 1992, 1995, 1998, 2000, 2002.

In the analyses of the supply of labour, it is also important to examine the economic activity of people, which is measured with the economic activity rate and the employment-to-population ratio. Both these rates are presented in the Polish and foreign

literature as the basic indicators of the supply of labour as relative measures. In particular, the economic activity rate is the ratio in percentage terms between the number of economically active people, including the employed and unemployed, to the number of economically active people (Kwiatkowski, 2001, p. 533; Borjas, 2013, p. 22). The employment-to-population ratio is the ration in percentage terms between the number of employed people and the total number of all people in the productive age (Borjas, 2013, p. 23).

The percentage level of the employment-to-population ration is presented in Figure 2, which shows the growing trend of this indicator in the examined period of 1992–2017, with some periods of its drop or stability. Such periods of the stability and drop of the employment-to-population ratio were observed in the following years: 1993–1999, 2001–2003, 2009–2011. They were also the years marked by the growth of unemployment and a decrease in employment caused by the poor economic condition. Traditionally, when the GDP rate decreases due to economic slowdown or recession, employers decide to reduce production and, consequently, lay off workers. This decision is often slightly delayed in relation to GDP drop as entrepreneurs try to maintain the employment level, hoping that the trend will revert. It should be noted here that employment in the public sector is relatively immune to changes in the economic condition: in public administration units, healthcare, education, self-government units and social security.



The results of BAEL (*Badanie aktywności ekonomicznej ludności – Study of the Economic Activity of the Population*) differ from those published for periods before 2010 due to: from 2001 – limiting the population of the unemployed according to BAEL to people aged 15–74; from 2006 – starting to use of the precise birth date for calculations; from 2010 – excluding from the study members of households who stay away from the household for the period of 12 or more months (it had been three or more months before).

Figure 2. Employment rates

Source: *Small Statistical Yearbook of Poland*: 2012 (p. 139); 2013 (p. 143); 2015 (p. 117); 2018 (p. 118); *Statistical Yearbooks of the GUS from the years 1994–2004*.

The data shown in Figures 2 indicate quite significant differences in the economic activity rate and the employment-to-population ratio. Given the above definitions of these indicators, which are consistent with the GUS's methodology and definitions, and the methodological notes of the GUS placed below the figure, it is safe to say that it is difficult to compare data over such a long time due to changes in the manner these data are collected by the GUS. One thing is evident, though, i.e. both the economic activity rate and the employment-to-population rate show a growing trend.

#### 4. The qualitative analysis of labour supply

The qualitative analysis of labour resources can be carried out by taking into consideration the structure of the economically active population in terms of educational background. Figure 3 shows that quite significant changes concerning the education level of labour resources took place in the period under study. First of all, an increase in the educational level is evident – the share of people with a university degree grew from 9.28% in 1992 to as much as 34.21% in 2017 (the author's own calculations based on the data in Figure 3). There is no doubt that such a large-scale change is the result of the increasing popularity and availability of university education, and of the rapid development of higher education since the second half of the 1990s. This definitely has had a positive impact on the labour market and the quality of labour resources. At the same time, in the period under study, the percentage of people with early childhood, primary and lower secondary education shrank. This group of people accounted for 35.38% of the whole economically active population in 1992. In the final year of our analysis, this figure dropped to only 5.28%.

Changes in the percentage of the other groups of educational levels were not as significant, which is not in contradiction with the statement that labour resources have definitely become better educated. In order to come up with a complete diagnosis, however, one should reflect on the quality and usefulness of this education. The thing is that improved education entails changes in the demand for labour, or, rather, these changes are the cause of changes of labour resources. Employers are in need of employees with higher education and the work environment has changed as well – specialists are highly sought-after. At the same time, jobs previously occupied by people with secondary education in the 1990s (salesperson, administrative officer), are now done by university graduates.

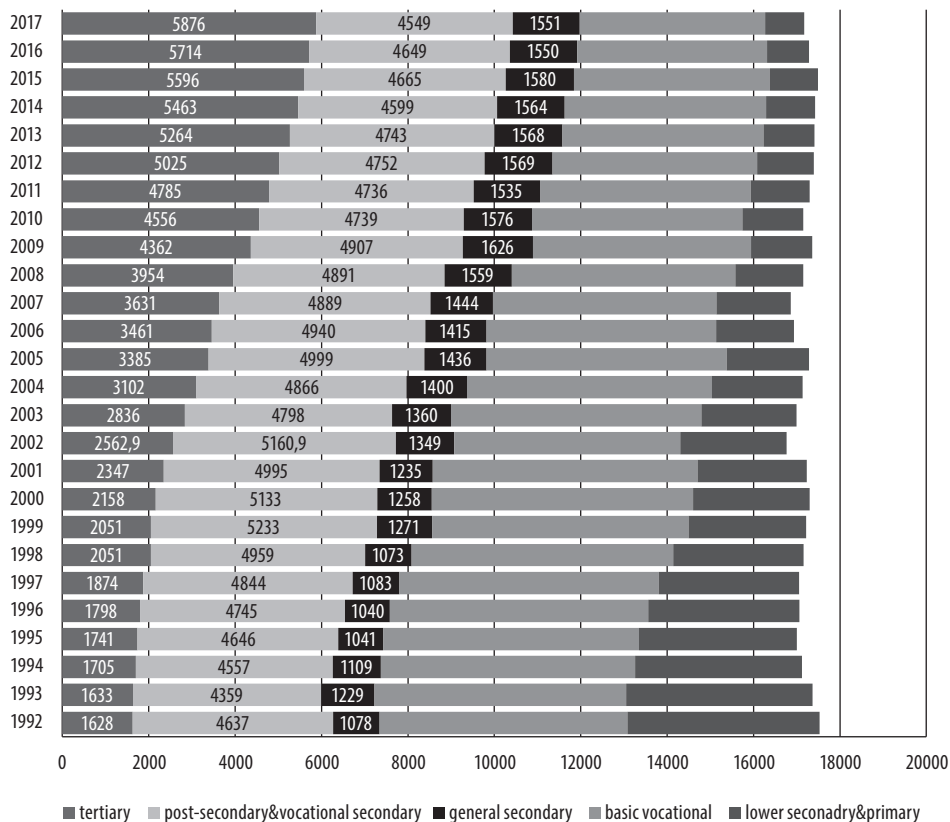


Figure 3. Economically active population according to the level of education

Source: *Statistical Yearbooks of the Republic of Poland: 1993–2003; Yearbooks of Labour Statistics: 2006, 2010, 2012, 2015, 2017; The Economic Activity of the Population of Poland, 2003–2007, 2009; The Economic Activity of the Population of Poland in the IVth quarter of 2017, 2018.*

## 5. Migration flows

The qualitative changes in the supply of labour are also determined by migration flows, although it should be remembered that not every migration flow is related to changes in the labour market. They could also be the migration movements of members of the families of employed people (e.g. minors), or the migration movement may have non-economical background (political, religious, health, ethnic, etc.). The data presented in Figure 4 refer to the number of emigrants and immigrants to Poland, and the migration balance in the years 1990–2017, published by the Main Statistical Office.

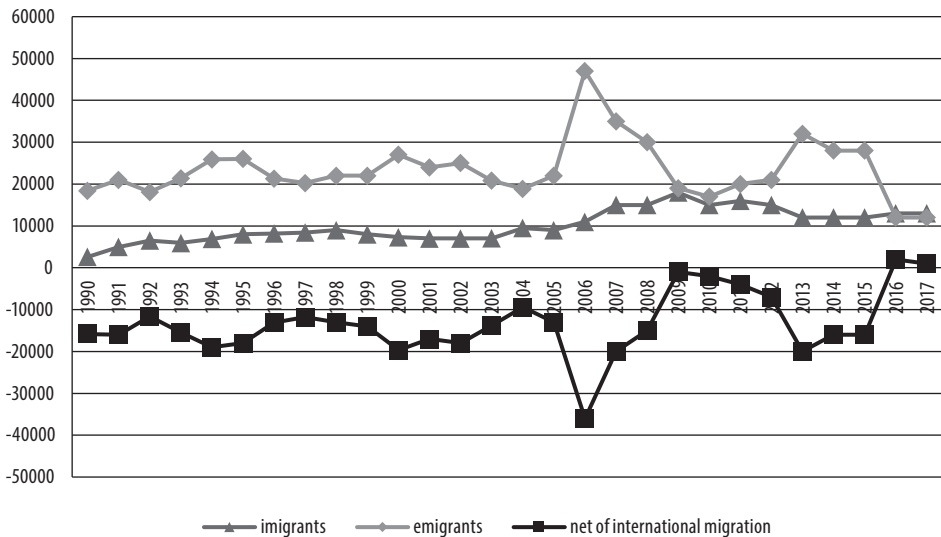


Figure 4. External migrations in Poland in the years 1990–2017

Source: *Statistical Yearbooks of the Republic of Poland: 1995, 1998, 2000, 2003, 2008–2010; Small Statistical Yearbook of the Republic of Poland: 2013, 2015, 2018.*

They were obtained on the basis of civil registration and of the permanent residence of people. Thus, they do not include temporary migrations, illegal movements, and foreign trips in search of work without giving up permanent residence in Poland. That is why, for example, the data concerning the period before and after Poland's accession to the EU are underestimated, because more people actually took advantage of the benefits of the common European labour market and the free flow of employees, but not all those people changed their permanent address in Poland.

The statistics in Figure 4 show that between 1990 and 2015 Poland had a negative net migration rate, i.e. there were more people leaving than entering the country. The historical change and a positive net migration rate was observed in the two final years of the period under study – it was quite a novelty as Poland used to be an emigration state a lot earlier, both in the 19th and 20th century.

What is worth our attention is the fact that since Poland's accession to the European Union the number of immigrants has grown every year – this was due to the fact that Poland has become an EU member state, thus, also a transit country for migrants from outside the European Union. Recent years have shown that Poland has also become a destination for the citizens of Ukraine, Belarus, or even Far East countries.

As far as emigration from Poland is concerned, it was particularly intense in the first years of Poland's membership in the European Union, when a lot of Poles left to work in the UK, Ireland, Sweden or other highly developed EU countries. In the examined period, there was a significant drop in the volume of emigration in the years

2009–2010, when West European countries were hit by the economic crisis and their labour markets consequently shrank. At the same time, the economic situation in Poland did not get worse; quite the opposite, it was gradually improving. In the last two years of the period under analysis, the number of emigrants decreased, which does not mean that the people who had left Poland before, now returned to their home country – they still constitute quite a large Polish community in countries such as: the United Kingdom, Germany or Sweden.

## 6. Conclusions and recommendations

The results of the study we undertook in the paper let us draw a few basic conclusions concerning changes in the supply of labour that took place in the examined period. There is no doubt that we observe a drop in the size of the population of Poland and a decreasing number of people in the productive age (GUS). This indicates a certain problem for the labour market and for the economy – labour resources do not become more numerous. However, we witness a few positive phenomena, such as the improvement of education, the growth of the economic activity rate and the employment-to-population ratio, and the increasing inflow of labour resources to Poland (see Table 1). These positive trends are among the stimuli of the GDP growth and the development of human resources in Poland. What is another determinant of the economic growth is the rising labour productivity, which, according to Eurostat, was already as much as 75.9% of the EU average in 2017. If we compare this figure to the data from 2006 (60.3%), we will see that the quality of human resources in Poland has improved (Eurostat). Thus, despite stagnation when it comes to an increase in the amount of labour resources from the quantitative perspective, we see the improvement of their quality and of utilizing them in the Polish economy.

Table 1. Changes observed in labour supply in Poland in 1990–2017

Specification	Influence on amount of human resources	Influence on quality of human resources
Population in productive age	–	0
Employment rate	–/+	+
Activity of high educated	+	+
Migration net	–/+	?

Source: own work.

As far as recommendations for future are concerned, being aware that some demographic and migrations process cannot be brought to a halt, we should consider further improving the quality of education so that its high level would go hand in hand with its high quality. What is more, we should take care of migration flows and attract



those resources that are attractive to our labour market. This attractiveness should encourage both top specialists and highly motivated unskilled workers, who are willing to work for quite low wages, but are ready to accept such conditions. Finally, we should also aim to stimulate the economic activity of the labour resources that remain to be unused, i.e. people who are still in the productive age, but are inactive due to, for example, having to take care of their children. In the long term, the increased economic activity is beneficial especially to the social security system, and for the labour market it means the quantitative growth of labour resources in the economy.

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## Podaż pracy i jej zmiany w Polsce w latach 1990–2017

Celem przeprowadzonym badań jest identyfikacja głównych kierunków zmian zachodzących w rozmiarach i strukturze podaży pracy. Problem ilościowego i jakościowego zaangażowania pracy w wytwarzanie PKB jest wciąż istotny dla każdego kraju. Stąd analizy zasobów pracy są niezwykle ważne dla ekonomistów. Zakres przestrzenny analiz obejmuje Polskę, a zakres czasowy lata 1990–2017. Podstawą badań jest materiał statystyczny publikowany przez GUS, który został zaprezentowany za pomocą metod statystyki opisowej. Wykorzystano także elementy analizy przyczynowo-skutkowej zjawisk ekonomicznych. W opracowaniu zaprezentowano wnioski z badań oraz rekomendacje dla dalszej polityki demograficznej, migracyjnej i gospodarczej, które można podjąć w trosce o podnoszenie jakości podaży pracy i jej produktywności.

**Słowa kluczowe:** ekonomia, rynek pracy, podaż pracy

**JEL:** J21