

STRUCTURAL LABOUR MARKET CRISIS IN BULGARIA: DEMOGRAPHIC DECLINE, LABOUR SHORTAGES AND MACROECONOMIC IMPLICATIONS (2013 – 2025)

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Abstract

This article examines Bulgaria's structural labour market crisis during the period 2013 – 2025, characterized by demographic decline, persistent labour shortages and weakening macroeconomic performance. Despite historically low unemployment rates of 3.6 – 4.2 percent in 2024 – 2025, the labour market operates under severe structural constraints driven by population ageing, shrinking labour force and regional depopulation. Using established theoretical models such as Okun's law, NAIRU and the Phillips curve, combined with empirical data from UN DESA, Eurostat, NSI, BNB and the World Bank, the study demonstrates that Bulgaria's low unemployment reflects labour market overheating rather than sustainable economic strength. Wage growth has consistently exceeded productivity, foreign direct investment has weakened, and the demographic contraction has sharply reduced the economy's potential growth. The findings highlight deepening structural imbalances that restrict competitiveness and long-term development. The study concludes that comprehensive reforms in demographic, educational and regional policy are essential for restoring Bulgaria's economic potential.

Keywords: labour market, demographic decline, labour shortages, productivity, foreign investment, regional disparities, economic growth

JEL: J11, J21, O40, R23

Introduction

Over the past two decades, Bulgaria has entered a specific demographic and economic trajectory in which the labour market has shifted from being a driver of growth to a structural constraint on development. The unemployment rate in 2024 – 2025 fluctuates around 3.6 – 4.2 percent (NSI, 2025; World Bank, 2025), a level that would normally be considered a historical achievement in most advanced economies. In the Bulgarian context, however, such figures have the opposite meaning. Low unemployment does not reflect expanding employment and capital accumulation, but rather demographic decline, deep

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regional disparities, internal migration and the disappearance of the labour force across large parts of the country.

This study therefore interprets low unemployment not as a sign of economic resilience, but as a symptom of a structural crisis that undermines productivity, capital investment, GDP growth and regional cohesion. In this sense, Bulgaria's historically low unemployment is less a reflection of economic vitality and more the numerical outcome of a rapidly shrinking labour pool, driven by ageing, emigration and declining birth rates. The analysis explores the interrelations between the labour market, demographic processes and macroeconomic performance by integrating established theoretical models – Okun's law, NAIRU and the Phillips curve – with empirical data for Bulgaria covering the period 2013 – 2025.

The central hypothesis is that the combination of demographic contraction, regional depopulation, accelerated wage growth and insufficient structural investment has resulted in a labour market operating below its natural rate of unemployment and under conditions of sustained overheating. Consequently, low unemployment in Bulgaria reflects underlying structural deficits rather than genuine economic strength or robust labour market participation.

This study contributes to the literature by providing an integrated analysis of demographic decline, labour market overheating and macroeconomic performance in Bulgaria – an area where empirical research remains limited.

Literature review

The relationship between labour market dynamics, demographic trends and macroeconomic performance has been extensively explored in economic literature. A central contribution to this field is Okun's law (Okun, 1962), which establishes an empirical link between changes in unemployment and deviations of real GDP from its potential level. Numerous studies confirm that this relationship holds primarily in economies where labour resources are stable and employment growth is driven by productive capacity rather than demographic shrinkage. However, in countries experiencing demographic contraction, the responsiveness of output to changes in unemployment weakens, suggesting that low unemployment may reflect labour force shrinkage rather than efficiency gains.

Another important foundation in labour market theory is NAIRU – the non-accelerating inflation rate of unemployment. Research by the European Central Bank (ECB, 2005) and the OECD (2023) demonstrates that economies with ageing populations, low labour mobility and structural rigidities tend to exhibit higher natural unemployment rates. When actual unemployment falls below the NAIRU threshold, wage growth accelerates beyond productivity, generating inflationary pressure and signalling labour market overheating. This framework is particularly relevant for Bulgaria, where unemployment has remained below

estimated NAIRU levels for several consecutive years, indicating that labour market tightness is structural rather than cyclical.

The Phillips curve further contextualises the interplay between unemployment and inflation by showing that tight labour markets induce faster wage growth, especially in low-productivity environments. Empirical studies across Europe highlight that persistent labour shortages, combined with slow technological advancement, weaken competitiveness and reduce export performance. This dynamic is particularly visible in Bulgaria, where productivity growth has persistently lagged behind wage growth, amplifying inflationary pressures and eroding competitiveness.

Demographic research from Eurostat (2024) and UN DESA (2024) emphasises the structural character of population ageing and regional depopulation in Eastern Europe, particularly Bulgaria. These processes intensify labour scarcity, reduce potential output and constrain the long-term growth trajectory. International literature consistently shows that without targeted policies addressing demographic decline, skill formation and regional disparities, economies enter a prolonged state of stagnation driven by insufficient human capital. Despite extensive international research, there is still limited empirical work analysing how demographic decline, regional depopulation and labour market overheating jointly constrain Bulgaria's growth potential – a gap this study aims to address.

Theoretical framework

The theoretical framework of this study draws upon established macroeconomic models that explain the interaction between labour market conditions, productivity dynamics and economic growth.

Okun's law

Okun's law provides the first analytical foundation by describing the empirical relationship between changes in unemployment and deviations of real GDP from its potential. The classical formulation suggests that a one-percentage-point decrease in unemployment increases GDP by approximately 2 – 3 percent above its potential level (Okun, 1962). This relationship holds under the assumption that fluctuations in unemployment reflect changes in the capacity utilization rather than structural labour shortages. In contexts of sustained demographic decline, the labour market's ability to return to NAIRU equilibrium weakens, as labour shortages become structural rather than cyclical.

NAIRU – natural rate of unemployment

A second central concept is the non-accelerating inflation rate of unemployment (NAIRU), which defines the level of unemployment consistent with stable inflation. When unemployment falls below this threshold, labour demand exceeds

supply, accelerating nominal wage growth and generating inflationary pressure. Empirical research across Europe demonstrates that economies with ageing populations, limited labour mobility and declining working-age cohorts tend to exhibit higher NAIRU levels (ECB, 2005; RBA, 2025). Persistent unemployment below this natural rate is therefore a signal of structural overheating rather than robust labour market functioning.

The Phillips curve

The Phillips curve further complements the analytical framework by illustrating the inverse relationship between unemployment and nominal wage growth. Under tight labour market conditions, firms face increasing wage demands, which raise production costs and contribute to inflation. In economies where productivity growth is weak, this dynamic results in a loss of competitiveness and long-term erosion of growth potential. Bulgaria's recent labour market patterns align with these theoretical mechanisms: declining unemployment, rapid wage growth and stagnating productivity collectively reflect structural imbalances rather than healthy economic expansion.

Together, these three theoretical pillars – Okun's law, NAIRU and the Phillips curve – form the conceptual basis for analysing Bulgaria's labour market performance between 2013 and 2025. They allow us to assess the extent to which observed labour market indicators deviate from equilibrium conditions and signal underlying demographic and structural constraints. These models are therefore indispensable for interpreting Bulgaria's labour market indicators, which increasingly diverge from theoretical equilibrium due to demographic contraction and regional labour shortages.

Methodology

The methodology of this analysis combines empirical macroeconomic data with structural economic modelling. The unemployment data are based on harmonized annual estimates (ILO & World Bank, 2025) for the period 2013 – 2024, ensuring comparability over time and across countries. Additional data on wages, labour productivity and regional unemployment are sourced from the National Statistical Institute (NSI). Foreign direct investment indicators are obtained from the Bulgarian National Bank (BNB), while macroeconomic projections rely on publications from the Ministry of Finance and the World Bank.

The methodological approach includes several analytical components. First, time-series analysis is employed to examine long-term trends in unemployment, productivity and GDP growth. Second, observed values are compared with theoretical benchmarks, such as NAIRU estimates and potential output growth, to assess deviations from equilibrium labour market conditions. In addition,

the study incorporates causal inference considerations by examining whether changes in unemployment correspond to proportional adjustments in output and wage dynamics, consistent with the mechanisms described in Okun's law and the Phillips curve. Third, a structural analysis of regional disparities is conducted to evaluate the extent of labour shortages across different parts of the country. Fourth, correlation analysis is used to explore the relationships between wage growth, labour productivity and economic expansion. Finally, a qualitative assessment of policy documents, including the Draft State Budget Act for 2026, is undertaken to evaluate the adequacy of institutional responses to labour market constraints.

Together, these methods enable a comprehensive evaluation of Bulgaria's labour market dynamics by integrating quantitative indicators with structural and policy-based perspectives. This multi-layered methodological design allows the study to capture both macroeconomic trends and micro-level labour market behaviours, providing a more precise interpretation of structural constraints.

Data and empirical evidence

Demography is a fundamental factor in the analysis. Bulgaria is among the fastest ageing societies in the world, with a population of approximately 6.44 million in 2025 and a median age of about 45.5 years (UN DESA, 2025). According to World Bank estimates, the working-age population has been declining by 30,000 to 50,000 people annually (World Bank, 2021). This implies that the labour market operates under conditions of absolute labour scarcity. The continued contraction of the working-age population directly limits potential output, reduces labour market flexibility and amplifies the long-term impact of structural labour shortages.

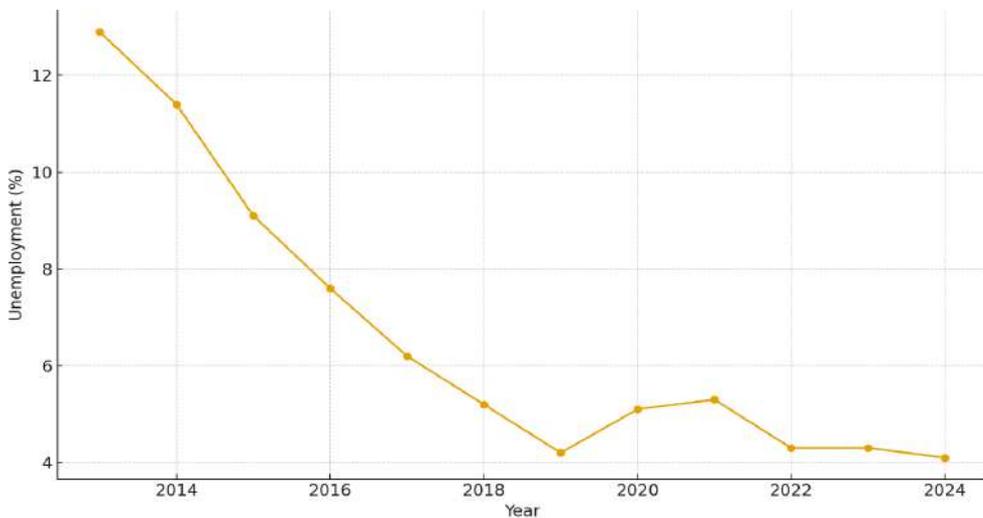
Table 1: Key economic indicators for Bulgaria (2019 – 2025)

Year	GDP growth (%)	Unemployment (%)	Productivity (%)	FDI (billion euros)
2019	3.7	4.2	5.4	
2020	-4.4	5.1	-1.5	
2021	7.6	5.3	7.7	
2022	3.9	4.3	3.0	
2023	1.8	4.3	0.8	3.284
2024	2.8	4.1	1.7	1.5

Source: World Bank (2025), NSI (2025).

Unemployment data exhibit a consistent downward trend: 12.9 percent in 2013; 11.4 percent in 2014; declining to 9.1 percent in 2015; 7.6 percent in 2016; 6.2 percent in 2017; 5.2 percent in 2018; 4.2 percent in 2019; 5.1 percent in 2020; falling again to 5.3 percent in 2021; 4.3 percent in both 2022 and 2023; and 4.1 percent in 2024 (World Bank, 2025). Regional discrepancies are substantial, reaching 10 percent in Northwestern Bulgaria while remaining below 3 percent in Sofia and surrounding regions (NSI, 2024).

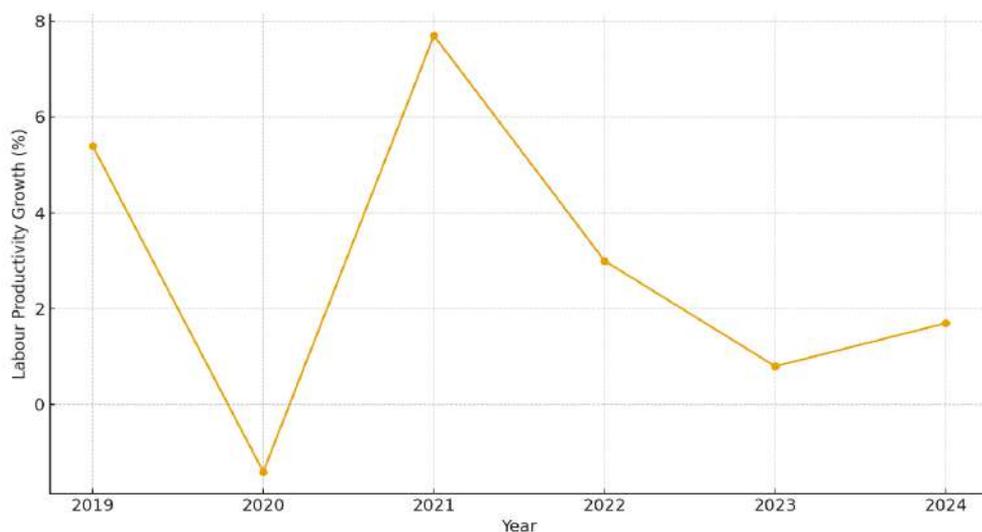
These regional disparities indicate that Bulgaria's unemployment rate reflects labour depletion rather than full employment, masking severe geographic imbalances in labour supply.



Source: World Bank (2025), ILO (2025).

Figure 1: Unemployment rate in Bulgaria (2013 – 2025)

Labour productivity provides an additional critical perspective. According to NSI, GDP per employed person increased by 0.9 percent in 2023, 2.3 percent in 2024 and 1.4 percent in early 2025 (NSI, 2025). By contrast, the average gross wage rose by 13.9 percent in 2024, indicating a significant gap between productivity and labour costs. Such a divergence between wage dynamics and productivity is typically associated with declining competitiveness and increasing unit labour costs, particularly in economies with limited technological upgrading.



Source: NSI (2025).

Figure 2: Labor productivity growth in Bulgaria (2019 – 2025)

Average wages during the same period increased at double-digit rates – 10.1 percent, 9.8 percent, 11.2 percent, 12.5 percent, 13.3 percent and 13.9 percent for the years 2019 – 2024. This considerably exceeds productivity growth and indicates a widening gap between labour costs and output per worker.

Table 2: Dynamics of average wages and productivity growth (2019 – 2025)

Year	Productivity growth (%)	Average salary growth (%)
2019	5.4	10.1
2020	-1.5	9.8
2021	7.7	11.2
2022	3.0	12.5
2023	0.8	13.3
2024	1.7	13.9

Source: NSI (2025).

Such a divergence is a classical symptom of structural labour market overheating: wage dynamics accelerate under conditions of labour scarcity without corresponding improvements in productivity, ultimately eroding cost competitiveness.

GDP dynamics further illustrate the structural challenges. Economic growth reached approximately 1.89 percent in 2023 and around 2.8 percent in 2024 (World Bank, 2025). These values are inconsistent with an economy operating

below NAIRU, which would theoretically support higher growth rates. The mismatch suggests that Bulgaria’s economy is constrained by demographic decline and labour shortages rather than benefitting from a tight labour market. This divergence suggests that labour shortages have reached a structural threshold where they no longer stimulate growth but instead suppress economic potential.

Table 3: Demographic indicators for Bulgaria (2013 – 2025)

Year	Population (million)	Average age	Working-age population (million)
2013	7.28	42.4	4.6
2015	7.18	43.1	4.45
2017	7.05	43.7	4.32
2019	6.95	44.2	4.15
2021	6.88	44.9	4.02
2023	6.72	45.3	3.88
2025	6.44	45.5	3.78

Source: UN DESA (2024), Eurostat (2024).

Analysis

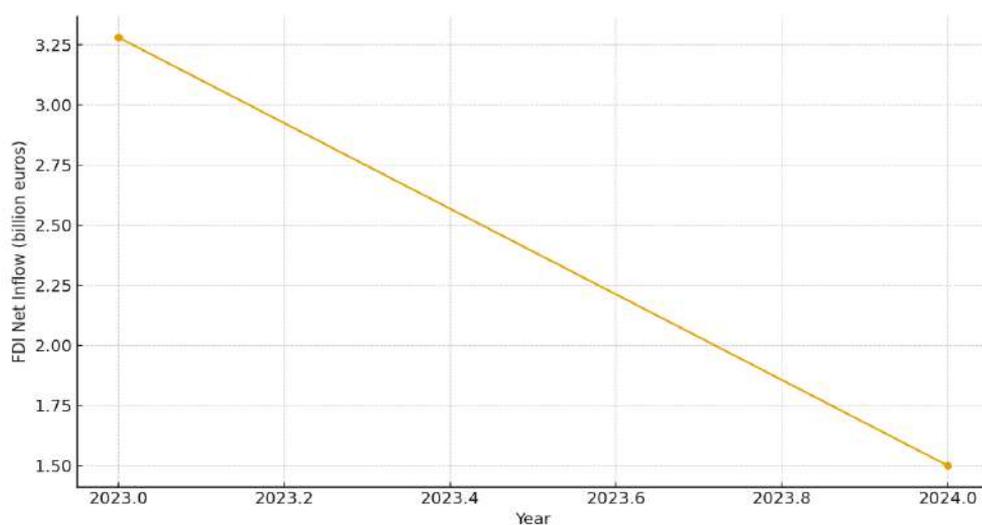
The central question addressed in this analysis is why persistently low unemployment in Bulgaria fails to generate the positive macroeconomic outcomes that economic theory typically predicts under tight labour market conditions. The answer is multilayered.

First, the labour market is in a state of structural overheating. Unemployment below 4 percent represents a level significantly lower than the estimated NAIRU range of 5 to 7 percent (ECB, 2005; RBA, 2025). This means that firms face a persistent shortage of workers and are compelled to raise wages in order to retain employees. This, in turn, generates strong inflationary pressure that is not supported by corresponding increases in productivity. Such a pattern is characteristic of economies where labour scarcity is structural, not cyclical, suggesting that low unemployment is driven by demographic contraction rather than employment expansion.

Second, productivity in Bulgaria is growing slowly. The divergence between wage growth and productivity growth is a classical example of declining competitiveness. Firms are pressured to increase wages, which raises unit labour costs without generating proportional output improvements. This dynamic may limit export capacity and make Bulgaria less attractive to investors. In macroeconomic terms, this indicates rising unit labour costs, a key indicator that productivity growth is insufficient to sustain wage dynamics over the medium term.

Third, the dynamics of foreign direct investment clearly demonstrate the negative impact of labour shortages. FDI inflows in 2024 amounted to only EUR 1.498 billion, compared to EUR 3.284 billion in 2023 (BNB, 2025). Although a temporary increase is registered for January–September 2025, the structure of investment remains narrow and concentrated in a limited number of sectors. Many international investors refrain from expanding or establishing operations in Bulgaria due to inadequate supply of qualified labour and rapidly increasing labour costs (Lloyds Bank, 2024). This illustrates a shift in Bulgaria’s investment profile: from a labour-cost-competitive destination to a structurally constrained market unable to provide sufficient human capital for sustainable expansion.

Fourth, the regional dimension significantly exacerbates the problem. Bulgaria is a highly centralized country in which economic activity is concentrated in a small number of major urban centers, while peripheral regions continue to depopulate. This limits the potential for territorially balanced growth. The migration of the labour force toward large cities prevents regional enterprises from recovering, leading to further contraction of local economies. This internal outflow of population is directly linked to the absence of regional policies aimed at stimulating economic activity outside urban hubs. The resulting imbalance reinforces long-term economic divergence between regions, reducing overall national productivity and weakening labour mobility, which further amplifies structural shortages.



Source: BNB (2025).

Figure 3: Foreign direct investment (net inflow), billion euros (2013 – 2025)

Fifth, national fiscal policy does not compensate for these structural deficits. The Draft State Budget Act for 2026 does not include substantial investments in regional development, nor does it contain concrete programmes to stimulate industrial activity outside large cities. Capital expenditures are insufficient to reshape the country's regional economic profile (Ministry of finance, 2025). This means that the state is failing to take active measures to expand labour resources or increase the productive capacity of the economy. Consequently, fiscal policy not only fails to alleviate labour constraints but may unintentionally reinforce them by prioritising current expenditures over strategic long-term investment.

Sixth, the combined effect of labour shortages, weak productivity, declining competitiveness, insufficient investment and inadequate fiscal and regional policies forms a self-reinforcing structural constraint on Bulgaria's economic growth potential. Instead of functioning as a driver of expansion, the labour market has become a limiting factor that restricts long-term development. The interplay of these structural weaknesses forms a self-reinforcing cycle in which demographic decline, low productivity, insufficient investment and inadequate policy responses mutually constrain Bulgaria's economic potential.

Discussion

The integration of demographic, macroeconomic and regional factors demonstrates that Bulgaria is experiencing a multilayered structural labour market crisis whose roots extend far beyond cyclical economic fluctuations. The primary reason is that the country is simultaneously undergoing demographic contraction, structural labour shortages, a widening gap between wage growth and productivity, and regional economic divergence – none of which is being offset by adequate state policies. These structural processes reinforce one another, creating a cumulative constraint on the country's capacity for long-term economic expansion.

The **first key element** of the discussion is demographic erosion, which is not merely a social phenomenon but an economic one with direct implications for sustainable growth. The decline of the working-age population by 30,000 – 50,000 people annually results in a lasting reduction in labour supply, rendering the labour market structurally incapable of meeting the needs of the economy. Comparable cases in Eastern Europe demonstrate that once demographic decline reaches such magnitude, labour market corrections become increasingly difficult to achieve without coordinated policy intervention. The ratio between the economically active population and dependent groups is deteriorating, and global experience shows that countries exhibiting such dynamics enter periods of persistently low growth unless they adopt targeted policies aimed at increasing employment and productivity.

The **second aspect** is the divergence between wage growth and productivity growth, which has been a negative characteristic of the Bulgarian economy for years. As wages increase at double-digit rates while productivity grows by only a few percentage points, unit labour costs rise, thereby limiting the competitiveness of Bulgarian enterprises. This is especially problematic in an economy that relies heavily on export-oriented industries where price sensitivity is high. In an environment of structural labour shortages, employers are compelled to raise wages to retain staff, yet without receiving corresponding improvements in productivity – an outcome that reinforces labour market overheating. This indicates a structural re-evaluation of Bulgaria’s competitiveness profile in the eyes of international investors.

The **third component** is the declining interest of foreign investors, which is directly influenced by demographic and labour market dynamics. Net FDI inflows, measured under BPM6 methodology, dropped from EUR 3.284 billion in 2023 to EUR 1.5 billion in 2024. This represents a reduction of more than 50 percent and is a clear signal that Bulgaria is losing its position as an investment destination. For many investors, the shortage of workers poses a greater challenge than tax burdens or administrative obstacles. The lack of qualified labour is cited as one of the main reasons why international companies avoid expanding their operations in the country or relocate their production to other Central and Eastern European states.

Fourth, regional disparities further deepen the overall weakness of the labour market. While Sofia, Plovdiv, Varna and Burgas are developing dynamically, entire regions of the country remain economically isolated and demographically depleted. The absence of a regional industrial policy leads to the concentration of economic growth in a few centers, while peripheral areas fall into economic stagnation. This not only reduces the country’s overall economic potential but also increases dependence on external factors such as foreign investment, migration and global economic cycles. Such spatial imbalances weaken national cohesion and reduce the effectiveness of labour market adjustment mechanisms.

A **fifth important element** is the role (or absence) of fiscal policy. Despite a record budget of BGN 89.8 billion and external debt exceeding BGN 48 billion, capital expenditures remain insufficient to support economic transformation. Social spending continues to expand, yet active labour market policies remain underfunded, and the lack of programmes for retraining and integrating inactive groups reduces the available labour reserve. This means that the state is not using the budget as an instrument to mitigate the structural weaknesses of the labour market, but rather intensifies them. As a result, fiscal policy fails to function as a counter-cyclical stabilizer and instead reinforces structural labour shortages.

All these factors form the overall discussion framework: Bulgaria faces a structural labour crisis in which the principal constraint on growth is not a lack of capital or entrepreneurship, but a lack of people. In such an environment, even the best economic policies have limited impact unless they are combined with effective demographic, educational and industrial reforms. Without coordinated reforms addressing labour supply, human capital formation and regional economic development, Bulgaria risks entering a prolonged phase of structurally constrained growth.

Policy implications

The evidence presented in this study demonstrates that Bulgaria's labour market imbalances cannot be mitigated without a comprehensive restructuring of national policy priorities. Demographic decline, regional economic fragmentation and persistent gaps between wage growth and productivity require coordinated interventions that extend beyond short-term fiscal adjustments. Policymakers must shift towards long-horizon strategies that simultaneously expand labour supply, strengthen human capital formation, and enhance productivity through technological upgrading and educational reform.

Furthermore, the persistent erosion of Bulgaria's attractiveness to foreign investors underscores the need for a predictable regulatory environment, targeted support for high-value industries, and robust incentives that align labour market capabilities with the demands of internationally competitive sectors. Absent such structural reforms, Bulgaria risks entering a prolonged low-growth equilibrium characterized by insufficient labour resources, stagnant productivity, and declining economic competitiveness.

Conclusion

Bulgaria is entering a period of deepening structural labour market crisis that calls into question the economy's ability to sustain long-term growth in the coming decades. The indicators analyzed in this study demonstrate that the constraints on Bulgaria's growth are structural rather than cyclical, and that the labour market is approaching conditions of long-term disequilibrium. Low unemployment, which typically represents a symbol of economic strength, in Bulgaria instead signals labour shortages, demographic depletion and economic overheating. This suggests that Bulgaria's existing growth model has reached a point where further expansion is constrained not by capital or investment capacity, but by the availability and quality of human resources.

If the country does not implement a comprehensive and coordinated policy framework that includes:

- a stable and long-term demographic strategy, explicitly aimed at reversing labour force contraction;
- a regional development policy that promotes economic diversification outside major urban centres;
- substantial investment in education, skills formation and technological modernisation;
- active labour market policies focused on integrating inactive population groups;
- a more competitive framework for attracting foreign direct investment.

These strategic pillars represent the minimum policy framework required to stabilise the labour market and restore Bulgaria's long-term economic potential. Then Bulgaria risks remaining a low-resource economy dependent on limited human capital and unable to generate stable and sustainable growth.

The conclusion is clear: the labour market is not merely an economic sector – it is the backbone of national development. When this backbone weakens, the entire economy weakens. Today, Bulgaria has a final opportunity to reverse the trend through strategic intervention, clear prioritization of productivity and targeted investments in human capital. Otherwise, low unemployment will continue to be not a sign of economic health, but a symptom of deepening structural weakness and a severely constrained potential for future growth. Without decisive intervention, low unemployment will remain not a sign of economic strength, but a quantitative reflection of structural erosion, signaling a long-term decline in the country's growth capacity.

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