

Labour reallocation and productivity in the Belarusian economy: consequences and prospects

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Abstract

The structure of Belarusian economy and labor market situation are facing considerable changes after COVID-19 pandemic, intra- and geopolitical destabilization. With aim to assess the efficiency of labor resources' reallocation in Belarusian economy and its influence on aggregate labour productivity growth I performed the decomposition of growth rate of aggregate labour productivity with four methods for the period 2011-2023. The results reveal that inter-sectoral reallocation in Belarusian economy hasn't been effective since 2015 and mitigates economic growth potential. The changes of intrasectoral productivity in several sectors are explained rather by employment reduction than by implementation of new productive workplaces. Taking into account the factor of relative prices in sectors makes noticeable impact on labour reallocation effect but doesn't solve the problem of its inefficiency. Among the reasons for losses in labour reallocation efficiency are: weak social defense system of unemployed and their economic discrimination; reduced opportunities for subsidized participation in programs of re-qualification according with major education; disbalance on labour market by qualification attribute; state sector inefficiency; mandatory assignment for young professionals, Intra- and geopolitical instability does not support the improvement of reallocation processes, catalyze emigration of working-age population and businesses as well as increase risks of human capital quality reduction.

Introduction

In recent years, the situation in the economy and on the labour market in Belarus has been undergoing significant changes. On the one hand, the number of job vacancies has been growing – in 2024 alone the average annual increase was 26.6% [51] – as has real wages, which rose by 25.3% over 2019–2023. On the other hand, there has been a substantial outflow of working-age population and the number of terminations have exceeded the number of new hires: since 2020, on average, there have been 108–109 terminations for every 100 new hires each year. Against a backdrop of an ageing population and the entry into the labour market of workers born during the 'demographic dip', a shrinking number of people employed in the economy is a challenge not only for ensuring sustainable economic growth, but also for maintaining fiscal stability and the functioning of the fiscal system, including the existing social protection system.

The Belarusian authorities' approach to the labour market has not undergone any significant positive changes. Prior to the COVID-19 pandemic, the domestic political crisis and Belarus's complicity in Russia's full-scale military invasion of Ukraine in February 2022 (hereinafter, Russia's war against Ukraine), the main features of state employment-promotion policy were a priority on supporting large state organisations over the development of private initiative, and an aim to ensure full employment through semi-restrictive measures. With the onset of the domestic and geopolitical crises, the Belarusian authorities began adopting contradictory decisions. In recent years, repressive pressure on people employed in the economy and on private business has been added to the existing problems of the labour market, and this is also affecting their decisions on the feasibility of continuing economic activity on the territory of Belarus.

At the same time, the Belarusian authorities acknowledge the existence of labour-market problems, which have been exacerbated by the situation that has developed since 2020. A decree of 3 January 2024 adopted the Concept of State Personnel Policy, which for the first time introduced the notion of personnel security, defined as “the condition of the state, sectors of the economy, activities, regions and organisations security against internal and external risks, challenges and threats associated with personnel and their potential” [31, p. 1]. To help the Belarusian labour market adapt to existing conditions, the Concept provides for: the involvement of people who are not employed and who have dif-

difficulties finding work; assistance in retaining personnel in jobs through an expanded social package; monitoring the movement of the most sought-after personnel and catch-up wage growth in the regions and in budget-sector organisations; and the creation of conditions for the return of emigrants and the attraction of highly qualified specialists from abroad [2].

Labour is a mobile factor of production, and economic growth is driven not only by the quantity of production resources and the level of technology used, but also by the quality of their placement – allocation – and their redistribution towards more productive economic agents and sectors – reallocation. Inefficient allocation and institutional obstacles to labour reallocation not only reduce the potential for economic growth but can also become one of the causes of increased emigration outflow. The transformation of labour reallocation, implying its redistribution towards high-income sectors with due regard to the requirements of balanced functional-spatial development, is stated as part of the goal 'Productive employment and decent incomes for the population' in the National Strategy for Sustainable Development of the Republic of Belarus until 2035 [28, p. 16].

Efficient inter-sectoral labour reallocation is understood as the redistribution of employment in the economy between different sectors and types of economic activity (hereinafter, sectors), contributing to the growth of aggregate labour productivity. For example, if a worker moves from a less productive job to a more productive one and/or to a more productive area of activity, their labour productivity rises and, accordingly, total output and average labour productivity in the economy rise without a technological breakthrough. In a macroeconomic context, efficient labour reallocation occurs when the share of employment in more productive sectors increases and falls in less productive ones; as a rule, the process of changing the structure of employment in the economy implies a long-term perspective. The efficiency of labour reallocation is determined both by economic factors (for example, a favourable investment climate that promotes the creation of new, more productive jobs) and by institutional factors (a stable and predictable socio-political situation, transparent and enforced legislation, developed institutions supporting the unemployed and those upgrading/changing their qualifications, etc.).

The body of research assessing the inter-sectoral labour reallocation effect in CIS countries, Ukraine and Moldova conducted in recent years is relatively small. A. Dieppe and H. Matsuoka (2021), assessing the sectoral decomposition of convergence in labour

productivity, calculated the effects of inter-sectoral labour reallocation using the TRAD method (more often referred to in the literature as 'shift-share analysis') for income-level regions across various time periods, the most recent of which was 2010–2018. For the group of developing and emerging-market countries, which included Poland and Russia, the contribution of the labour reallocation effect was positive – around 1 p.p. – and was mainly driven by the transport and financial sectors [11, p. 23]. M. Iootty, A. Bizhan and P. Correa (2022), citing E. Davies, A. Sakhonchik and P. Correa (2021), presented calculations based on data from Kazakhstani organisations using the Melitz-Polanec total factor productivity decomposition methodology, showing that over 2011–2018 labour reallocation between organisations in Kazakhstan was inefficient in both the production and services sectors, with contributions of –0.6 and –0.7 p.p. respectively [20, p. 13]. Y. Bilenko (2022) analysed labour productivity growth in Central and Eastern European countries and likewise used the TRAD method to assess the labour reallocation effect in selected countries over 1996–2019, broken down into sub-periods, the last of which is 2008–2019. According to the author's estimates, in Ukraine over that period the total labour reallocation effect was 1.8 p.p., alongside a negative within reallocation effect of –1.2 p.p.; in Moldova the reallocation effect was also positive, at 6.8 p.p., with a within effect contribution of 50.3 p.p.; the highest estimates of the reallocation effect among Eastern European countries were found for Romania (11.8 p.p.) and Poland (5.8 p.p.). In Russia over the same period labour reallocation was inefficient, with an estimated contribution of –0.4 p.p. alongside a within effect contribution of 18.8 p.p. For Belarus, the author estimates contributions of –0.8 p.p. for the reallocation effect and 24.2 p.p. for the within effect [5, p. 20]. V. Ahmadov (2023), in a work analysing structural shifts and economic growth in the countries of the South Caucasus – Armenia, Azerbaijan and Georgia – over 1998 (1999, 2000)–2019, used the CCLS methodology to decompose aggregate labour productivity. According to the resulting calculations, the contribution of the labour reallocation effect in Armenia over 2000–2019 was 1.48 p.p., in Azerbaijan over 1999–2019 – 0.50 p.p., and in Georgia over 1998–2019 – 2.33 p.p. [1, pp. 65–66].112051

The topic of the efficiency of labour allocation and reallocation in the Belarusian economy has repeatedly been raised in domestic research as well. One of the most significant studies, which attempted to assess the efficiency of capital and labour allocation in the Belarusian economy in the 2000s and the first half of the 2010s, is the study of the fac-

tors of economic growth by K. Bornukova and D. Kruk (2015). Using growth-accounting model calculations, the authors found that over 2006–2012 the relative efficiency of labour allocation in the Belarusian economy was higher than the efficiency of capital allocation, and that the difference in levels and growth rates was not particularly sensitive across sectors. The authors also note that the efficiency of labour allocation improved during the crises of 2009 and 2011, whereas it deteriorated in the more 'calm' years [21, pp. 24–27]. V. Valetko (2014) pointed out that labour reallocation towards more productive sectors proceeded very slowly amid high staff turnover. The flow of labour resources was driven more by distorted worker motivation than by a genuine desire to move to more productive jobs [56, p. 268].

Over time, the situation on the Belarusian labour market has changed. G. Shymanovich and A. Boltochko (2020) noted that during the 2010s the Belarusian labour market became more flexible, as labour demand increasingly came to be shaped by the private sector, which is not inclined to maintain excess employment, while on the supply side an increasing number of people were willing to take risks in pursuit of higher earnings and better prospects [42, pp. 109–110]. N. Mironchik and A. Levikhina (2020) emphasised the importance of the labour market providing comfortable conditions for the allocation and reallocation of labour as factors in accelerating the growth of the Belarusian economy and unlocking the potential of human capital. The authors noted that even before the onset of the COVID-19 pandemic, inter-sectoral labour reallocation was not contributing to growth in aggregate labour productivity, since against a backdrop of an overall 7.7% decline in employment over 2011–2018, the outflow from advancing sectors (where average labour productivity is above the economy-wide average) was even stronger, at 7.9%. Difficulties in achieving efficient labour reallocation within the country contributed to increased labour emigration, even though at the time labour relations in Belarus were characterised by a relatively high degree of freedom¹ [27, pp. 23–24].

Attempts to assess the contribution of labour reallocation to the growth of aggregate labour productivity in the Belarusian economy are set out in the works of A. Filiptsova (2023). Using a TRAD decomposition of aggregate labour productivity, the author

¹ The authors referred to the ranking by the research centre The Heritage Foundation (USA), where in 2019 Belarus ranked 23rd among 184 countries in terms of labour relations freedom. In the 2024 edition, Belarus ranked 151st among 176 countries. [19].

demonstrated that over 2010–2020 the total labour reallocation effect was positive, at 0.65 p.p., alongside within productivity growth effect of 18.05 p.p. The author also finds no significant relationship between employment dynamics in Belarus and labour productivity growth, and shows evidence of a positive correlation between employment dynamics and the level and growth rate of wages [18, p. 489].

Given these circumstances, ensuring the efficiency of labour allocation and reallocation in the Belarusian economy is a pressing issue, both as a component of total factor productivity growth and as a condition for the economy's adaptability to a dynamically changing environment. To what extent do the state's policy and the prevailing conditions on the Belarusian labour market contribute to growth in aggregate labour productivity? Answering this question is the main aim of this paper.

The novelty of this study lies in the fact that it is the first to provide estimates of the labour reallocation effect in the Belarusian economy calculated using several different methods, which allows for a more accurate and complete picture of the structural changes in the economy and of the causes and role of labour-market changes within them. The results of the decomposition of aggregate labour productivity growth (base index) are presented as a time series for 2012–2023, as well as broken down by sector contribution for the most recent observation. In addition, an analysis was carried out of the features of the Belarusian labour market that constrain the potential for improving the efficiency of labour reallocation, and a hypothesis is put forward regarding the influence of repressive pressure on labour redistribution processes in the economy.

The paper consists of an introduction, three parts and a conclusion. The first part describes the methodology for decomposing aggregate labour productivity. The second part presents a preliminary analysis of structural changes in the Belarusian economy. The third part presents the results obtained from the decomposition of aggregate labour productivity and analyses the reasons limiting the efficiency of labour reallocation. The conclusion sums up the findings of the study, sets out the main limitations of the analysis, and proposes possible directions for further analysis.

Methodology for the decomposition of aggregate labour productivity

To decompose the growth of aggregate labour productivity in the Belarusian economy and assess the labour reallocation effect, the set of methods proposed by I. Vos-

koboynikov and V. Gimpelson (2015) [58] was used. These can be divided into two groups: the 'traditional' group (the TRAD and CSLS methods), which requires additivity of output in constant prices, and the 'advanced' group (the GEAD and GEAD-3f methods), which assumes additivity of output in current prices and accounts for changes in relative prices in the economy.

The decomposition methods used in this study share a similar overall structure and make it possible to break down the growth of aggregate labour productivity into the contribution of the sector productivity growth effect – the *within* effect – and the contribution of the labour reallocation effect – the *between* effect. In the TRAD, CSLS and GEAD methods, the *between* effect consists of two components: the Denison effect – the redistribution of workers between sectors with different levels of labour productivity – and the Baumol effect – the redistribution of workers between high-productivity and low-productivity sectors [29, p. 7]. The GEAD-3f method decomposes the *between* effect into a labour reallocation effect and a relative price change effect.

All of the methods described use aggregated sectoral data.

TRAD decomposition

The 'traditional' method for decomposing aggregate labour productivity was developed and first published in the work of E. F. Denison (1962; 1967) [9; 10]. It assumes that the sum of the sectors' value added in constant prices equals the economy's total output in constant prices:

$$Y_t^* = \sum_n^N Y_{n,t}^*, \quad (1)$$

where n is the sector's ordinal number, N is the number of sectors in the economy, and t is the reporting year.

Total labour input is represented as the sum of labour inputs across sectors:

$$L_t = \sum_n^N L_{n,t}. \quad (2)$$

Accordingly, labour productivity is defined as output per unit of labour input, or

$$X_t^* = \frac{Y_t^*}{L_t}, \text{ and the growth rate of productivity relative to the base year 0, or } G_t^* = \frac{X_t^* - X_0^*}{X_0^*}.$$

Given these assumptions, the TRAD decomposition method proposes the following formula for decomposing the growth rate of aggregate labour productivity:

$$G_t^* = \sum_n^N (s_{n,0}^{Y^*} \times G_{n,t}^*) + \sum_n^N (s_{n,0}^{Y^*} \times \sigma_n) + \sum_n^N (s_{n,0}^{Y^*} \times \sigma_n \times G_{n,t}^*), \quad (3)$$

where $s_{n,0}^{Y^*} = \frac{Y_{n,0}^*}{Y_0^*}$ is the sector's share of output in total output in the base year; $G_{n,t}^*$ is the

growth rate of labour productivity in sector n ; and $\sigma_n = \frac{s_{n,t}^L - s_{n,0}^L}{s_{n,0}^L}$, ($s_{n,t}^L = \frac{L_{n,t}}{L_t}$) is the

growth rate of the sector's share of labour input relative to the base year.

The first term in the TRAD formula represents the contribution of the *within* effect; the sum of the second and third terms represents the contribution of the *between* effect. The second term is the Denison effect and, as noted in [10, p. 115], aggregate productivity can rise even when labour productivity in an individual sector does not change, provided labour resources are redistributed from a below-average-productivity sector to an above-average-productivity sector in the economy. The effect is positive if the sector's labour share increases. The third term – the Baumol effect – takes a positive value in the TRAD decomposition in cases where: 1) labour resources are redistributed away from a sector experiencing a falling employment share and declining productivity, or 2) labour resources are redistributed towards a sector where both the employment share and productivity are rising.

Among the advantages of this decomposition method are its computational simplicity and the fact that it can be applied to more disaggregated data, as well as the substantial body of research conducted based on it [58, p. 37]. However, it has significant limitations and drawbacks. In particular, TRAD relies on the simplified assumption that the sectors between which labour reallocation occurs are compared on the basis of average labour productivity, whereas the main driver of the reallocation process is in fact marginal productivity, which generally differs from the average. There is also a certain difficulty in interpreting the labour reallocation effect in cases where productivity is declining in a sector: if the sector's employment share is growing, the Denison effect will take a positive value; the Baumol effect will take a positive value only where the employment share and productivity are declining simultaneously.

CSLS decomposition

This method for decomposing aggregate labour productivity was developed by the Canadian Centre for the Study of Living Standards and was first presented in the works of A. Sharpe (2008; 2010) and A. Sharpe, E. Thompson (2010) [39; 40; 41]; it is a modification of the TRAD method. In [58, p. 37], in order to simplify the interpretation of the components of the between effect, the authors propose introducing the difference between the level of labour productivity in a sector and the economy-wide average level:

$$G_t^* = \sum_n^N (s_{n,0}^{Y*} \times G_{n,t}^*) + \sum_n^N \sigma_n \times (s_{n,0}^{Y*} - s_{n,0}^L) + \sum_n^N \sigma_n \times (s_{n,0}^{Y*} \times G_{n,t}^* - s_{n,0}^L \times G_t^*), \quad (4)$$

The first term – the *within* effect – remains unchanged, while the Denison and Baumol effects (the second and third terms respectively) are calculated and interpreted differently. In this case, the Denison effect takes a negative value if labour flows into a sector with lower productivity. The Baumol effect declines in a similar way.

As with TRAD, the advantages of this method are its comparative simplicity of calculation and widespread use in research, as well as a more intuitive interpretation of the labour reallocation effect. However, all methods that assume additivity of output in constant prices share the drawback and limitation of not accounting for changes in relative output prices: the price level is fixed within the base year, which makes the choice of base year a critical issue. In cases of systemic crises and structural transformation of the economy, its price structure changes, which can bias the estimated labour reallocation effect, potentially even reversing its sign.

GEAD decomposition

The GEAD (Generalised Exactly Additive Decomposition) method is also a modification of the TRAD method; it was presented in the work of J. Tang and W. Wang (2004) and received its name in the work of J. Dumagan (2013) [13; 47]. This method involves moving to a system of chained indices.

It is assumed that output in nominal prices is additive across sectors:

$$V_t = \sum_n^N V_{n,t}, \quad (5)$$

where $V_{n,t}$ denotes output in sector n . Accordingly, $V_t = Y_t \times P_t$, $V_{n,t} = Y_{n,t} \times P_{n,t}$, where P_t and $P_{n,t}$ are economy-wide and sector-specific price levels respectively. In gen-

eral, if a system of chained indices is used, the condition of additivity of output in constant prices does not hold when moving to real values. We take the relative price level in the

sector as $p_{n,t} = \frac{P_{n,t}}{P_t}$, the sector's employment share as $l_{n,t} = \frac{L_{n,t}}{L_t}$, the level of labour

productivity in the economy as $X_t = \frac{Y_t}{L_t}$, the growth rate of productivity in the economy

relative to base year 0 as $G_t = \frac{X_t - X_0}{X_0}$, and the growth rate of productivity in the sector as

$G_{n,t} = \frac{X_{n,t} - X_{n,0}}{X_{n,0}}$. The decomposition takes the following form:

$$G_t = \sum_n s_{n,0}^Y \times G_{n,t} + \sum_n s_{n,0}^X \times (p_{n,t} \times l_{n,t} - p_{n,0} \times l_{n,0}) + \sum_n s_{n,0}^X \times (p_{n,t} \times l_{n,t} - p_{n,0} \times l_{n,0}) \times G_{n,t}, \quad (6)$$

where $s_{n,0}^Y = \frac{Y_{n,0}}{Y_0}$ is the sector's share of output in total output in the base year, and

$s_{n,0}^X = \frac{X_{n,0}}{X_0}$ is the ratio of labour productivity in the sector to labour productivity in the

economy. The first term is the *within* effect; the sum of the second and third terms is the *between* effect, where the second term is the Denison effect and the third is the Baumol effect.

One of the most obvious advantages of the GEAD method over TRAD and CSLS is the absence of bias in the estimate of within-sector productivity growth, since the 'traditional' decomposition methods require the additivity of output in constant prices condition to hold. The GEAD method uses the structure of output in current prices, which removes the issue of choosing a base year.

A further advantage of the GEAD method is that it takes into account the possibility of labour reallocation arising purely from changes in relative prices; however, this is simultaneously a weakness of the method, since it does not allow one to separate the effect attributable to labour reallocation from that attributable to rising relative prices. This problem is addressed by the GEAD-3f modification.

GEAD-3f decomposition

This method was first presented in the work of W. Diewert (2015) [12], where, through a series of transformations, the author arrives at a decomposition of the *between* effect into a labour reallocation effect and a relative price change effect.

Taking the rate of change of relative prices in sector n as $\rho_{n,t} = \frac{P_{n,t} - P_{n,0}}{P_{n,0}}$, the decomposition formula takes the following form:

$$G_t = \sum_{n=1}^n \Delta G_{n,t} + \sum_{n=1}^n \Delta s_{n,t}^L + \sum_{n=1}^n \Delta p_{n,t}, \quad (7)$$

$$\Delta G_{n,t} = s_{n,0}^Y \times G_{n,t} \times \left\{ 1 + \frac{1}{2} \times \rho_{n,t} + \frac{1}{2} \times \sigma_{n,t} + \frac{1}{3} \times \rho_{n,t} \times \sigma_{n,t} \right\}, \quad (8)$$

$$\Delta s_{n,t}^L = s_{n,0}^Y \times \sigma_{n,t} \times \left\{ 1 + \frac{1}{2} \times \rho_{n,t} + \frac{1}{2} \times G_{n,t} + \frac{1}{3} \times \rho_{n,t} \times G_{n,t} \right\}, \quad (9)$$

$$\Delta p_{n,t} = s_{n,0}^Y \times \rho_{n,t} \times \left\{ 1 + \frac{1}{2} \times \sigma_{n,t} + \frac{1}{2} \times G_{n,t} + \frac{1}{3} \times \sigma_{n,t} \times G_{n,t} \right\}, \quad (10)$$

where $\Delta G_{n,t}$ is the contribution of within-sector productivity growth in sector n , $\Delta s_{n,t}^L$ is the contribution of labour reallocation in sector n , and $\Delta p_{n,t}$ is the contribution of relative price changes in sector n .

The main limitation of this approach is that it does not allow the labour reallocation effect to be split into Denison and Baumol effects, so the resulting estimates of the reallocation effect should be compared against the *between* effect estimates from the other methods.

Analysis of the results obtained using the proposed methods for decomposing aggregate labour productivity makes it possible to assess the efficiency of inter-sectoral labour reallocation as fully as possible: TRAD allows the labour reallocation effect to be assessed under the assumption of additivity of output in constant prices; CSLS refines and simplifies the interpretation of the contributions of individual sectors to the reallocation effect; GEAD takes into account the impact of changes in relative prices in the economy on the reallocation effect; and GEAD-3f makes it possible to separate the contributions of labour reallocation and relative price changes.

Data

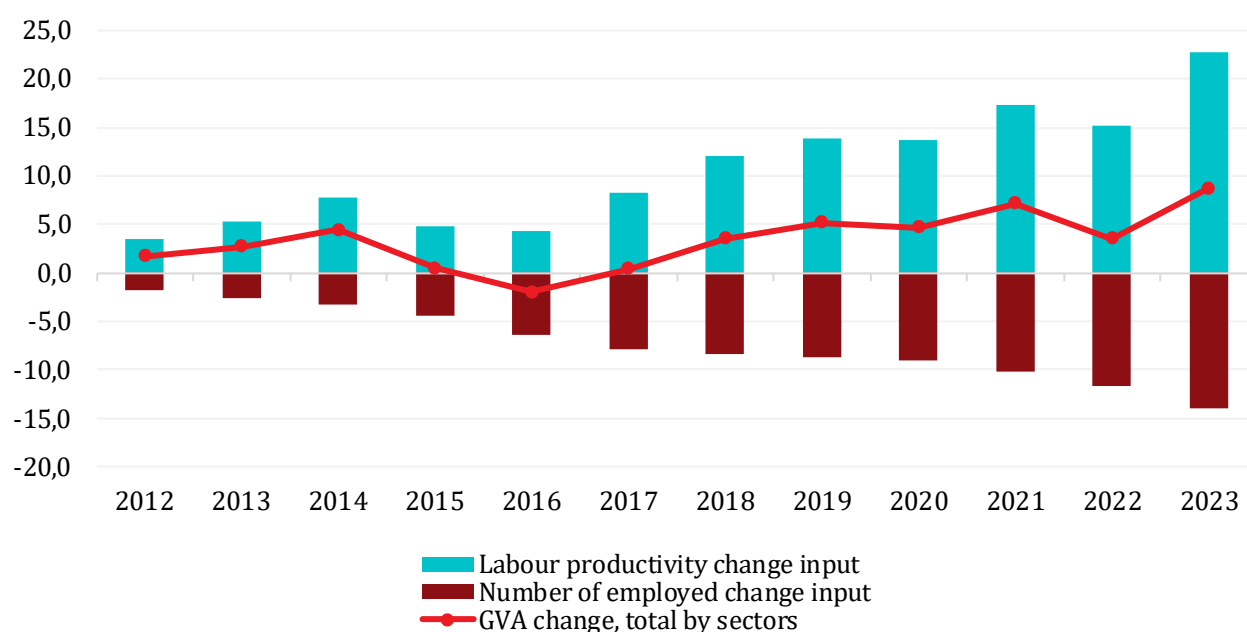
The calculations for the decomposition of aggregate labour productivity used National Accounts data and employment structure data published by the Belarusian Statistical Committee (hereinafter, Belstat) for 2011–2023. To ensure comparability of results, Belarus's sectoral indicators were adapted to the sector format used by OECD countries. Additional data were drawn from the following Belstat statistical data books and bulletins: statistics on state commercial organisations were taken from the statistical bulletin 'Key performance indicators of state sector organisations' for January–December of each year over 2016–2020; education statistics were taken from the 2023 'Statistical Yearbook', the 2023 Statistical Review for Youth and Students' Day, the 2021 Statistical Review for International Students' Day, and the 'Education in the Republic of Belarus' booklets for 2013 and 2021; other data were taken from the Eurostat and World Bank databases.

In similar studies, labour productivity is usually expressed as average productivity per hour worked. Average hourly labour productivity is determined both by the number of people employed in the economy and by the average number of hours worked. The latter depends both on changes in the number of people employed and on the specific nature of work in each sector, the adoption of innovation, optimisation of working time, staffing arrangements, the national calendar, and so on. This paper focuses on changes in the number of people employed in the Belarusian economy and their impact on aggregate labour productivity; accordingly, the indicator used for labour productivity is average annual productivity per person employed in the economy and in each sector respectively.

Key indicators of development and structural change in the Belarusian economy

Before turning to the analysis of the decomposition results for aggregate labour productivity, let us consider the key indicators characterising changes in the structure of the economy and in the situation on the labour market in Belarus.

Fig. 1. Decomposition of the growth rate of Belarus's GVA, 2012–2023 (2011 = 1), constant 2011 prices, per cent



Source: author's own calculations based on Belstat data.

The decomposition of GVA growth rates into labour productivity and employment factors shows that the growth of the Belarusian economy over the past 12 years has been driven mainly by productivity growth. At the same time, this growth was not stable, owing to systemic economic crises. The state's policy during the COVID-19 pandemic, aimed at preserving output by forgoing a lockdown, made it possible to keep productivity at approximately its 2019 level, unlike in neighbouring countries, and to bring the economy onto a recovery growth path in 2021 [6]. Nevertheless, the absence of restrictive measures during the COVID-19 pandemic and the onset of the domestic political crisis in 2020 accelerated the outflow of workers from the economy, while Belarus's complicity in Russia's war against Ukraine and the subsequent sanctions pressure, and the severance and suspension of economic relations with certain trading-partner countries, caused a significant reduction in output and, accordingly, in productivity in 2022. In 2023 the Belarusian economy managed to adapt to the prevailing conditions, enabling it to restore output and exceed the 2021 level; however, the negative impact of the declining employment factor is intensifying at a faster pace than during the crisis of 2014–2015.

The reduction in employment in the years under review had a negative impact on economic growth rates, and in 2023 its contribution to the growth rate of the

economy was –14.0 pp. relative to the 2011 level. The acceleration in the pace of decline in the number of people employed in the economy is linked to crisis phenomena and has an inertial character: thus, the most noticeable declines in employment were observed in 2012, 2015–2017 and 2021; in 2022, as a result of the onset of Russia's war against Ukraine, there was, for the first time in the period under review, an outflow of employment across all sectors, and this trend continued in 2023.

In the literature, the decline in the number of people employed in Belarus is most often attributed to causes that can be divided into two groups: demographic (an ageing population, the retirement of 'baby boomers' and the entry into employment of the generation born during the 'demographic dip of the 1990s', and rising labour emigration) and labour market inefficiency (slow growth in the number of more productive jobs, insufficient or absent social support for the unemployed, imbalances between labour supply and demand, etc.). One consequence of insufficient labour market efficiency is, among other things, rising emigration of the working-age population, while the prevailing economic conditions limit the possibility of attracting a sufficient number of workers from abroad to make up for the outflow of labour resources from the country.

Table 1. Distribution of GVA by sector in Belarus, in current prices, per cent

	2011	2021	2022	2023	2023 vs 2011
Total by type of economic activity	100.0	100.0	100.0	100.00	–
Production sector	50.0	44.4	46.0	44.4	–5.6
Agriculture, forestry and fishing	9.1	7.7	9.0	8.3	–0.8
Industry	33.5	30.8	31.6	30.2	–3.3
Construction	7.4	5.9	5.4	5.9	–1.5
Services sector	50.0	55.6	54.0	55.6	5.6
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities	23.7	17.7	17.6	18.3	–5.4
Information and communication	2.4	8.3	6.9	5.8	3.3
Financial and insurance activities	4.9	3.0	3.7	4.3	–0.5
Real estate activities	4.0	7.0	6.5	6.7	2.7
Professional, scientific and technical activities; administrative and support service activities	3.2	4.7	4.3	4.5	1.4
Public administration, defence, education, human health and social work activities	10.3	13.2	13.2	14.1	3.8
Other services activities	1.5	1.8	1.8	2.0	0.4

Note: minor statistical discrepancies are due to rounding.

Over the 12-year period, the share of the services sector in Belarus's GVA structure increased. It gained 5.6 p.p., as a result of which its share of GVA rose from 50.0% in 2011 to 55.6% in 2023. The largest increase in share belongs to the 'Public administration, defence, education, human health and social work activities' sector (3.8 pp.). Significant increases in GVA share were also shown by 'Information and communication' (3.3 pp.) and 'Real estate activities' (2.7 pp.). The shares of all sectors within the production sector declined over the period under review.

In 2022, geopolitical destabilisation had a significant impact on the structure of output, and the share of the services sector fell compared with its 2021 value of 55.6%. However, in 2023, as the economy adapted to the new reality, the structure of output moved closer to that of 2021, albeit with some differences. Whereas before 2022 the 'Information and communication' sector had been actively increasing its share and led all sectors in terms of the growth of share in output, in 2022 its share fell for the first time, by 1.4 pp. from 8.3%, and it fell by a further 1.1 p.p. in 2023 compared with the previous year. At the same time, the COVID-19 pandemic and domestic political destabilisation did not have such a significant impact on the structure of output in 2020–2021.

Table 2. Distribution of employment by sector in Belarus, per cent

	2011	2021	2022	2023	2023 vs 2011
Total by type of economic activity	100.0	100.0	100.0	100.0	–
Production sector	44.4	38.6	38.4	38.3	–6.1
Agriculture, forestry and fishing	10.2	8.6	8.6	8.4	–1.7
Industry	25.6	23.6	23.8	24.0	–1.5
Construction	8.7	6.3	6.0	5.9	–2.8
Services sector	55.6	61.4	61.6	61.7	6.1
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities	21.8	23.0	23.1	23.1	1.3
Information and communication	1.8	3.4	3.3	3.0	1.2
Financial and insurance activities	1.6	1.4	1.4	1.4	–0.2
Real estate activities	1.7	1.6	1.6	1.6	–0.1
Professional, scientific and technical activities; administrative and support service activities	4.8	6.0	5.9	6.0	1.1
Public administration, defence, education, human health and social work activities	20.9	22.3	22.5	22.7	1.6
Other services activities	3.1	3.8	3.7	3.9	0.7

Note: minor statistical discrepancies are due to rounding.

The share of the services sector in the employment structure also increased. Over 12 years, its share of total employment rose by 6.1 pp., from 55.6% in 2011 to 61.7% in 2023. As with the GVA structure, in 2023 the sector with the largest increase in employment share was 'Public administration, defence, education, human health and social work activities' (1.6 pp.), followed by 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities' (1.3 pp.); the third largest change in employment share was in 'Information and communication', which had led in employment share growth until 2022 (1.2 pp.). All sectors within the production sector saw a decline in their employment share. Overall, the change in the employment structure was smoother than the change in the GVA structure.

Table 3. Average labour productivity in the Belarusian economy and by sector, per unit of labour, constant 2011 prices, denominated BYN

	2011	2023	Growth rate, %	Group
Total by type of economic activity	5,777.8	7,024.8	21.6	–
Production sector	6,506.3	9,414.5	44.7	–
Agriculture, forestry and fishing	5,161.7	8,540.2	65.5	II
Industry	7,578.5	10,726.0	41.5	II
Construction	4,922.1	5,297.8	7.6	III
Services sector	5,196.5	5,647.0	8.7	–
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities	6,296.6	7,209.5	14.5	II
Information and communication	8,047.5	10,435.8	29.7	I
Financial and insurance activities	17,531.7	28,259.4	61.2	II
Real estate activities	13,629.6	13,469.4	–1.2	IV
Professional, scientific and technical activities; administrative and support service activities	3,801.1	2,723.3	–28.4	V
Public administration, defence, education, human health and social work activities	2,845.7	2,855.4	0.3	III
Other services activities	2,857.6	2,461.0	–13.9	V

Note: Average labour productivity is calculated as the ratio of GVA to the number of employed in the economy (by sector) over the period indicated.

Sectors were allocated to groups of sources of labour productivity growth according to the following principle. The first three groups comprise sectors that showed labour productivity growth: Group I – GVA grew faster than employment; Group II – GVA grew while employment declined; Group III – GVA declined more slowly than employment. The second three groups comprise sectors where labour productivity declined: Group IV – GVA declined faster than employment; Group V – GVA declined while employment grew; Group VI – GVA grew more slowly than employment.

Labour productivity increased in seven out of ten sectors in Belarus over the period under review, but the growth was driven by GVA growth rates in only half of them. The only sector in which productivity growth was driven by GVA growth outpacing employment growth (Group I) was 'Information and communication'. Group II comprised the production sector activities 'Industry' and 'Agriculture, forestry and fishing', and the services sector activities 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities' and 'Financial and insurance activities'. The only sectors in which employment grew over the period under review were 'Information and communication', 'Professional, scientific and technical activities; administrative and support service activities' and 'Other services activities', but in the second case productivity fell by almost a third, and in the third by almost 14.0%.

The preliminary analysis carried out indicates that labour redistribution has taken place in the Belarusian economy as a result of its structural changes, and there are certain problems with its efficiency. Whether the economy's transformation processes have contributed to efficient labour reallocation is examined below.

Results of the decomposition of aggregate labour productivity

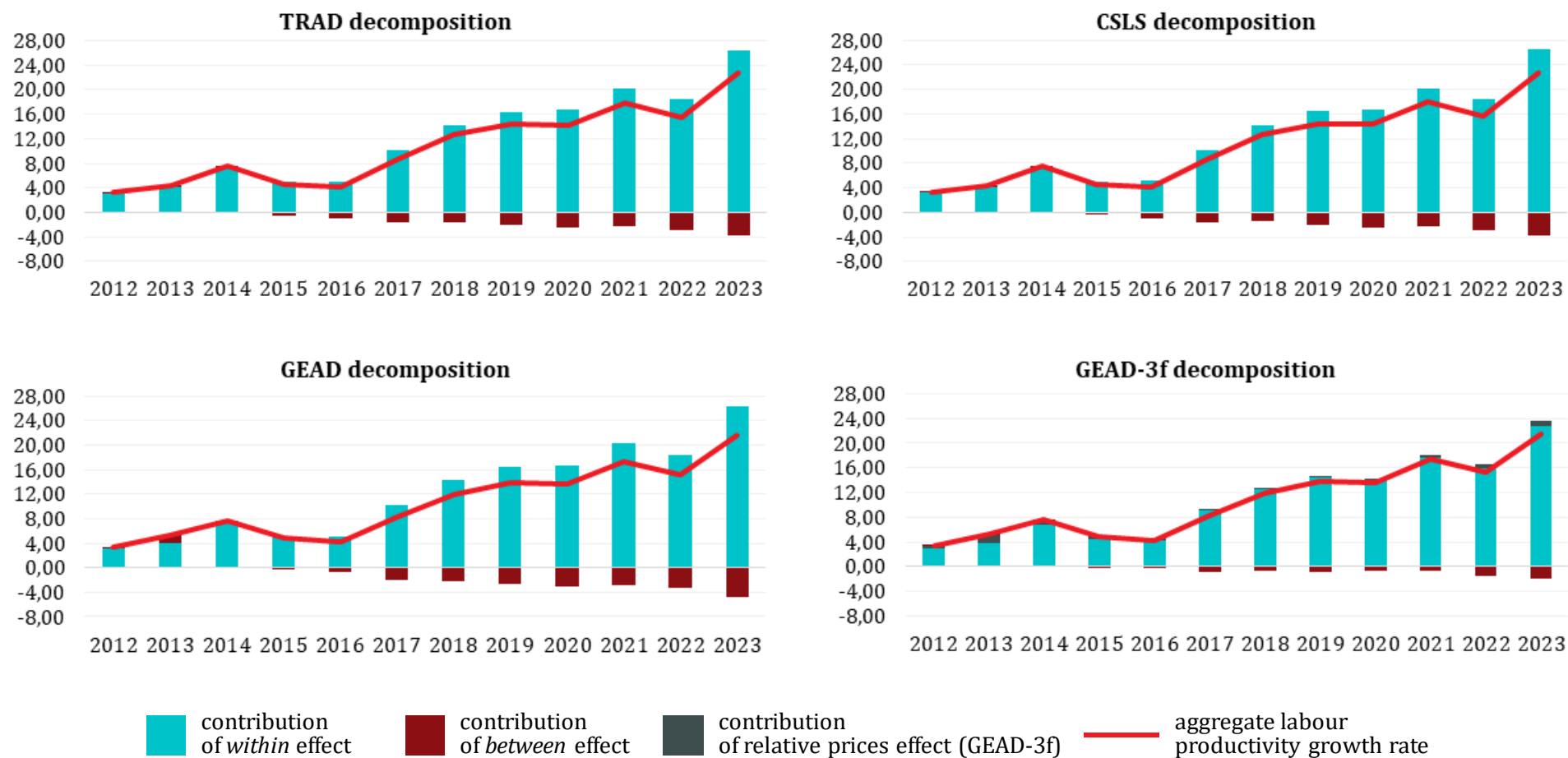
Labour reallocation between sectors of the Belarusian economy has not been efficient since 2015. The estimated size of this component's contribution varies across decomposition methods, but all the results obtained are consistent and signal a deterioration in the efficiency of inter-sectoral labour reallocation. Although the share of the *between* component in aggregate labour productivity growth is small, with the main contribution coming from *within* productivity growth, inefficient labour reallocation is nevertheless failing to support faster economic growth in the case of the Belarusian economy.

The trend that took shape in the Belarusian economy over 2012–2014 showed potential for aggregate labour productivity growth partly driven by the labour reallocation effect. The 2015 crisis was a turning point, contributing among other things to an

acceleration of labour emigration. Over 2017–2019 there was a recovery in productivity growth, but the contribution of labour reallocation gradually declined over this period. The COVID-19 pandemic and the onset of the domestic political crisis in Belarus had a significant impact on the development of the Belarusian economy, and three of the four methods for the labour reallocation effect assessment (TRAD, CSLS, GEAD) showed a marked decline in reallocation efficiency in 2020. In 2021, all estimates reflected some improvement as the Belarusian economy adapted to the prevailing conditions; however, the onset of Russia's war against Ukraine and the effects of tighter restrictions linked to Belarus's co-aggression significantly worsened the contribution of labour reallocation, as confirmed by calculations using all methods: in 2022, the TRAD and CSLS estimates worsened from –2.29 pp. in 2021 to –2.91 pp. in 2022; the GEAD estimate worsened from –2.86 pp. to –3.21 pp.; and the GEAD-3f estimate fell from –0.72 pp. to –1.44 pp. Although the contribution of within-sector productivity became the main driver of the recovery in productivity growth in 2023 and significantly exceeded its 2021 level, the labour reallocation effect declined faster than before.

To better understand the labour reallocation processes, let us consider the results of the productivity decomposition broken down by sector contributions to aggregate labour productivity growth in 2023. All sectors can be conditionally divided into two categories according to their level of labour productivity: progressive (P) – where the level of labour productivity is above the economy-wide average, and non-progressive – where it is below the economy-wide average. Thus, in 2023 the progressive sectors were 'Industry' (Group II), 'Information and communication' (Group I), 'Financial and insurance activities' (Group II) and 'Real estate activities' (Group IV).

Fig. 2. Decomposition of aggregate labour productivity in Belarus, 2012–2023, base index (1 = 2011), pp.



Source: author's own calculations based on Belstat data

Table 4. Decomposition of the growth rate of aggregate labour productivity in Belarus using the TRAD method, 2023 to 2011, by sector contribution, within-sector (*within*) and reallocation (*between*) effects, constant 2011 prices, pp.

Sector	TRAD		
	<i>Within</i>	<i>Between</i>	Total
	1	2	3 = 1+2
Total by type of economic activity	26.44	-3.70	22.73
<i>Production sector</i>	20.42	-7.94	12.48
Agriculture, forestry and fishing (II)	5.94	-2.82	3.39
Industry (II) (P)	13.92	-3.09	11.10
Construction (III)	0.56	-2.58	-2.01
<i>Services sector</i>	6.01	4.24	10.25
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities (II)	3.44	2.16	5.10
Information and communication (I) (P)	0.73	2.76	2.89
Financial and insurance activities (II) (P)	2.97	-1.20	1.77
Real estate activities (IV) (P)	-0.05	-0.20	-0.25
Professional, scientific and technical activities; administrative and support service activities (V)	-0.90	0.56	-0.34
Public administration, defence, education, human health and social work activities (III)	0.04	0.90	0.94
Other services activities (V)	-0.21	0.36	0.15

Note: minor statistical discrepancies are due to rounding.

Source: author's own calculations based on Belstat data.

Aggregate labour productivity, calculated under the assumption of additivity of output in constant prices, grew by 22.73% in Belarus over 12 years. As noted above, this growth was driven mainly by the within-sector productivity growth effect, whose contribution was 26.44 pp. The results of the aggregate labour productivity decomposition shed light on several important points. In terms of within-sector productivity growth, the leading sector is 'Industry', accounting for 13.92 pp., or 50.5% of the total positive contribution; followed by 'Agriculture, forestry and fishing' (5.94 pp.) and 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities' (3.44 pp.). It is notable that only two of the progressive sectors show a significant contribution to within-sector productivity: the contribution of 'Information and communication' to within-sector productivity is just under 1 pp., while 'Real estate activities' makes a small negative contribution. At the same time, both 'Industry' and 'Agriculture, forestry and fishing' saw declines in both their employment share and their share of GVA, so the within-sector productivity growth can

partly be explained by workforce optimisation. The total negative contribution to within-sector productivity growth across sectors was small, at –1.15 pp., with the largest negative contribution coming from 'Professional, scientific and technical activities; administrative and support service activities' at –0.90 pp.

The negative value of the reallocation effect over the period under review resulted from negative contributions from half of the sectors; a positive contribution to the reallocation effect came from the services activities. The largest positive contributions belong to 'Information and communication' (2.16 pp.) and 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities' (1.66 pp.). The remaining services sector activities, apart from 'Financial and insurance activities' and 'Real estate activities', showed a small but positive contribution to the labour reallocation effect, totalling 1.82 pp. At the same time, the only progressive sector with a positive contribution to the reallocation effect was 'Information and communication', while the total contribution of the progressive sectors was –2.06 pp.

As noted earlier, the TRAD decomposition has a significant drawback that complicates the interpretation of the reallocation effect in non-progressive sectors: where employment is falling while the output share is rising and productivity is declining at the same time, the reallocation effect will be positive, as in the cases of 'Professional, scientific and technical activities; administrative and support service activities' and 'Other service activities'. This problem is resolved by the CSLS decomposition method.

Table 5. Decomposition of the growth rate of aggregate labour productivity using the CSLS method, 2023 to 2011, by sector contribution in the Belarusian economy, within-sector (*within*) and reallocation (*between*) effects, constant 2011 prices, pp.

Sector	CSLS		
	<i>Within</i>	<i>Between</i>	Total
	1	2	3 = 1+2
Total by type of economic activity	26.44	–3.70	22.73
<i>Production sector</i>	20.42	–0.51	19.91
Agriculture, forestry and fishing (II)	5.94	–0.43	5.51
Industry (II) (P)	13.92	–0.95	12.96
Construction (III)	0.56	0.87	1.44
<i>Services sector</i>	6.01	–3.19	2.82
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities (II)	3.44	0.03	3.47

Information and communication (I) (P)	0.73	0.69	1.42
Financial and insurance activities (II) (P)	2.97	-0.90	2.07
Real estate activities (IV) (P)	-0.05	-0.10	-0.14
Professional, scientific and technical activities; administrative and support service activities (V)	-0.90	-0.90	-1.79
Public administration, defence, education, human health and social work activities (III)	0.04	-1.34	-1.30
Other services activities (V)	-0.21	-0.68	-0.89

Note: minor statistical discrepancies are due to rounding.

Source: author's own calculations based on Belstat data.

Unlike TRAD, the CSLs estimates point to a negative contribution to the total reallocation effect from most sectors. The contribution of the within-sector productivity effect is calculated in the same way as in TRAD under this methodology. The calculation of the reallocation effect takes into account the effect of rising employment in non-progressive sectors, which significantly changed the estimates of their contributions. In this case, only three sectors show a positive contribution – 'Construction' (0.87 pp.), 'Information and communication' (0.69 pp.) and 'Wholesale and retail trade; transportation and storage; accommodation and food service activities' (0.03 pp.) – while all other sectors make a negative contribution, the lowest of which belong to 'Public administration, defence, education, human health and social work activities' (-1.34 pp.) and 'Industry' (-0.95 pp.), together accounting for 43.3% of the total negative contribution to the reallocation effect. At the same time, it is worth noting that, compared to the TRAD decomposition results, the estimated contributions shifted upward for the production sector activities: the negative contributions of 'Industry' and 'Agriculture, forestry and fishing' declined, while 'Construction' turned positive; the negative contribution also declined for 'Financial and insurance activities' and 'Real estate activities'. At the same time, this decomposition also reveals the inefficiency of labour reallocation among the progressive sectors: despite the significant contribution of 'Information and communication', their total contribution to the reallocation effect was -1.26 pp.

Table 6. Decomposition of the growth rate of aggregate labour productivity using the GEAD method, 2023 to 2011, by sector contribution in the Belarusian economy, within-sector (*within*) and reallocation (*between*) effects, pp.

Sector	GEAD		
	<i>Within</i>	<i>Between</i>	Total
	1	2	3 = 1+2
Total by type of economic activity	26.44	-4.85	21.58

Production sector	20.42	-16.44	3.98
Agriculture, forestry and fishing (II)	5.94	-4.96	0.97
Industry (II) (P)	13.92	-10.73	3.19
Construction (III)	0.56	-0.74	-0.18
Services sector	6.01	11.59	17.60
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities (II)	3.44	-4.94	-1.51
Information and communication (I) (P)	0.73	3.84	4.56
Financial and insurance activities (II) (P)	2.97	-2.54	0.42
Real estate activities (IV) (P)	-0.05	4.16	4.11
Professional, scientific and technical activities; administrative and support service activities (V)	-0.90	3.22	2.33
Public administration, defence, education, human health and social work activities (III)	0.04	6.78	6.82
Other services activities (V)	-0.21	1.08	0.87

Note: minor statistical discrepancies are due to rounding.

Source: author's own calculations based on Belstat data.

Accounting for changes in relative prices reduces the estimated growth in aggregate labour productivity in Belarus over the period under review to 21.58%.

The estimated contribution of within-sector productivity remains unchanged at 26.44 p.p., but the estimated size of the reallocation effect declines, and a detailed look at sector contributions reveals changes compared with the results of the decomposition methods discussed above. Specifically, the contributions to the reallocation effect from sectors such as 'Agriculture, forestry and fishing' and 'Industry' decline; unlike in the previous methods, the contribution of 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities' is estimated as negative under this decomposition. Such changes may be attributable to a decline in relative prices for the output of the above-mentioned sectors. At the same time, other services sector activities, apart from 'Financial and insurance activities', show a positive contribution to the reallocation effect: the contribution of 'Real estate activities' rose most noticeably and turned positive; the increase in contributions from the services sector may, conversely, be linked to rising relative prices for the services of these sectors. However, the results of the GEAD decomposition likewise do not point to efficient labour reallocation among the progressive sectors: their total contribution to the reallocation effect was -5.28 pp.

The GEAD decomposition does not make it possible to precisely isolate the effect of changes in relative prices in the economy. To do this, let us consider the results of the GEAD-3f decomposition.

Table 7. Decomposition of the growth rate of aggregate labour productivity using the GEAD-3f method, 2023 to 2011, by sector contribution in the Belarusian economy, within-sector (*within*) and reallocation (*between*) effects, pp.

Sector	GEAD-3f				
	<i>Within</i>	<i>Between</i>	Labour reallocation effect	Relative prices change effect	Total
	1	2 = 3+4	3	4	5 = 1+2
Total by type of economic activity	22.72	-1.13	-1.94	0.80	21.58
Production sector	17.79	-13.81	-6.92	-6.89	3.98
Agriculture, forestry and fishing (II)	4.92	-3.95	-1.83	-2.12	0.97
Industry (II) (P)	12.32	-9.13	-2.18	-6.95	3.19
Construction (III)	0.55	-0.73	-2.92	2.19	-0.18
Services sector	4.92	12.68	4.98	7.69	17.60
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities (II)	3.13	-4.64	1.37	-6.01	-1.51
Information and communication (I) (P)	1.14	3.42	2.23	1.20	4.56
Financial and insurance activities (II) (P)	2.47	-2.05	-0.87	-1.18	0.42
Real estate activities (IV) (P)	-0.07	4.18	-0.32	4.51	4.11
Professional, scientific and technical activities; administrative and support service activities (V)	-1.50	3.83	0.97	2.86	2.33
Public administration, defence, education, human health and social work activities (III)	0.05	6.77	1.14	5.63	6.82
Other services activities (V)	-0.29	1.16	0.47	0.69	0.87

Note: minor statistical discrepancies are due to rounding.

Source: author's own calculations based on Belstat data.

The decomposition estimates from the GEAD and GEAD-3f methods differ, but the magnitudes of the effects are similar. As noted in [33, pp. 54–55], the statistical differences between these decomposition methods carry no substantive meaning and are due to adjustments made to ensure additivity of the effects. Thus, the estimated

labour reallocation effect remains negative, at -1.94 pp., while the relative prices change effect is positive (0.80 pp.) and partly offsets the negative reallocation effect. Looking at sectoral contributions, it becomes clear that the hypothesis put forward earlier regarding the influence of relative price changes is correct: more than half of the negative contribution of 'Agriculture, forestry and fishing' and more than two-thirds of the contribution of 'Industry' are attributable to falling relative prices; the same explains the decline in the contribution of 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities'. As for the labour reallocation effect itself, it is negative and is largely driven by negative contributions from the production sector, caused by the outflow of employment from these sectors. The positive contribution to the reallocation effect belongs mainly to 'Information and communication' and 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities', accounting for 58.3% of the total positive contribution to the reallocation effect. The total contribution of the progressive sectors to the reallocation effect was -1.14 pp.

The positive reallocation results for sectors such as 'Professional, scientific and technical activities; administrative and support service activities', 'Public administration, defence, education, human health and social work activities' and 'Other service activities' appear somewhat contradictory. From a technical standpoint, these results can be explained by nuances of the calculation: the employment share in these sectors was increasing, while the decline in productivity was smaller in magnitude than the rise in relative prices in these sectors. Moreover, two of the abovementioned sectors have the largest contributions to the relative prices change effect.

Table 8. Decomposition of the labour reallocation effect in the Belarusian economy into Baumol and Denison effects, 2023 to 2011, pp.

Decomposition method	<i>Between effect</i>	Baumol effect	Denison effect
	1 = 2+3	2	3
TRAD, CSLS	-3.70	-2.04	-1.66
GEAD	-4.85	-7.36	2.50

Source: author's own calculations based on Belstat data.

Accounting for changes in relative prices in the decomposition of aggregate labour productivity has a significant impact on the sizes of sector contributions to the reallocation effect. The results of decomposition methods that do not account for

relative price changes show that the larger negative contribution to the reallocation effect came from the redistribution of workers from progressive to non-progressive sectors (the Denison effect). However, once relative price changes are accounted for, this effect turns positive, because relative prices rose faster in some lower-productivity sectors, while the contribution of the Baumol effect, reflecting the redistribution of labour between sectors with different productivity levels, declines. Taken together, the results of the calculations are not contradictory: faster growth in relative prices in non-progressive sectors overstated the estimated contribution of labour reallocation even in cases of rising employment in these sectors, but it did not resolve the problem of inefficient labour redistribution.

The redistribution of labour towards progressive sectors and towards sectors where productivity was rising was not efficient in Belarus. As noted above, among all the progressive sectors only 'Information and communication' had a positive contribution to the reallocation effect, and even this did not offset the negative contributions of the other sectors. The total contribution of the progressive sectors was negative; for sectors where productivity rose (Groups I–III), the estimated reallocation effect was –4.42 pp. under TRAD, –2.03 pp. under CSLS, –13.31 pp. under GEAD, and –3.05 pp. under GEAD-3f. Such results may point to a problem with the sources of productivity growth in some sectors, which stemmed not from innovative development and the creation of new, highly productive workplaces, but from a reduction in the number of employees (in recent years, partly due to the outflow of working age citizens abroad), and may also indicate that, when deciding to change their field of activity, workers do not prioritise the productivity of the new job.

In sum, the labour reallocation effect in Belarus was not neutral over the period under review. Estimates of the reallocation effect were obtained using different methods, and the results reinforce one another, pointing to problems on the Belarusian labour market: despite increased labour market flexibility, existing institutional obstacles do not support the redistribution of labour towards more productive sectors, and in some sectors within-sector productivity growth is partly driven by workforce attrition. Overall, the situation on the labour market, which also involved labour reallocation towards non-progressing sectors with faster rising relative prices, did not support growth in aggregate labour productivity and, consequently, the economy's growth potential.

Among the main labour market problems constraining the potential for improving the efficiency of labour reallocation in the Belarusian economy, the following can be highlighted.

A weak social protection system and economic discrimination against the unemployed. Belarus has a low unemployment benefit, insufficient to cover a person's basic living needs, and the conditions for receiving and continuing to receive it are being tightened. Until the start of 2025, the unemployment benefit amounted to up to 2 base units², or up to 21.2% of the subsistence minimum budget; from 2025, the benefit amount is fixed and set by the Council of Ministers, and in 2025 it stands at BYN 40, or 9.1% of the subsistence minimum budget [50]. To be officially recognised as unemployed, an applicant must meet a number of criteria (at least 5 years of work experience; a dismissal reason included on a specified list, or work under civil contracts with contributions paid to the Social Protection Fund), must apply within a month of dismissal to the labour, employment and social protection authorities and register as unemployed. If the unemployed refuses two job offers or two retraining/upskilling courses referred by the labour and employment authorities that are deemed suitable, they are deregistered and stop receiving the benefit. Participation in paid community work is a mandatory condition for receiving the unemployment benefit [47]. As a result, many people who lose their jobs prefer to cope with the situation on their own or rely on relatives and acquaintances to find new job and meet their daily needs [59, p. 111].

In 2015, the Presidential Decree No. 3 'On the prevention of social dependency' was adopted, under which Belarusian citizens who were officially unemployed for more than 6 months were obliged to pay a levy to help finance state expenditure (the so-called 'parasitism tax') amounting to 20 base units [48, p. 2], which subsequently triggered what were at the time the largest street protests and led to its suspension. In 2018, Presidential Decree No. 1 'On promoting employment of the population' was adopted, under which, from 2019, able-bodied citizens deemed not employed in the economy who own real estate are required to pay for certain utility services at full tar-

² As of 1st January 2024, one base unit in Belarus was BYN 40 (EUR 11.31 at the National Bank of the Republic of Belarus exchange rate on that date).

iffs, and face restrictions on their entitlement to certain social services and state support for purchasing/renovating housing [49, pp. 2–3].

On the one hand, this approach to promoting employment motivates workers to stay in their current jobs or, if they lose their job, to find a new one as quickly as possible, which helps to achieve lower unemployment rates³ and keep the Social Protection Fund's spending on supporting the unemployed to a minimum level⁴. On the other hand, it discourages workers from deciding to look for a higher-paid, more productive jobs within their sector, or to retrain and move to a more progressive sector, which is among the factors constraining the growth of aggregate labour productivity through labour re-allocation.

A small number or absence of opportunities for the unemployed to undertake state-supported upskilling or retraining programmes matched to their existing qualifications. The labour, employment and social protection authorities most often offer retraining courses in manual occupations that are not classified as skilled and often lead to placement in low-paid jobs. Such retraining would make sense if the qualification of the person seeking assistance were at the same level as their existing qualification, but had become no longer in demand on the labour market. For a skilled specialist, this kind of retraining entails a loss of human capital and of the potential to work in their previous field, and upgrading or changing to an equivalent-level qualification requires additional personal investment, which in turn can become a demotivating factor when deciding on employment if it implies upskilling at the candidate's own expense. As a result, a job-seeker may decide to remain in their current job or opt for a less skilled and less productive one.

An imbalance on the labour market due to a mismatch between supply and demand along occupational-qualification lines. The existing education system does not fully meet labour market expectations. There is a global trend towards a growing share of the population with higher education, and Belarus is no exception in this respect. As of

³ In 2023, the unemployment rate according to the methodology of the International Labour Organisation (hereinafter, ILO) was 3.6% in Belarus, 7.0% in Lithuania, and 2.9% in Poland. Source: World Bank.

⁴ In 2023, the share of the Social Protection Fund's expenditure on employment promotion measures and support for the unemployed population amounted to 0.11% of total expenditure [Ошибка! Источник ссылки не найден.].

2024, the share of the population employed in the Belarusian economy with higher education was 35.8%⁵, comparable to the EU average of 40.0%⁶ [13]. At the same time, a number of occupational-qualification imbalances exist on the labour market.

1) In Belarus, demand is higher for manual/trade occupations. In 2023, according to data from the *rabota.by* Research Centre, among the most sought-after positions that could imply a mandatory requirement of higher education were accountants and software developers. Employers most often sought sales staff, drivers and cleaners [52]. At the same time, graduates of higher education institutions account for roughly half of all graduates each year: in 2023, their share of the total was 53.1%⁷. This skew towards higher education can partly be explained both by the persistence of the social stereotype that career success and the desired level of well-being are unattainable without higher education (which persists partly due to the insufficient development of career-guidance institutions) and by the problem of workforce 'overqualification'⁸ [40, p. 20]. As an example, one can point to the structure of higher education students by field of study in the early 2010s: in the 2010/2011 academic year, students in fields related to economics, management, communications and law accounted for 40.8% of all students. However, over the following decade, as the influence of the social stereotype weakened, the structure of the economy changed, and wages rose significantly in some sectors, in particular 'Information and communication', the structure of students by field of study became more even – in the 2020/2021 academic year, the share of students in the above-mentioned field was 29.3%, and the share of students in all other fields, except pedagogy and vocational education, increased.

2) The quality of higher education in Belarus lags behind leading global standards, and the content of educational programmes is updated slowly and often fails to meet the requirements of future jobs, which reduces employers' interest in hiring grad-

⁵ Based on data from a sample household survey. Source: Belstat.

⁶ Of the population employed, aged 20–64.

⁷ Graduates of tertiary education institutions with Bachelor's and Master's degrees. Source: Statistical Review for Youth and Students' Day 2024, Belstat.

⁸ Workforce overqualification is defined as the percentage of employed with higher education who hold a position that does not correspond to the ISCO (International Standard Classification of Occupations) qualification requirements of higher education, including cases where performing the job's duties does not require mandatory higher education.

uates without relevant work experience. In 2015, Belarus joined the Bologna Process, but, despite this, no significant transformation of the higher education system took place in line with the goals, values and main directions of the European Higher Education Area [40, p. 20]. In 2022, following the onset of Russia's war against Ukraine, Belarus's participation in the Bologna Process was suspended, and given the course set by Belarusian education towards self-isolation and reorientation towards the Russian educational space [39], a further gradual widening of the gap between the content of educational programmes and employer expectations and requirements can be expected.

3) Lack of employers' interest in upskilling employees, and the predominance of fixed-term employment contracts in the formalisation of labour relations. The efficiency of a system in which labour relations with employees are predominantly established for a fixed term is a separate subject of debate within the academic community. Expert opinions differ, and there is no single view on a system of labour relations formalisation dominated by fixed-term contracts; however, there is a certain body of research showing that the prevalence of fixed-term contracts, up to a certain point, can support greater innovativeness in organisations, but that once this form of employment becomes predominant, innovation processes deteriorate [12, p. 16; 54, p. 68]. This may be due to employers' reluctance to invest in developing the skills and competencies of temporary workers, given the expectation that they will leave once their contracts expire. At the same time, the concept of lifelong learning has not yet become widespread in Belarusian society, and people themselves are often unwilling to invest in upskilling on their own initiative. As a result, in a rapidly developing world where knowledge constantly needs updating, workers who do not upskill become less competitive on the labour market and more quickly lose the motivation to look for a more productive job. The opportunity to upskill in the workplace is considered one of the factors improving human capital and organisational innovativeness, and workers' willingness to take the risk of adopting innovation may be acceptable only where there is a certain sense of security and stability [25; 29].

In Belarus in 2024, 8.1% of all people employed in the economy underwent vocational training under supplementary education programmes. The leading sectors where employees underwent training were 'Industry' (10.8% of all workers in the sector) and 'Public administration, defence, education, human health and social work activities'

(14.2% of all workers in the sector). At the same time, in other progressive sectors, apart from 'Industry', the equivalent figure in 2024 did not exceed 4%. By comparison, the share of the population employed in the economy (aged 25–64) participating in training and upskilling programmes averaged 13.3% in the EU in 2022.⁹

The most common form of employment relationship in Belarusian organisations is the fixed-term contract. This practice took shape as far back as the late 1990s and early 2000s. Estimates of the impact of the widespread use of fixed-term contracts in Belarus on the labour market situation, productivity growth and organisational innovation vary, as they do in foreign research. K. Tomashevski (2019) noted that shortcomings in the legislative framework governing labour relations, and the use of fixed-term contracts in particular, lead to the precarisation of labour (a vulnerable position for workers) [56, pp. 31–32], while the risk of unemployment was considered one of the most sensitive for labour market participants [60, p. 30]. K. Tomashevski noted that, according to labour union monitoring results, around 30% of fixed-term contracts in 2018 were signed for a one-year term. At the same time, employees on fixed-term contracts do not have the right to resign of their own initiative, but only upon request, which must state a valid reason relating to the employer's breach of contract terms, or by mutual agreement of the parties, which allows the employer to retain the employee in the job until the contract expires – something the author characterises as a hidden form of forced labour [56, p. 32].

On the other hand, N. Makovskaya (2018), based on a survey of Belarusian organisations, showed that the prevalence of fixed-term contracts did not have a negative effect on organisational innovation activity. The author explains this by the fact that innovations are most often implemented by organisations on the basis of older technologies serviced by workers with secondary general or vocational education, while workers with higher education do not have a significant impact on organisational innovation activity, so employers see no need to retain them in their jobs. At the same time, fixed-term contracts provide flexibility in labour relations and reduce the costs to organisations of dismissing workers, which, among other things, allows them to increase financing for innovation activity [37, p. 105].

⁹ Based on data from a sample household survey. Source: Cedefop.

The estimated labour reallocation effect obtained for the Belarusian economy, as mentioned earlier, is more likely to point to insufficient innovation activity among organisations. Despite the labour market flexibility that the system of fixed-term contracts provides for workers and employers, in the context of workers' sensitivity to unemployment risk and to the obsolescence of their skills and competencies without upskilling, it can both reduce workers' motivation to look for more productive jobs and reduce organisations' level of innovation activity. Instead of improving their skills and acquiring up-to-date knowledge, workers may prefer to direct their efforts towards retaining their current job or moving to jobs with lower requirements in terms of experience, qualifications and competencies.

Taken together, the problems listed above may also give rise to underemployment¹⁰ in the Belarusian economy, which is one of inefficient labour reallocation outcomes and causes educational and labour emigration among the most motivated and qualified workers, owing to constraints on their potential realization in Belarus. Assessing the scale of underemployment is currently difficult owing to a lack of the necessary statistics, but represents a distinct area of research interest.

Employment in organisations that are wholly or partly state-owned, owing to the social function assigned to them. The state, as an owner within the Belarusian economy, continues to play a major role. According to Belstat data, although at the end of 2023 commercial organisations with state ownership or a state stake accounted for 2.4% of all commercial organisations in the country, they accounted for 71.4% of industrial output and 42.6% of the payroll number of employees; enterprises where the state is the sole owner or major shareholder produced 56.0% of all industrial output and employed 39.0% of the payroll number of employees. In 2020¹¹, 65.1% of all organisations that were wholly or partly state-owned operated in the production sector: 31.9% were organisations in 'Agriculture, forestry and fishing' and 22.7% in 'Industry'; these organisa-

¹⁰ Underemployment refers to the employment of workers in jobs that do not make full use of their human capital. Underemployment can manifest itself in an employee being overqualified for their position; possessing knowledge, skills and competencies that are not used in the workplace; a mismatch between qualifications and the position held; or a wage level that does not correspond to their qualifications.

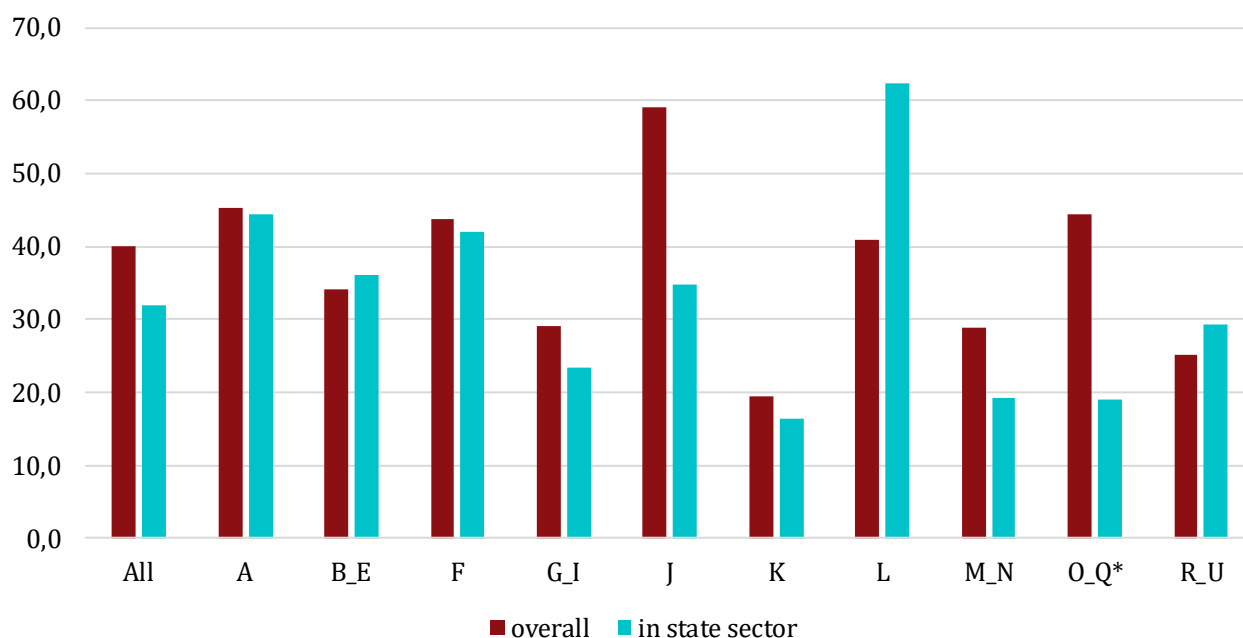
¹¹ Starting from Q2-2021, Belstat no longer provides statistics on the activities of state-owned organisations in sectoral breakdown, the latest available data are shown.

tions employed 69.4% and 60.9% respectively of all workers employed in these sectors. As a rule, state-owned organisations are large and, in addition to their primary goal of generating profit, have numerous additional functions related to ensuring the fulfilment of economic-development targets and preventing a deterioration in employment statistics [19, pp. 26–27]. This specific mode of operation makes state-owned organisations less flexible in adapting to changing external and internal conditions of economic development, which also contributes to a greater degree of state protectionism towards them and undermines competitive conditions for private business. 36

From the standpoint of labour redistribution, this situation results in that large state organisations are being perceived by workers as 'employers of last resort'. This may be particularly true in regions with an above-average share of state-owned legal entities and an above-average share of employment in the state sector: in 2023, the share of state-owned organisations out of the total in all regions, except Minsk Region and the city of Minsk, exceeded the economy-wide average of 2.8% and ranged from 3.5% to 4.5%, while the share of the payroll number of employees in such organisations exceeded 45% in Gomel Region. Within the existing economic system, a social stereotype has formed whereby state organisations are seen as guarantors of stable employment and regular wage payments, even though these wages are lower than in the private sector, which imposes lower requirements on employees' experience and competencies. Thus, according to the results of a 2019 survey by the IPM Research Centre and BEROC, respondents rated the lower risk of dismissal for employees of state organisations than for employees of private organisations [60, p. 37]. As a result, workers in less productive jobs at state organisations may decline to move to more productive jobs at private organisations for the following reasons: a) uncertainty about the relevance of their knowledge and competencies, and fear of uncertainty in a new job if it is offered by a private organisation; b) unwillingness and/or inability to relocate to another region if the private-sector employer is located elsewhere, while employers in the relevant field in their place of residence are state organisations unable to offer substantially better working conditions than the current employer; c) workers' reluctance to upskill and/or obtain further education in order to move to a higher-paid but more 'turbulent' job with a private-sector employer.

The social stereotype of state organisations as 'employers of last resort' has lost its relevance [34, p. 4], as confirmed by statistical data. After the crises of 2011 and 2015, state organisations faced reduced state support and were consequently forced to operate under tighter budget constraints. Over 2011–2022, the decline in employment in sectors was among the most significant where the state sector was most heavily represented: employment in 'Agriculture, forestry and fishing' fell by 24.0%, in 'Industry' by 16.5%, and in 'Construction' by 37.6%. Within state commercial organisations specifically, over 2016–2020 the payroll number of employees declined in almost all sectors, falling overall by 18.1%; 'Agriculture, forestry and fishing' reduced employment by 14.6%, 'Industry' by 19.2%, and 'Construction' by 34.6%; meanwhile, against a backdrop of an overall decline in employment in the economy, private-sector employment grew over the same period by 7.2%, including by 35.6% in 'Industry' and 20.5% in 'Construction'. Wages in the state sector grew more slowly than the economy-wide average until 2021; broken down by sector over 2016–2020, wages in the state commercial sector grew faster in 'Industry', 'Real estate activities' and 'Other service activities'.

Fig. 3. Growth rate of real average monthly wages economy-wide and in the state sector, 2016–2020, per cent



Note: Sector abbreviations: A – Agriculture, forestry and fishing; B_E – Industry; F – Construction; G_I – Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities; J – Information and communication; K – Financial and insurance activities; L – Real estate activities; M_N – Professional, scientific and technical activities; administrative and support service activities; O_Q – Education, human health, excluding the 'Public administration' activity; R_U – Other services activities.*

After the onset of the 2020 political crisis, state organisations became one of the instruments used to repress disloyal employees, as discussed in more detail below. The imposition and tightening of sanctions pressure by the EU, the US, the UK, Ukraine and other countries on large state organisations, which play an important role in Belarus's exports, following the onset of the 2020 domestic political crisis and Belarus's co-aggression in Russia's war against Ukraine, caused not only a rupture of international cooperation with a significant number of trading partners and the loss of export markets, but also problems in organising production and logistics processes and risks of falling behind technologically and in terms of innovation. Should the consequences of the domestic and geopolitical destabilisation persist, the opportunities for state sector productivity growth driven by innovation and the development of high-tech production will be limited and will continue to shrink, increasing the risk of further deterioration in state sector efficiency [41, p. 14].

The significant negative contribution of the state sector to the inefficiency of labour reallocation is confirmed by the calculations. It is not possible to reliably estimate the reallocation effect including the state sector using published data, since Belstat does not provide data on GVA generated by the state sector, on changes in output price levels, or on volume indices, and the period for which state-sector data is publicly available is relatively short (annual data are published for 2016–2020). However, under significant assumptions – 1) that labour productivity and the price level by sector in the state and private sectors of Belarus were the same over the period under review; 2) that private sector payroll employment is derived by subtracting state sector payroll employment from total average payroll number of employees; 3) that sectoral output is calculated based on the above assumptions – the decomposition of aggregate labour productivity yields the following results. Over 2016–2020, the labour reallocation effect for the Belarusian economy was negative: –0.94 pp. under TRAD and CSLS¹², –2.49 pp. under GEAD, and –0.76 pp. under GEAD-3f; meanwhile, equivalent calculations for the private sector show a substantial positive contribution from labour reallocation: 2.63 pp. under TRAD

¹² In this case, the calculations using the TRAD and CSLS decomposition methods used values in constant 2016 prices.

and CSLs, 1.93 pp. under GEAD, and 2.48 pp. under GEAD-3f, accounting for almost a third of the total growth in private sector aggregate labour productivity. These results confirm both the more efficient labour reallocation process in the private sector and the argument that the situation in the state commercial sector is constraining Belarus's economic growth potential.

Mandatory assignment of young professionals. Belarus is currently the only CIS country where the practice of mandatory assignment applies to students who received their education at public expense. As of early 2024, students who received secondary vocational/technical or higher education on a full-time, publicly funded basis are required to work for one year (graduates of vocational and technical institutions) or two years (graduates of secondary specialised and higher education institutions) under their assignment; students studying under targeted-admission arrangements are required to work for five years. If a young professional refuses to complete this mandatory assignment, they are required to reimburse the funds spent on their education over the entire period of study, including scholarships and other social benefits.

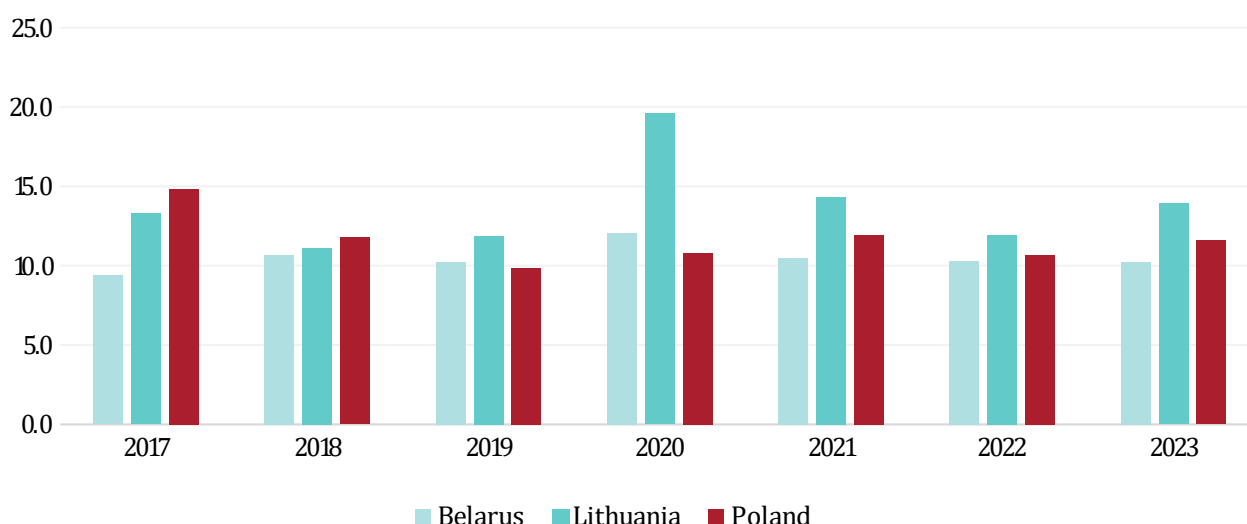
The share of full-time graduates taking up mandatory assignment jobs is substantial for both secondary vocational/technical and higher education. In 2020, 60.9% of graduates of secondary vocational/technical education institutions and 56% of graduates of higher education institutions began working under mandatory assignment; in 2012 the equivalent figures were 52.5% and 53.2% respectively.

Proponents of mandatory assignment argue for its usefulness on the grounds that a young professional receives a guaranteed first job without a probationary period, along with certain benefits and financial assistance [51]. At the same time, the assignment of future employees often takes place without regard to their preferences, place of residence, skills or competencies, and such employees may lack motivation to continue working there once their assignment period ends. Moreover, the assignment of young professionals is not based on the priority of more productive jobs, but on the staffing needs of organisations, primarily in the state sector. This reduces the efficiency of the allocation of young workers' labour resources, since a motivated young professional could be employed in a more productive job but is instead required to complete their assignment, while organisations do not have to compete to attract the most promising young professionals. For private organisations, the additional obligations involved in

employing young professionals may reduce the appeal of hiring them, if students have the option of being assigned to jobs of their own choosing. It is possible to be reassigned to a different job, but this requires additional bureaucratic costs for both the young professional and employers; moreover, if the original employer refuses to agree to a transfer, the young professional won't have this option. All of the above also slows the efficient reallocation of the most promising young workers and undermines the appeal of obtaining an education in Belarus.

Also, as a counterargument to the claim that mandatory assignment guarantees youth employment, one can point out that **mandatory assignment does not have a significant impact on reducing youth unemployment compared with other countries**. The average unemployment rate among the population aged 15–24 in Belarus over the past 6 years has been close to the levels seen in neighbouring countries: according to ILO methodology estimates, the average unemployment rate in this age group in Belarus over 2017–2023 was 10.5%. By comparison, the equivalent figure was 13.7% in Lithuania and 11.6%¹³ in Poland. Youth unemployment in Belarus is relatively stable and shows no downward trend.

Fig. 4. Youth unemployment rate (aged 15–24) in Belarus and neighbouring countries in 2017–2023, ILO methodology, per cent,



Source: compiled based on World Bank data.

Although the youth unemployment rate in Belarus is somewhat lower than in neighbouring countries, it remains high relative to the overall unemployment rate in the

¹³ Taking into account the 2020 values, when the COVID-19 pandemic began.

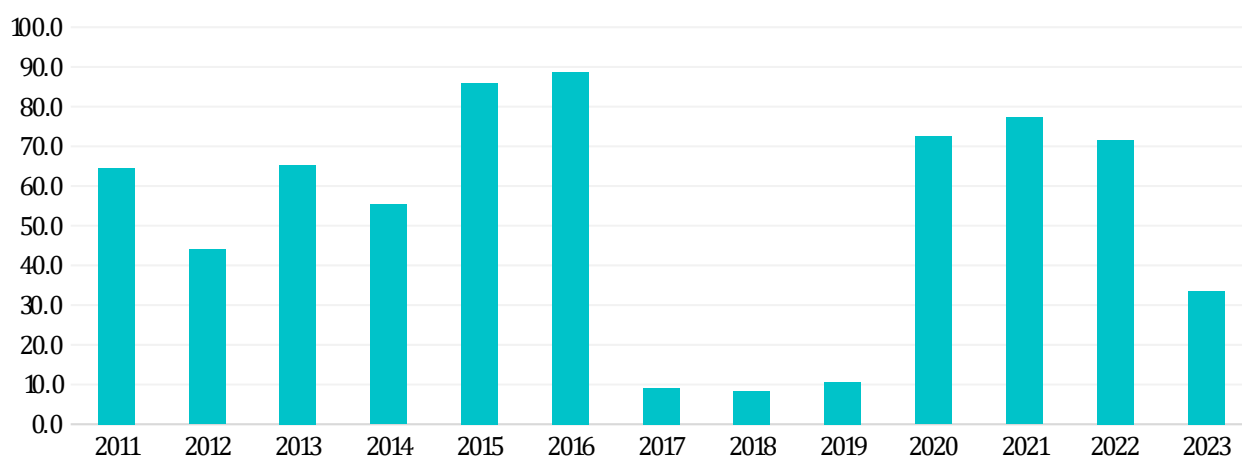
economy. This fact may also, in part, support the argument that mandatory assignment does not help retain young professionals in their jobs and that they have low motivation to work in assigned positions. On the one hand, the low level of development of career-guidance programmes and the gap between curricula and employer expectations and requirements fail to give future employees a realistic picture of their chosen profession, which can ultimately lead both to students becoming disillusioned with their chosen career path and to employers becoming disillusioned with the quality of young professionals' training, as a result of which a young professional leaves their previous job once the assignment period ends. On the other hand, motivated and highly qualified young professionals may find a gap between the expected and actual level of pay and working conditions during their assignment, which can likewise lead such workers to leave their previous job once the assignment ends in search of work where duties and pay levels correspond more closely to their expectations given their qualifications and experience.

In recent years, the state has been trying to address the problem of young talent leaving the country partly by tightening the terms of assignment for young professionals. In autumn 2023, the government put forward a proposal under which the assignment period for those receiving higher education at public expense would increase to 5 years, along with the introduction of a mandatory 2-year assignment period for fee-paying students; subsequently, in March 2024, the government decided not to introduce mandatory assignment for fee-paying students. In April 2024, changes to the procedure for assigning and completing mandatory service for young professionals were announced. A potential lengthening of the assignment period could partially address the shortage of workers in the medium term, but without economic reforms it will not solve the underlying staffing shortage, and will instead reduce young people's motivation to choose Belarusian educational institutions, which could accelerate educational emigration and its subsequent conversion into labour emigration. Ultimately, in the long run, a decision to lengthen assignment periods could lead to an even greater outflow of potential workers and a worsening imbalance between labour supply and demand in Belarus.

The impact of domestic political instability on within-sectoral and inter-sectoral labour reallocation processes and on the labour market situation is ambiguous, but pressure directly or indirectly drives increased labour emigration among skilled specialists and growth of the shadow economy. After the 2020 pro-

tests, one popular form of punishment for citizens who expressed disagreement with the authorities' actions was their inclusion on so-called 'blacklists' and subsequent dismissal or non-renewal of employment contracts in the state sector and in organisations under significant state control, for example where the nature of the work involves security vetting of employees (the banking system, large industrial enterprises, etc.). Employees placed on 'blacklists' can no longer find work at the abovementioned organisations, which significantly narrows their employment options within the country. The scale of politically motivated terminations in state organisations is difficult to quantify, but published hiring and terminations data suggest that it was substantial.

Fig. 5. Trend in the difference between the number of terminations and the number of new hires during the year, 2011–2023, thsnd. persons



Source: compiled based on Belstat data.

Over the period under review, the number of dismissals in Belarus consistently exceeded the number of new hires, but the gap between terminations and hires shows a tendency to widen during crisis periods. In 2020–2022 the gap exceeded the level of the 2011 crisis in magnitude but fell short of the scale of the 2015 crisis, averaging around 73,000 persons per year; in 2023 the gap narrowed to 33,600 persons. It is important to consider that, in addition to the political crisis, the COVID-19 pandemic also contributed to the size of the gap, and it is not possible to separate the effects of the pandemic from those of domestic political instability. Around a third of the gap – 33.7% – in 2020 was accounted for by 'Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities', which for objective reasons was significantly affected by the consequences of the pandemic. Never-

theless, as noted earlier, during the pandemic the state chose a course of preserving output volumes instead of a lockdown and optimising surplus employment, and state organisations more often sent employees on unpaid leave or switched them to part-time work [**Ошибка! Источник ссылки не найден.**, p. 19], so there is reason to believe that dismissals of employees from state organisations due to the pandemic were not on a mass scale.

Formally, Belarusian legislation does not provide for the dismissal of employees on grounds of disloyalty to the current authorities; however, Law No. 114-3 of 28 May 2021 amended Article 42 of the Labour Code of the Republic of Belarus, under which an employer may refuse to continue an employment relationship with an employee for reasons including: 1) the employee serving an administrative penalty which prevents them from performing their job duties; 2) coercing other employees to take part in a strike and creating obstacles to the performance of job duties; 3) participating in an illegal strike and refusing to perform job duties without valid reason. An amendment to Article 388 of the Labour Code of the Republic of Belarus prohibits strikes involving political demands.

The impact of domestic political instability on labour reallocation processes may be ambiguous. For example, the calculation results presented above indicate an improvement in the estimated reallocation effect in 2021. In cases where employees terminated for political reasons found more productive jobs in the private sector, it could be argued that labour reallocation became more efficient. In practice, however, it is often the case that employees terminated for political reasons are forced to take less productive jobs, in cases when their previous fields of activity are under significant state control, or to emigrate for work, which ultimately leads both to a deterioration in labour allocation and reallocation in the economy and to increased underemployment and the risk of 'brain drain'. The consequences of such dismissals harm not only employees but also employers, especially where highly qualified personnel are involved, who are difficult to replace quickly given the complexity and length of their training. Finding new employees is made more difficult for some organisations both by accelerating labour emigration and by the restrictions imposed by 'blacklists', which artificially create staff shortages in certain sectors. Moreover, the employment difficulties faced by those dismissed for political reasons can lead to a shift of employment into the shadow economy,

contributing to its growth, reducing the efficiency of labour reallocation, and undermining the sustainability of economic growth.

It is difficult to assess the true scale of labour emigration from Belarus triggered by domestic and geopolitical instability. Inefficient labour reallocation in the Belarusian economy and systemic economic crises had already, in earlier periods, contributed to accelerating educational and labour emigration in the 2010s, but domestic political and geopolitical instability in the region is intensifying emigration processes. In addition to existing accuracy problems with recording labour emigration, such as the difficulty of estimating the number of people leaving for employment abroad and the open border with Russia together with the simplified legalisation procedure for Belarusian labour migrants, official migration statistics have not been published in Belarus since 2020. A. Luzgina and V. Koreyvo (2023) estimated the number of Belarusians who left for permanent residence in EU countries in 2021–2022 at 143,600–170,900 [36, p. 24], including 97,500–111,500 to Poland [36, p. 19] and 25,400–37,900 to Lithuania [36, p. 8]. Lithuania's Migration Department estimated the number of Belarusian migrants living in Lithuania as of early September 2023 at more than 60,000, compared with 48,000 at the start of the year [27]. Poland's Social Insurance Institution put the number of registered Belarusians at 128,000 as of the end of October 2023 [20]. The Department of Citizenship and Migration of the Ministry of Internal Affairs of Belarus estimated in early 2024 that more than 200,000 people had left in 2021–2022 [30]. At the same time, it is important to note the difficulty of identifying emigrants' primary motivation – political or economic – in deciding to change their place of residence, given that these motivations are not mutually exclusive. Thus, in the current situation, working-age people may leave the country formally for employment reasons, while in fact having been terminated from their previous jobs and facing obstacles to finding new employment in Belarus, or having been forced to emigrate owing to their employer's relocation.

A pressing issue is assessing the skill structure of labour emigration, which is also difficult to determine owing to the lack of up-to-date official statistics in recent years. In the 2010s, the core of labour emigration from Belarus consisted of workers with higher and secondary vocational/technical education, i. e. skilled workers [40, p. 24], and the problem of 'brain drain' is not new for the Belarusian economy. The problem became

especially apparent after the onset of Russia's war against Ukraine, which triggered a new wave of outflow of IT companies and specialists abroad: for the first time, in 2022, a decline in the number of people employed in 'Information and communication' was recorded, along with the number of dismissals exceeding the number of new hires. At the same time, the problem of 'brain waste' is a separate issue. Highly qualified specialists, in particular those who left urgently owing to fears of political persecution, are often forced to work outside their field and take jobs that do not match their qualification level; in such jobs, workers lose their qualifications, which in turn reduces the quality of human capital. In this way, the Belarusian economy loses workers who could have produced high value added goods and services, with a significant risk of their permanent loss, which also affects the efficiency of labour reallocation. If highly qualified workers are forced to take less-skilled jobs while abroad, it is not only the 'donor' country's economy that loses out, but also that of the 'recipient' country.

The mass outflow of skilled personnel from Belarus carries negative and difficult to offset consequences for the Belarusian economy in the medium and long term. A decline in the quality of the workforce leads to technological and innovation lag, a further slowdown in economic growth and a loss of competitiveness for the national economy, which is also driven by reduced efficiency of labour reallocation, a deterioration in the quality of education, and a decline in the intellectual potential of the labour force [55, pp. 304–305].

Under the given parameters, more efficient labour reallocation in the Belarusian economy could have been achieved. To illustrate this claim, a linear optimisation problem for the aggregate labour productivity decomposition functions was defined and solved for 2023 under the following assumptions and constraints.

1. The objective set was to maximise the aggregate labour productivity decomposition function by varying the sectoral employment shares. Other parameters – sectoral productivity, the structure of output and employment in 2011, and relative prices – are assumed to be exogenous; the contribution of the within-sector productivity growth effect therefore remains unchanged.

2. The sum of all employment shares equals 100%, and their values are non-negative. To ensure a plausible employment structure, the following constraints were imposed:

- In 'Construction' and 'Other service activities', the employment share values must be at least equal to the actual 2023 figures;
- The share of 'Industry' must be at least 20% and no more than its 2023 value;
- The share of 'Financial and insurance activities' must not exceed 2.0%, and 'Real estate activities' must not exceed 1.5%, based on the values of these indicators in Belarus in 2011 and on the shares of equivalent sectors in Lithuania and Poland;
- The share of 'Information and communication' must be at least equal to its actual 2023 value and no more than 4.3%, based on the employment share of this sector in Lithuania in 2023.
- The shares of the remaining sectors must lie within the range of their 2011 and 2023 values.

The results of solving the optimisation problem for the TRAD¹⁴, GEAD and GEAD-3f decomposition models are identical under the given parameters and are presented in the tables below.

Table 9. Results of calculating optimal employment structure values for the Belarusian economy from the standpoint of the contribution of the inter-sectoral labour reallocation effect, 2011–2023

Sector	Optimal value in the employment structure*, %	TRAD*	CSLS**	GEAD*	GEAD-3f*
	2023	2023	2023	2023	2023
Total by type of economic activity	100.0	1.97	1.97	-0.70	1.53
<i>Production sector</i>	40.1	-5.40	-0.08	-14.39	-5.10
Agriculture, forestry and fishing	10.2	0.00	0.00	-2.91	0.00
Industry (P)	24.0	-2.82	-0.95	-10.73	-2.18
Construction	5.9	2.58	0.87	-0.74	-2.92
<i>Services sector</i>	59.9	7.37	2.05	13.69	6.63
Wholesale and retail trade; repair of motor vehicles and motorcycles; transportation and storage; accommodation and food service activities	22.5	0.93	0.02	-5.51	0.77

¹⁴ Solving the optimisation problem for the CSLS decomposition model is not possible, since its decomposition formula involves accounting for the change in aggregate labour productivity, which in this task is the target variable.

Information and communication (P)	4.3	4.59	1.47	7.03	4.73
Financial and insurance activities (P)	2.0	1.96	1.47	-0.02	1.42
Real estate activities (P)	1.5	-0.48	-0.23	3.57	-0.76
Professional, scientific and technical activities; administrative and support service activities	4.8	0.00	0.00	2.14	0.00
Public administration, defence, education, human health and social work activities	20.9	0.00	0.00	5.41	0.00
Other services activities	3.9	0.36	-0.68	1.08	0.47
Estimated growth in aggregate labour productivity	–	28.40		25.73	
Estimated growth in GVA	–	15.35		13.00	

Notes: * – values obtained by solving the linear optimisation problem under the conditions specified above. ** – values calculated by substituting the employment-structure values obtained using the other methods.

Source: compiled based on Belstat data.

Under the conditions specified above, more efficient labour reallocation could have delivered an additional 4.3–6.7 pp. of GVA growth in 2023 compared to 2011. As in the actual calculations, in this hypothetical scenario the services sector would form the basis of efficient labour reallocation, but efficiency losses in the production sector would also have been smaller. Improved reallocation efficiency could have been achieved primarily through a larger increase in the employment share of progressive sectors ('Information and communication'), or through maintaining that share or having it decline more slowly ('Financial and insurance activities', 'Real estate activities'). In this way, aggregate labour productivity growth over the period under review could have gained around 2 pp. from labour reallocation, ultimately contributing to faster growth of the Belarusian economy.

These calculations are approximate and base on the significant assumption that labour productivity is exogenous; they therefore cannot serve as a guide for labour-market policy making or reflect an ideal employment structure for the Belarusian economy, but are intended to demonstrate that ensuring comfortable conditions conducive to efficient labour redistribution has a positive effect on the country's economic growth.

Conclusion

Structural change in the economy and the corresponding redistribution of production resources are not only a consequence of development but also a result of the impact on them of both external conditions and the economic policy pursued. Amid numerous social, demographic, domestic and geopolitical challenges, ensuring the efficiency of output and driving sustainable economic growth are cornerstones of preserving the country's sovereignty and independence.

The results of this study show that the prevailing conditions on the Belarusian labour market over 2011–2023 did not support efficient inter-sectoral labour reallocation, and that the COVID-19 pandemic, domestic and geopolitical instability and their consequences worsened the existing conditions in which the labour market functions and became a catalyst for intensifying emigration processes. The only sector in which both employment and productivity grew over the period under review, and which contributed substantially and positively to the reallocation effect, was 'Information and communication'. However, efficient labour reallocation towards progressive sectors did not take place, as confirmed by their negative total contribution to the reallocation effect. In other sectors where productivity grew, this was achieved mainly through a reduction in employment. The state sector remains one of the main sources of inefficient labour reallocation in the Belarusian economy.

Improving the efficiency of labour reallocation, as one of the conditions for ensuring sustainable economic growth, is impossible without normalising the domestic and foreign political situation, guaranteeing security and confidence in the future for both employed in the economy and businesses, comprehensive and consistent economic reforms, and the revision and improvement of labour legislation and of the systems of social protection for the unemployed and of education. The ultimate goal of labour market regulation should not be to ensure employment of the population 'at any cost', but to promote the most efficient and full use of workers' human capital by creating conditions for the generation of new, highly productive jobs and by ensuring a balance between labour market flexibility, worker protection and employer motivation to invest resources in improving the quality of human capital. It is also important to address the creation and provision of comfortable and secure conditions for the return of emigrated citizens

and businesses and to make the fullest possible use of the experience and competencies they gained while working abroad in the practice of economic activity in Belarus.

The analysis carried out has a number of limitations. The results obtained for the reallocation effects do not allow the efficiency of labour redistribution within sectors and organisations to be assessed, since they rely on aggregated data, nor do they provide a quantitative assessment of the influence of the factors driving labour reallocation processes. Beyond the scope of this study remain the assessment of labour mobility and the efficiency of inter-regional labour reallocation, as well as an assessment of the Belarusian economy's potential losses from emigration outflow resulting from inefficient labour reallocation and from the destabilisation of the domestic and foreign political situation.

This study is intended both to draw attention to labour market problems and their impact on economic growth in Belarus under current conditions, and to serve as a starting point for a more detailed examination of its specific features. It would be worthwhile to calculate and study the labour reallocation effect between and/or within organisations and its contribution to labour productivity growth in the Belarusian economy using organisation level microdata. To better understand workers' motivations for (not) deciding to change jobs, and the impact of this on the efficiency of reallocation processes, it seems important to conduct a survey and an in-depth analysis of the results, examining the external factors and internal attitudes and barriers that influence workers' decisions to change jobs and/or field of activity, as well as an assessment of the level of underemployment in the Belarusian economy. In light of intensifying emigration processes, it seems worthwhile to conduct a separate study on the reasons for and motivations behind decisions to relocate by individuals and legal entities, followed by an assessment of the extent of 'brain drain' and 'brain waste' and identification of the conditions needed for emigrants to return to Belarus and become engaged in economic activity. The results obtained will make it possible to better understand the underlying causes of low labour market efficiency and to develop a set of measures aimed at improving it, taking local specifics into account, as well as at mitigating as far as possible the consequences of underemployment and the loss of human capital due to 'brain waste', which will ultimately serve to strengthen the resilience and acceleration of the country's economic growth.

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