
Changes in the Labor Market Determined by Demographic Factors: The Case of Poland

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Abstract:

Purpose: The aim of the article is to systematize knowledge about changes taking place on the labor market in Poland, in particular those resulting from demographic changes. In order to achieve the aim of the work, a review of the literature on the subject was conducted and available statistical data was analyzed. The discussion and presented conclusions aim to show the scale of the phenomenon, directions of demographic changes as a result of which changes occur on the labor market. Attention was drawn to possible factors that may be helpful in overcoming difficulties on the labor market.

Design/Methodology/Approach: In order to achieve the aim of the work, selected statistical data from the Central Statistical Office and Eurostat were analyzed. The structure of the article corresponds to the aim set in the article. At the beginning, the challenges facing the labor market in connection with the forecasted demographic changes were discussed. To achieve the specified aim, a critical analysis of the literature on the subject was used, as well as the desk research method and the induction method. The inference was based on the analysis of available statistical data, which were selected in a purposeful and intentional manner.

Findings: The investigations contained in the work led to the formulation of conclusions that indicate threats to the labor market resulting from demographic predictions, as well as the complexity of non-demographic conditions that also determine the functioning of the labor market.

Practical Implications: The results can be used in work on developing social policies, including labour market policies.

Originality Value: This article presents the results of original desk research and induction methods. The topic is crucial in the era of such dynamic demographic changes and alarming forecasts in this area.

Keywords: Labour market, population aging, demographic changes, elderly people.

JEL classification: J11, J13, J14, J21.

Paper type: Research article.

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1. Introduction

The labor market is one of those areas that is constantly changing, and the dynamics of change can sometimes be very high. Changes in the labor market in the 21st century are determined by many factors. These factors include demographic, political, economic, cultural, social or technological factors. These are certainly not all possible determinants affecting the labor market.

The transformations concern both the demand for work, i.e., the situation in which employers find themselves, but also the supply of labor, i.e., the conditions affecting the situation of employees. In this article, attention will be focused primarily on the demographic factors determining the functioning of the labor market.

However, it should be noted that the influence of these various factors cannot be completely separated from each other, and their synergistic impact is difficult to diagnose and analyze.

The purpose of these considerations is to determine the direction and scale of changes observed on the Polish labor market. The analysis will be based on data from Polish and European public statistics, and the research will be carried out using the method of critical analysis of the subject literature, desk research and the induction method.

The growing labor shortage, with a simultaneous increase in the percentage of elderly and elderly people (the so-called double aging problem), as well as the observed depopulation and falling fertility rate are the main trends that can be observed in the demographics of Europe and thus Poland. These changes, both directly and indirectly, determine the functioning of the labor market.

An important issue, however, is that the demographic changes mentioned are, according to demographers, irreversible and inevitable (Van de Kaa, 2008; Kurek, 2008; Abramowska-Kmon, 2011), which causes significant social and economic consequences. This means that this process is difficult to stop and requires special action in both the area of economic and social policy (Bloom *et al.*, 2003).

Changing demographic conditions, including the weaker rate of growth of labor resources, can be considered a burden on economic development, which in turn will have a negative impact on the standard of living of the population in the long run (Nyce, 2011; Thalassinos *et al.*, 2019). Moreover, the research results conducted by Han and Lee (2020) indicate that the changing nature of the composition of the labor force, including age, education, gender, and wage rates, affects the level of economic growth. The consequences will also impact the labor market.

”The demographic mechanism is that there is a dynamic feedback between fertility and the number of births and the age structure of the population, a falling number of

births results in a decrease in the proportion of young people in the population and, as a result, an acceleration in the aging process of the population. In turn, the older the age structure, the lower the number of births. These driving processes in the long term can cause very profound changes in the structure of the population, and as a result there will be a negative impetus for population growth, i.e., a permanent decrease in the population resulting from its age structure" (Jóźwiak, 2013).

Declining fertility and mortality rates result in transformational changes in the age composition of the population (demographic transition). Depending on the stage of this transition, societies exhibit different age structures with implications for socio-economic well-being (Ronanki *et al.*, 2024).

Therefore, it is important to introduce various types of systemic solutions that, in the face of the inevitability of demographic changes, can reduce their negative consequences or postpone them in time. Such solutions are introduced in Poland, such as pro-natalist policies, including e.g. Family 800+ or extending parental leave. However, it must be remembered that the possible effectiveness of such initiatives is significantly postponed over time.

A detailed diagnosis of Poland's demographic situation and the challenges facing Poland are included in the document Demographic Strategy 2040 (2022). This document states that demographic changes should be considered one of the most important long-term challenges facing Poland. The key challenge is the low fertility rate, which is the most important factor affecting the demographic aging of the population and the projected consistent population decline. Therefore, Poland faces certain demographic challenges, which include (Demographic Strategy, 2022):

- Counteracting the lowering of the family's standard of living with the birth of more children.
- Increasing the degree of meeting the housing needs of families.
- Facilitating the combination of work and childcare.
- Improving the quality of education.
- Improving the health of Poles.
- Increasing social capital, including strengthening family ties.
- Development of family-friendly infrastructure and services.
- More effective use of the potential of local governments and civil sector organizations.
- Counteracting regional inequalities.
- Ensuring stable, coherent and effective public policies.

Many of these challenges are directly or indirectly related to the functioning of the labor market, especially those related to pro-natalistic initiatives. These, in turn, are crucial both for the possibility of acquiring an employee, but also create a better chance of longer activity on the labor market.

2. Data and Methods

The purpose of the research conducted in this paper is to determine the direction and scale of changes observed on the labor market in Poland. The analysis will be based on data from Polish and European public statistics, and the research will be carried out using the method of critical analysis of the subject literature, desk research and the induction method.

In the process of data collection, the available statistical data in the resources of the Central Statistical Office and Eurostat were reviewed. After selecting the data, it was decided to use the available data in the field of: fertility forecasts, population forecasts, population forecasts of working age and age 65+, life expectancy taking into account gender, population pyramids and old-age dependency ratio.

3. Study Results

The data on the basis of which the analysis was carried out were prepared by the Central Statistical Office (GUS), taking into account three forecast variants until 2060. Every forecast must take into account prediction errors, so for longer predictions, several possible scenarios are usually developed with specific assumptions. Due to the use of the forecast in official analyses, the average scenario, recognized by experts from the Government Population Council as the most likely, will also be treated in this work.

The fertility rate is a key indicator informing about changes in the population dictated by procreative attitudes. All GUS scenarios in terms of the Total Fertility Rate (TFR) indicator do not inspire optimism. High and medium scenarios assume an increase in the discussed indicator, but the condition for this growth is at least a stable economic situation, maintaining a favorable situation on the labor market and implementing an active pro-family policy.

However, none of the scenarios provides for the possibility of achieving an indicator at a level that allows a simple replacement of generations, i.e., up to 2.1 (Table 1). Presented forecasts correlate with the forecasts regarding changes in the population during the forecast period.

Table 1. Total fertility rate (TFR) in selected years

Variant	2000a	2010a	2020a	2022a	2030	2040	2050	2060
High	1,37	1,38	1,39	1,26	1,58	1,69	1,75	1,79
Medium					1,39	1,44	1,47	1,49
Low					1,21	1,19	1,19	1,19

Note: Empirical data Statistics Poland.

Source: Główny Urząd Statystyczny 2023. Prognoza ludności na lata 2023-2060, Warszawa.

The forecasted situation of Poland in the area of population size clearly indicates a decrease in population regardless of the forecast scenario. However, it is worth noting that the difference between the high and low scenarios deepens with the lengthening of the analysis period. This means that the very different assumptions were adopted when creating the aforementioned scenarios.

The high scenario was built by assuming the highest parameters for a given year, including the fertility rate, the variant with the longest life expectancy and the variant with the highest migration balance.

When creating a scenario, the medium adopted the average values of the mentioned parameters, while the low scenario adopted the lowest values of the mentioned parameters. Between 2022 and 2060, depending on the scenario, there will be a population loss from 8% to 29% to its current size.

Table 2. Population of Poland (in millions) according to three scenarios in selected years

Variant	2022a	2030	2040	2050	2060
High	37,77	37,71	36,83	35,85	34,80
Medium		37,05	35,26	33,20	30,93
Low		36,33	33,50	30,23	26,65

Note: Empirical data Statistics Poland.

Source: Główny Urząd Statystyczny 2023. Prognoza ludności na lata 2023-2060, Warszawa.

Along with the projected population decline, a systematic decline in the population of people of working age is also predicted. Analyzing the data contained in Table 3, it should be concluded that the loss of the working age population is predicted in each of the scenarios. The version of the medium scenario assumes a loss of as much as 7 million people in 2060 compared to 2022 - decline of 31.8%.

Table 3. Population in working-age (in millions) according to three scenarios in selected years

Variant	2022a	2030	2040	2050	2060
High	22,17	21,10	20,23	17,69	16,55
Medium		21,52	19,87	16,87	15,10
Low		21,29	19,36	15,79	13,31

Note: Empirical data Statistics Poland

Source: Główny Urząd Statystyczny 2023. Prognoza ludności na lata 2023-2060, Warszawa.

From the point of view of demographics, changes in proportions between different age groups are important. The expected increase in the population aged 65+ is a consequence of the loss in the group of people of working age. The average scenario assumes that in 2060 there will be about 37% of the population aged 65+ compared to 2022.

Table 4. Population (in millions) aged 65 years and more according to three scenarios in selected years

Variant	2022a	2030	2040	2050	2060
High	7,35	8,33	9,04	10,53	11,09
Medium		8,19	8,67	9,87	10,07
Low		8,05	8,30	9,17	8,98

Note: Empirical data Statistics Poland.

Source: Główny Urząd Statystyczny 2023. Prognoza ludności na lata 2023-2060, Warszawa.

Along with the projected significant increase in the population aged 65+, the average life expectancy will also systematically increase. The projected lengthening of life expectancy applies to both women and men, with both currently and according to predictions, women living longer than men.

Table 5. Life expectancy in selected years

Sex	Variant	2000a	2010a	2020a	2022a	2030	2040	2050	2060
Males	High	69,74	72,10	72,61	73,42	75,86	77,64	79,42	81,29
	Medium					75,16	76,35	77,55	78,63
	Low					74,38	75,07	75,60	75,87
Females	High	78,00	80,59	80,71	81,06	83,18	84,57	85,92	87,19
	Medium					82,49	83,47	84,34	85,14
	Low					81,81	82,38	82,77	83,08

Note: Empirical data Statistics Poland

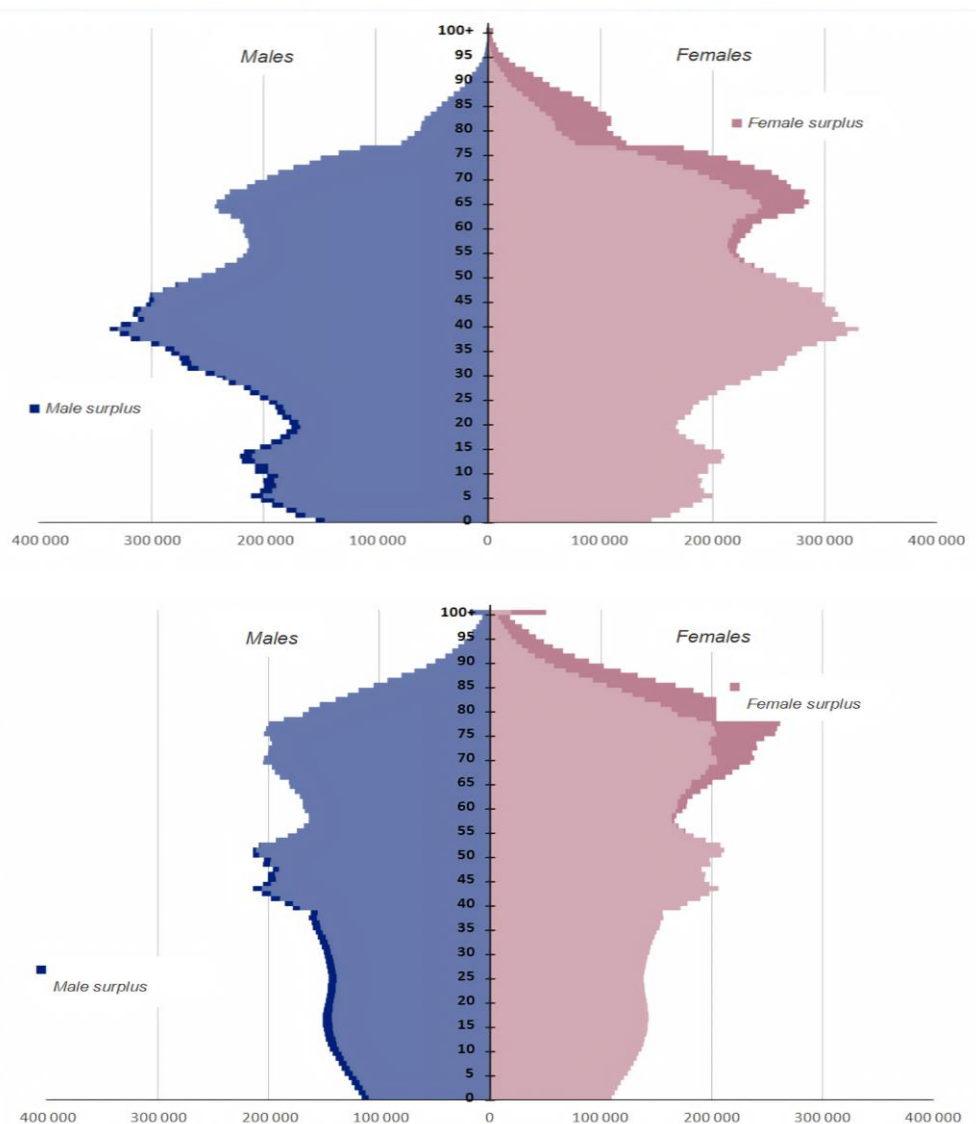
Source: Główny Urząd Statystyczny 2023. Prognoza ludności na lata 2023-2060, Warszawa.

Figure 1 shows the population pyramid in 2022 and the one created based on demographic forecasts for 2060. The shape of the pyramid will be subject to fundamental modifications. It can be observed that the age groups at the base of the pyramid shrink, while the cohorts at the top of the pyramid grow.

The shape of the pyramid forecast for 2060 also indicates a significant loss of people of working age, which confirms the data presented in Table 3. In addition, data projected for 2060 maintain a surplus of women over men of near-retirement and retirement age.

According to Eurostat's forecasts, the demographic burden index for the elderly will have an upward trend by 2100. In the case of Poland, the largest growth is forecasted to occur between 2040 and 2050. In turn, between 2050 and 2060, a slight decrease in the index is possible, just like between 2090 and 2100. By 2050, according to the forecasts, Poland will have a lower old-age dependency ratio than the EU average, while after this time until the end of the forecast, this indicator will be higher than the EU average.

Figure 1. Population pyramid. Actual situation and 2060 forecast



Source: Główny Urząd Statystyczny 2023. Prognoza ludności na lata 2023-2060, Warszawa.

Table 6. Old-age dependency ratio 1st variant (population 65 years or over to population 15 to 64 years). Baseline projections

Specification	2022	2023	2030	2040	2050	2060	2070	2080	2090	2100
EU - 27	33,0	33,3	38,0	45,4	50,4	53,0	54,1	57,0	58,7	59,7
Poland	29,3	29,7	34,2	38,6	50,5	60,1	58,5	59,1	60,6	60,1

Source: Eurostat.

4. Discussion

The labor market is naturally subject to transformations, among which demographic factors are of particular importance. Changes that have already begun in accordance with the presented forecasts will deepen. The consequences of these changes are difficult to predict, especially in the long term. However, it should be assumed that the direction of changes indicated above will have a negative impact on the situation on the labor market.

Depopulation and fundamental changes in the age structure of the population, as a result of which labor resources are shrinking with a simultaneous population growth of post-production age, are a very big challenge for both the labor market and public finance. For several years, there has been an employee market in Poland, the main feature of which is the excess demand for labor over the supply of labor.

Naturally, this shortage on the supply side is to some extent compensated by workers who came to Poland as a result of immigration. It is especially noticeable after Russia's attack on Ukraine, as a result of which Poland accepted hundreds of thousands of refugees, who in a noticeable extent, fed the Polish labor market.

In addition, it should be emphasized that due to the low projected TFR, which does not guarantee a simple replacement of generations, while increasing the average life expectancy, it causes a generation gap, which will impose a heavy burden on professionally active people, related to the maintenance of the pension system, stimulating labor costs growth. This, in turn, can have a destructive impact on entrepreneurial attitudes and a tendency to self-employment.

According to experts, the most likely changes that will take place in the population structure in Poland, taking into account the age criterion, will be (Waligórska and Witkowski, 2014):

- The progressive process of population aging,
- Large loss and aging of the working age population,
- Decreasing number of children and adolescents,
- Loss of women of procreative age.

These changes are confirmed by the data presented in this work. From the perspective of the labour market, these changes should be treated as a challenge requiring the preparation of appropriate actions from both the state and employers. One of the ideas that has been discussed for a long time is to raise the retirement age and thus extend the period of professional activity.

However, such decisions are usually met with social disapproval, so their eventual introduction would have to be preceded by thorough consultations with different circles in order to possibly gain support for change.

In addition, a possible extension of professional activity may be of little importance if employers are not willing to employ older workers as well. Changes in employers' approach to older employees require recognizing the potential of them and noticing that age-diverse teams can be an added value to the company.

It is also worth mentioning that the instruments of pronatalist policy that have been used for a long time, are not always effective. In Poland, many different instruments are used, including primarily the Family 800+ program, but also maternity leave, Large Family Card or parenting benefits. However, despite many diverse instruments of pro-family policy, fertility rates do not reach a satisfactory level, and forecasts in this area do not inspire optimism.

Analyzing the demographic factors that decisively determine the functioning of the labor market, however, one cannot forget about other variables that can also have a significant impact on the labor market. These factors include, above all, technical and technological changes aimed at machine learning, robotization, digitization or AI development.

In addition, factors from the field of education and the recognition of the importance of lifelong learning. Events both on the domestic and international market, often difficult to predict, such as the COVID-19 pandemic or the war in Ukraine and any future tensions in different parts of the globe, are also not without significance.

5. Conclusions

Demographic changes should be classified as one of the key factors determining the functioning of the labor market. The current demographic situation in Poland, as well as forecasts, allow us to conclude that the impact of demography on the labor market will become increasingly important. Such forecasts force decision-makers to take action to counteract the negative effects of the impact of demographic changes in this field.

Firstly, decision-makers must be aware of the very large loss of the population from the group of people of working age and the large increase in the population in the post-working age. Such a situation may lead to a gap/ shortage on the labor supply side. The shortage can be compensated by actions involving the implementation of a specific migration policy, the purpose of which will be to attract needed workers from abroad.

On the other hand, there may be a real need to extend the period of professional activity by increasing retirement age or encouraging people of pre-retirement age to continue working and employers to create conditions in the work environment for them to continue such activity.

Decision-makers must also be aware of the negative effects of the fertility rate decline or stabilization on the low level, which is projected not to reach generational replaceability by 2060. If this factor is added to a constantly increasing average life expectancy, it will result in an increasing indicator of the demographic burden.

It should be remembered, however, that the investigations carried out in this work are based on predictive data, which always contain some margin of error. In addition, the geopolitical and socio-economic situation is subject to major changes, which are often caused by factors that are difficult to predict.

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