

## STRONG WAGE GROWTH AMIDST RISING UNEMPLOYMENT IN BULGARIA

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### Abstract

*The Bulgarian labour market adjustment during the economic crisis stands out by significant job losses, but at the same time strong average wage growth. The predominance of job cuts over wage cuts is most problematic for vulnerable groups, sectors and regions. Wage adjustments have hardly helped limiting unemployment.*

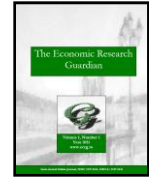
*Strong increases in unit labour costs (ULC) and real effective exchange rates (REER) seem not (yet) to have eroded external competitiveness as exports have remained strong. This can be explained by economic convergence, lower wage growth in tradable sectors and possibly only temporarily favourable export price developments on world markets.*

*Rapid wage growth is influenced by a combination of factors. At first sight the institutional features of the Bulgarian labour market seem rather flexible. Some factors only impact the statistical average even without actual wage increases (like job cuts being concentrated in low paid jobs and a reduction in undeclared wages). However, actual wages have probably also increased, impacted by convergence from the lowest wage levels in the EU, skills and regional mismatches. One of the key features identified in this paper is a unique system of hundreds of different minimum income thresholds across sectors and occupations applied for the calculation of social security taxes. These thresholds are set close to the average wages prevalent in the same sectors and occupations, especially for the low-wage segment where unemployment is also the highest.*

*To minimise the negative implications for employment, the minimum social security thresholds might usefully be reviewed. Recalibration of the thresholds could be combined with a wider set of labour market measures (ALMPs, training and education policies) to improve the employability of crisis-hit employees.*

**Keywords:** Labour, Market, Wage, Unemployment, Bulgaria

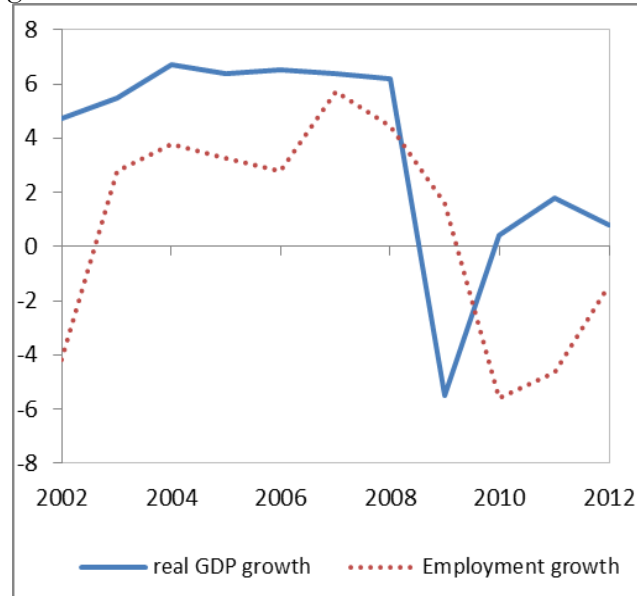
**JEL classification:** J20, J30, J40, J50, J60



## 1. Key facts: raising wages despite doubling unemployment<sup>1</sup>

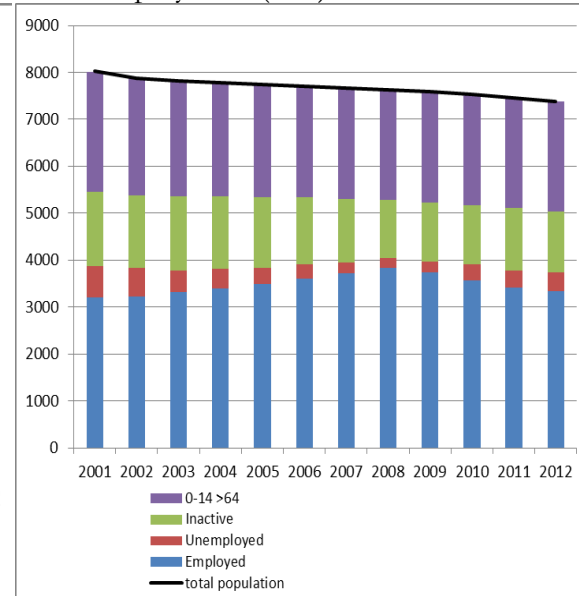
Bulgaria was hit hard by the global crisis, with GDP contracting by 5.5% in 2009 and showing only modest recovery in the following years to the present date (2013). At the same time, Bulgaria experienced one of the strongest drops in employment in the EU, declining cumulatively by about 12% over 2008–2012 (Graph 1). This sharp contraction followed a period of economic and labour market overheating. Part of the decline in employment can be explained by the fact that Bulgaria suffers from a relatively strong decline in working-age population by about 1½% per year due to negative demographic trends<sup>2</sup> (low birth rate, ageing population, emigration) (Graph 2). However, also the unemployment rate has more than doubled from about 5% of the labour force in 2008 to over 12% in 2012. Similarly, long-term unemployment doubled from about 3% of the labour force in 2008-2009 to 6.8% in 2012 and youth unemployment went up to more than 28% in 2012.

Graph 1: Real GDP and employment growth



Source: European Commission

Graph 2: Population, employment and unemployment ('000)

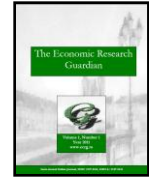


Source: European Commission

The labour market stress is also reflected in the sharp decline in the employment rate. This drop has been much stronger than in most other incumbent and new Member States, although the current

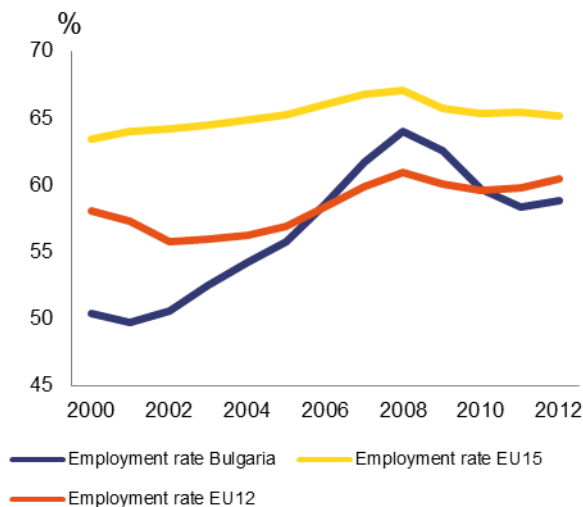
<sup>1</sup>The views expressed here are those of the authors only and do not necessarily correspond to those of the Directorate-General for Economic and Financial Affairs or the European Commission. An earlier version of this paper has been published as ECFIN Country Focus (Maiväli and Stierle, 2013).

<sup>2</sup> Population decline affects especially rural areas and smaller towns, while larger growth centres have a more stable population base.



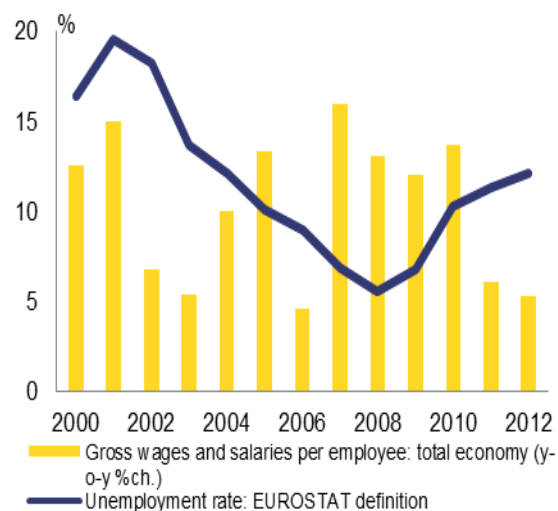
employment rate is still much more favourable than in the early 2000s (Graph 3).<sup>3</sup> It might be expected that in a setting of a sharp economic downturn with rising unemployment wages would react strongly, especially in a country with a relatively flexible labour market and wage setting institutions (discussed in more detail in Section 5) as well as a fixed exchange rate regime. Remarkably, even though wage growth rates did decelerate to some extent from the extreme peak levels of the boom years, average wage growth continued to be relatively strong over the crisis, with annual growth close to double digit figures, subsiding only in 2011 (Graph 4).

Graph 3: Employment and unemployment rate (% 15-64 years), BG, NMS, EU15



Source: European Commission

Graph 4: Unemployment rate and compensation per employee

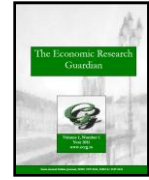


Source: European Commission

Consequently, it appears that the labour market adjustment in Bulgaria has taken place primarily via cuts in employment rather than wages, which entails high social cost for the unemployed. In addition, in the longer term unemployment risks becoming entrenched given the erosion of skills for people out of work. Employers seem to have overwhelmingly opted for cutting jobs, probably due to restructuring needs following a period of economic overheating and a sudden stop in capital inflows. Nevertheless, it might be argued that stronger downward wage adjustments could have suppressed the increase in unemployment to some extent.

Against this backdrop the following sections will analyse if the average wage growth was in line with domestic macroeconomic fundamentals and its impact on external competitiveness. Afterwards, a

<sup>3</sup> Despite the decline over 2009 - 2011, the employment rate remains above the level from the early 2000s. The recent drop is thus partly a normalisation after a boom phase with overheated labour market. However, the increase in the early 2000s started from exceptionally low levels and the drop by 5 pps. over 3 years was similarly exceptional, even during the crisis.



more detailed analysis will look into regional and sectoral developments before institutional settings and labour market policies are discussed. The last section concludes with policy challenges.

## **2. Were labour market reactions in line with fundamentals?**

In order to assess whether the labour market reaction to the crisis was in line with macroeconomic fundamentals several tools will be used. First, it will be analysed if the increase in unemployment was excessive relative to the sharp drop in GDP. Second, wage increases will be benchmarked against changes in employment and against productivity increases.

Employment and unemployment are reacting more strongly to changes in GDP in Bulgaria than in other European countries on average.<sup>4</sup> This applies both during up- and downturns and can be seen as one facet of a flexible<sup>5</sup> labour market, although this volatility implies high social costs. With a coefficient of -0.8 in the Okun equation (growth form), disregarding the outlier of 2009, the Bulgarian unemployment rate reacts relatively strongly to changes in real GDP growth. The reaction of unemployment to GDP is two to three times stronger than in the EU on average (Graph 5). Applying the Okun estimation results to the crisis years shows that the initial increase in unemployment at the onset of the crisis, particularly in 2009, was lower than what might have been expected given the sharp drop in GDP<sup>6</sup>. Thereafter, unemployment continued to increase steadily as the relatively slow GDP recovery in 2010-2012 was not strong enough to create employment growth.

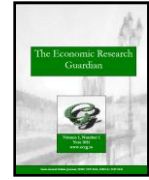
A regression of the response of wages per employee to changes in the employment rate one year earlier indicates that changes in the labour market do affect wages, although this relation is rather weak (Graph 6). Benchmarked against this estimation, wages grew over 2008-2011 by more than the historical response function would suggest.

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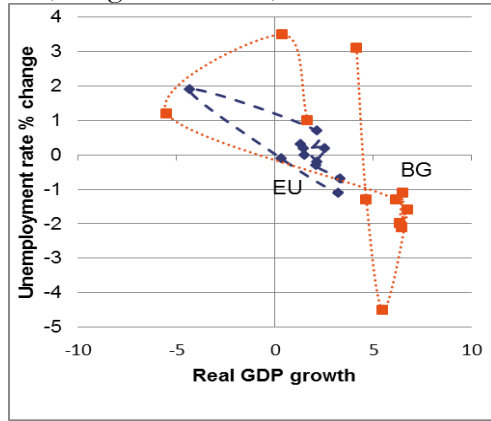
<sup>4</sup> See also Raleva (2014).

<sup>5</sup> It could be argued that a perfectly flexible labour market should lead to a more efficient reallocation of workers and cushion unemployment increases, probably led by corresponding wage adjustments.

<sup>6</sup> A lagged response of the labour market to the crisis is a common feature among countries. The Okun estimates are cited only as a broad reference.

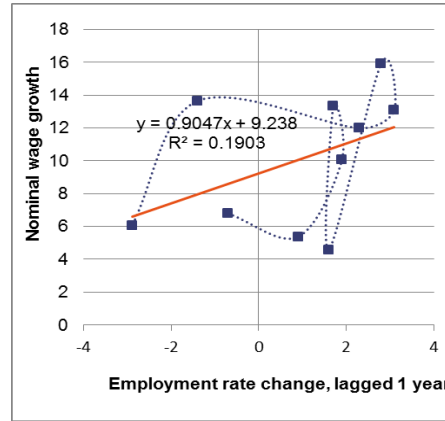


Graph 5: Growth and unemployment rate, Bulgaria and EU, 2000-11



Source: European Commission and own calculations

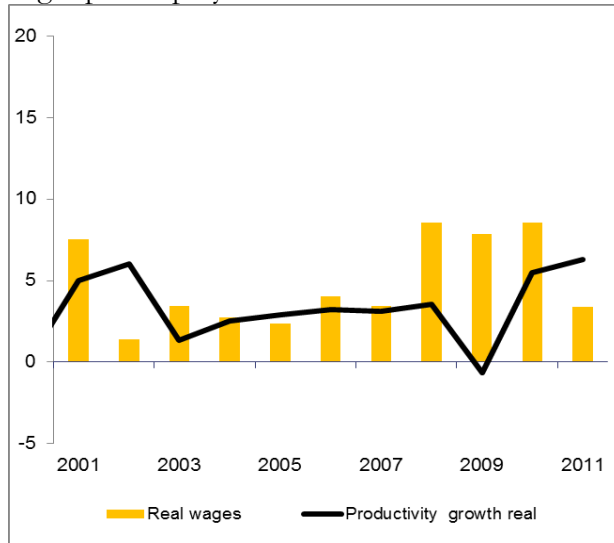
Graph 6: Change in wages and employment rate 2000-2011



Source: European Commission and own calculations

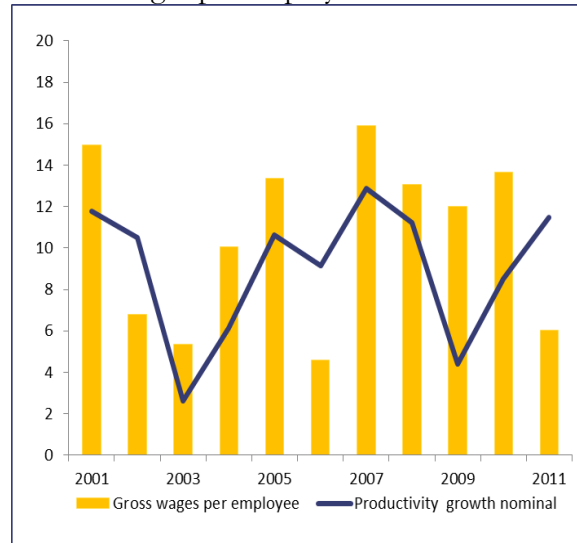
If real wages per employee grow in parallel with real productivity, this implies that wage developments are consistent with matching changes in labour demand and supply - provided full employment is maintained. In Bulgaria, wage growth appears to have been broadly in line with productivity prior to the boom-bust cycle. During the crisis, wages seem to have increased excessively, even though productivity growth also appears to have been remarkably strong (Graphs 7 and 8). However, especially during 2010 and 2012, productivity (or output per employee) was boosted statistically by the steep fall in employment, when employment fell despite a small GDP expansion. While in both real and nominal terms output per person employed grew strongly throughout the crisis, over 2007-2010 this was surpassed by even more rapid wage growth. Only since 2011 has a correction taken place.

Graph 7: Real productivity growth and real wages per employee

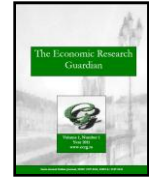


Source: European Commission

Graph 8: Nominal productivity growth and nominal wages per employee

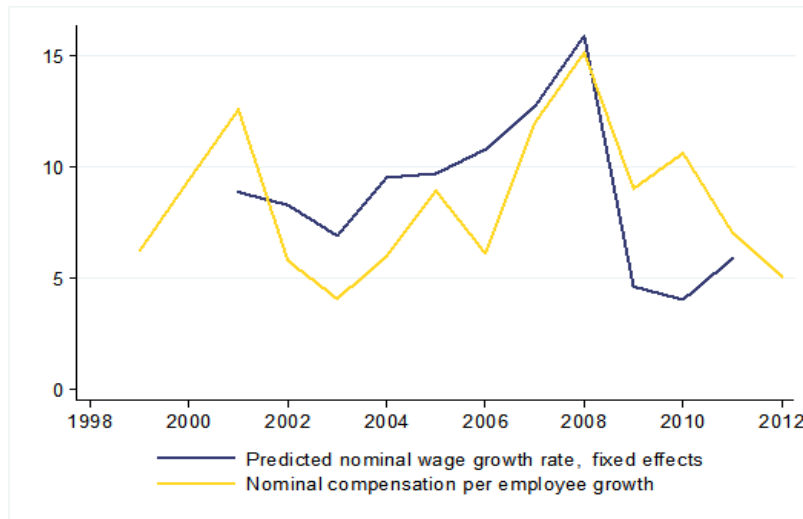


Source: European Commission



In order to obtain a combined benchmark to assess wage growth in Bulgaria, Graph 9 compares actual wage developments in Bulgaria with a hypothetical wage growth predicted from a macroeconomic wage regression. Wages may depend on a broader set of factors beyond productivity. This benchmark is estimated by a macroeconomic wage regression that explains nominal compensation growth with inflation, growth in labour productivity and changes in the unemployment rate. It gives an indication whether compensation per employee developments have been in line with average historical macroeconomic trends or have deviated from them due to temporary or structural factors. These results broadly confirm the previous analysis, suggesting that wage growth was unusually high over the boom-bust years, but not so in the previous period, and an alignment took place in 2011.

Graph 9: Actual wage growth and benchmark wage equation results

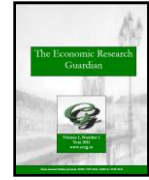


Source: European Commission, unpublished note for the EPC LIME working group

### 3. Economic convergence and international competitiveness

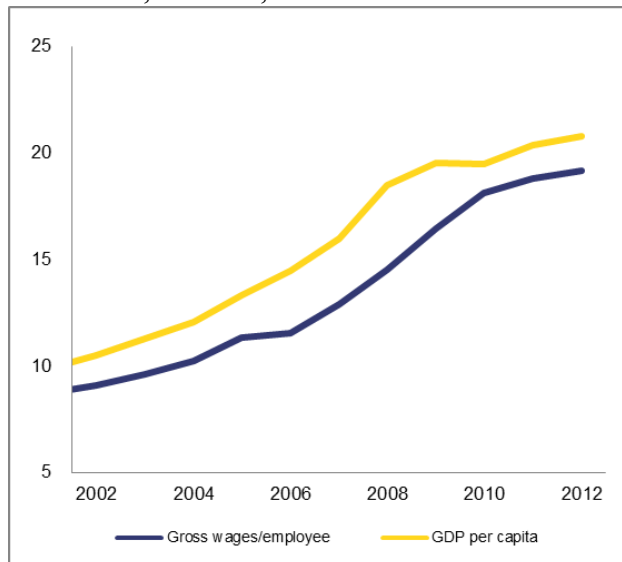
In the following, labour market developments in Bulgaria will be assessed in an international perspective. Two key aspects have to be taken into account, the convergence process as well as international competitiveness.

Within the EU, Bulgaria together with Romania is one of the economies with the most significant catching-up potential on account of their low starting position. Despite the strong economic and wage growth in the last decade (Graph 10), in 2012 the hourly labour cost in Bulgaria was still just EUR 3.7 which is 16% of the EU average of EUR 23.4 and also significantly lower compared with EUR 4.4 in Romania. In purchasing power standards, wages in Bulgaria amount to about 37% of the EU average, at par with Romania.



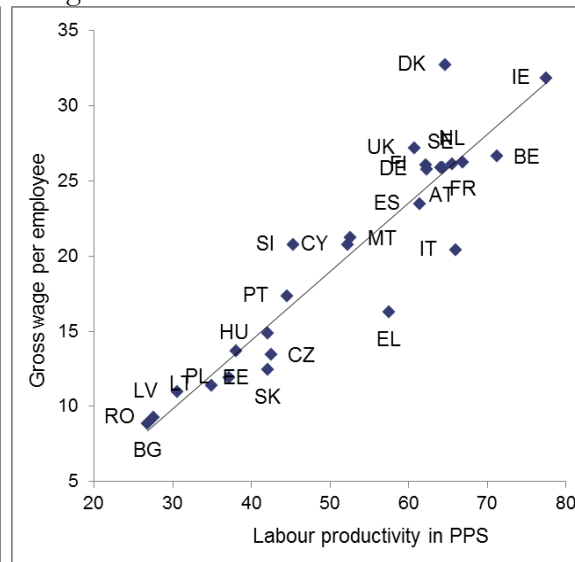
While at first sight this might seem as a strong competitiveness situation, also productivity in Bulgaria is the lowest in the EU (Graph 11). Consequently, the low wage level in absolute terms has to be seen in light of the productivity gap to the other EU Member States. Looking forward, wage levels will most likely continue to converge towards the EU average as also productivity levels converge.<sup>7</sup>

Graph 10: Wages and productivity with EU27=100, nominal, 2000 –2012



Source: European Commission

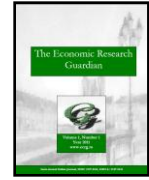
Graph 11: Sectoral wage and employment change correlation 2008-10



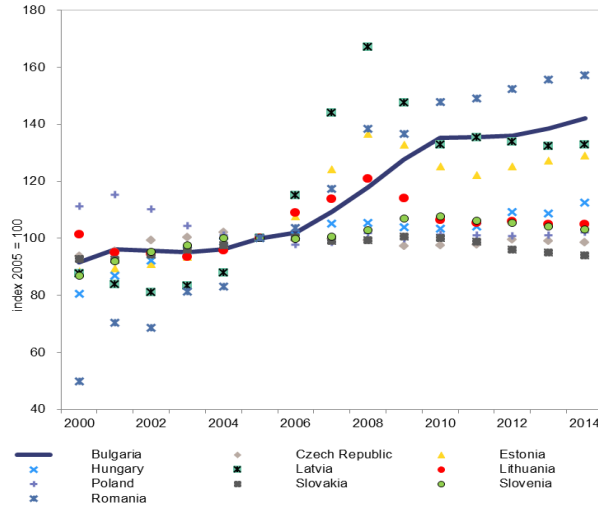
Source: European Commission and own calculations

To assess whether wages have grown without harming international price competitiveness, unit-labour cost based real effective exchange rates (REER) can be compared internationally. When doing so, wage growth in Bulgaria appears high compared to its peers even when adjusted to the relatively high productivity growth. In comparison with its peers, ULC and REER growth appears to have been particularly rapid over 2007-2009, but less so in other periods (Graph 12 and 13).

<sup>7</sup> See also Yorgova (2011).

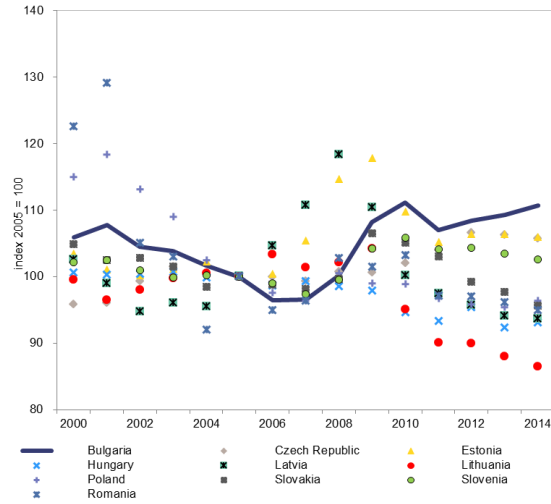


Graph 12: ULC for new Member States



Source: European Commission

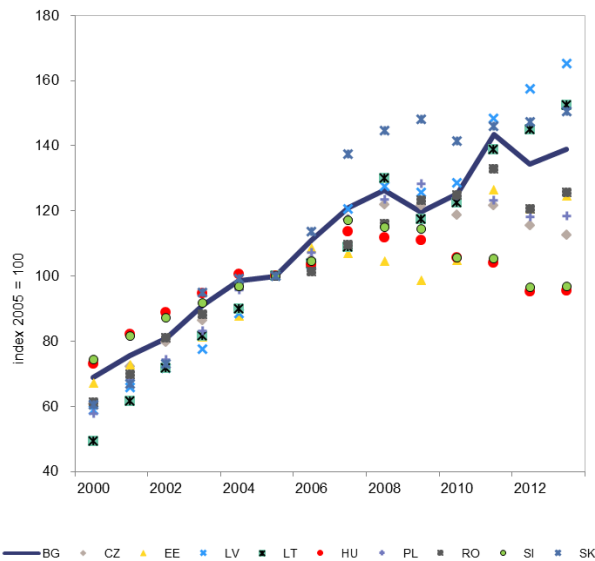
Graph 13: ULC based REER for new Member States



Source: European Commission

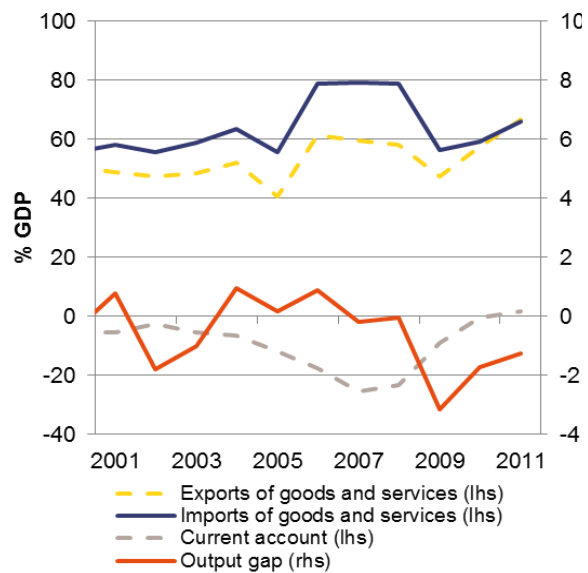
In spite of the unfavourable trends in the standard cost-related indicators like ULC and REER, some other indicators for external competitiveness appear favourable. Notably, a solid rise in export market shares suggest that non-cost factors (e.g. product quality, marketing efficiency) might have compensated for the rising unit labour costs (Graph 14). This rise in exports helped Bulgaria correct the current account deficit from 22% of GDP in 2008 to a surplus of 2% of GDP in 2011 over a remarkably short period.

Graph 14: World export market shares



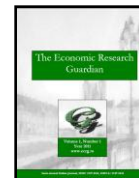
Source: European Commission

Graph 15: Exports and imports (lhs), CA and output gap (rhs)



Source: European Commission





While the current account correction is a remarkably positive development, three aspects have to be taken into account. First, part of the current account adjustment is cyclical, linked to falling domestic demand in the course of the downturn and a presently negative output gap (Graph 15).

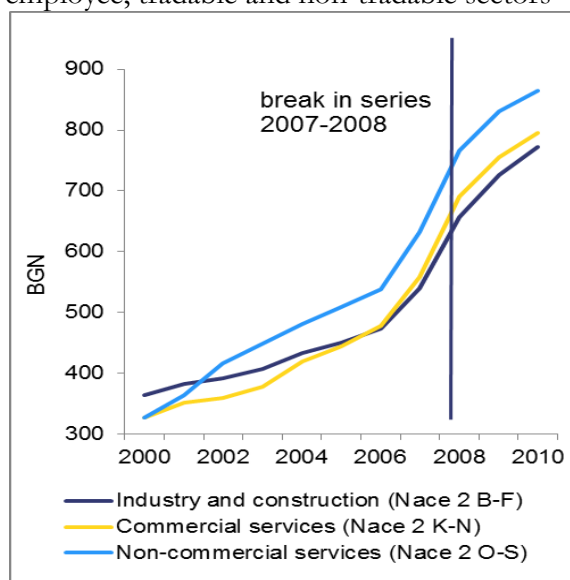
Second, world export market shares of Bulgaria seem to have benefited recently from a windfall profit via the rise in world market prices for various commodities that are important for Bulgaria's exports: ferrous and non-ferrous metals, plastics, rubber, fuels and cereals (European Commission, 'In depth Review for Bulgaria', 2012) (Graph 16). In 2010 and 2011, export prices grew by close to 10% annually, well over import price growth. However, world commodities prices have proven to be volatile in the past. Third, the conflicting results between gains in world export market shares and ULC can also be explained by the different wage developments of tradable and non-tradable sectors (Graph 17).

Graph 16: Terms of trade  
(4 quarters moving average)



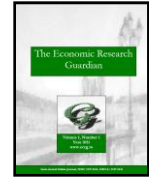
Source: European Commission

Graph 17: Nominal labour costs per employee, tradable and non-tradable sectors

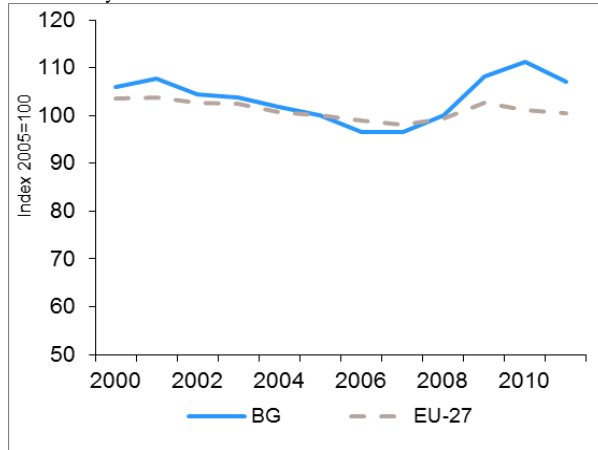


Source: Eurostat

Wages are higher in the non-tradable sectors than in the tradable sector, contributing to the explanation why wage growth seems excessive in a domestic perspective while international price competitiveness has not yet been eroded. It appears that not only wage levels are lower in the manufacturing sector but also ULC growth rates. This is reflected in diverging real ULC growth rates. While real ULC growth in the aggregate economy has been higher in Bulgaria than in the EU on average, in the manufacturing sector it has even been lower (Charts 18, 19).

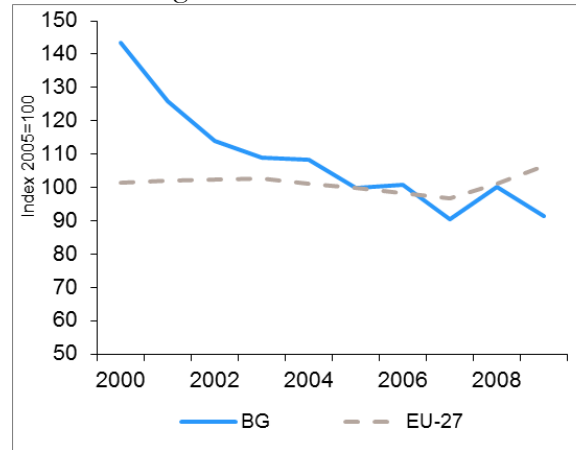


Graph 18: Real unit labour costs, aggregate economy



Source: European Commission

Graph 19: Real unit labour costs - manufacturing sector



Source: European Commission

Nevertheless, the relatively stronger employment and wage dynamics in the service sectors have so far not translated into substantial domestic inflationary pressures. It seems that Bulgaria's core inflation and the inflation difference with the euro area are rather driven by the economic cycle and commodity prices than ULC (Bulgarian National Bank, 2011).

#### 4. Upward wage pressures due to skills and regional mismatches

The previous sections showed that while international price competitiveness has not been eroded by strong wage increases in Bulgaria, wage growth over 2009 - 2012 does not appear to be in line with labour market equilibrium. A closer look into disaggregated developments can help shedding some light into underlying developments and explaining the Bulgarian labour market puzzle.

Challenges in the job-matching process can be analysed via a Beveridge curve which relates unemployment rates to job vacancies. Over the business cycle this curve typically shows a negative relationship. If, however, the curve is shifted, i.e. unemployment and vacancies increase at the same time, this indicates skill related, regional and / or sectoral mismatches. In the case of Bulgaria, however, the vacancy ratio remained constant during the severe downturn at slightly below 1% (Eurostat), raising questions on data reliability<sup>8</sup>.

The impact of the economic downturn varies significantly between sectors, skill levels and regions. This seems to have contributed to upward pressure on average wages during the last years. In a sectoral perspective, between 2008 and 2011 *production* was reduced in construction and the primary

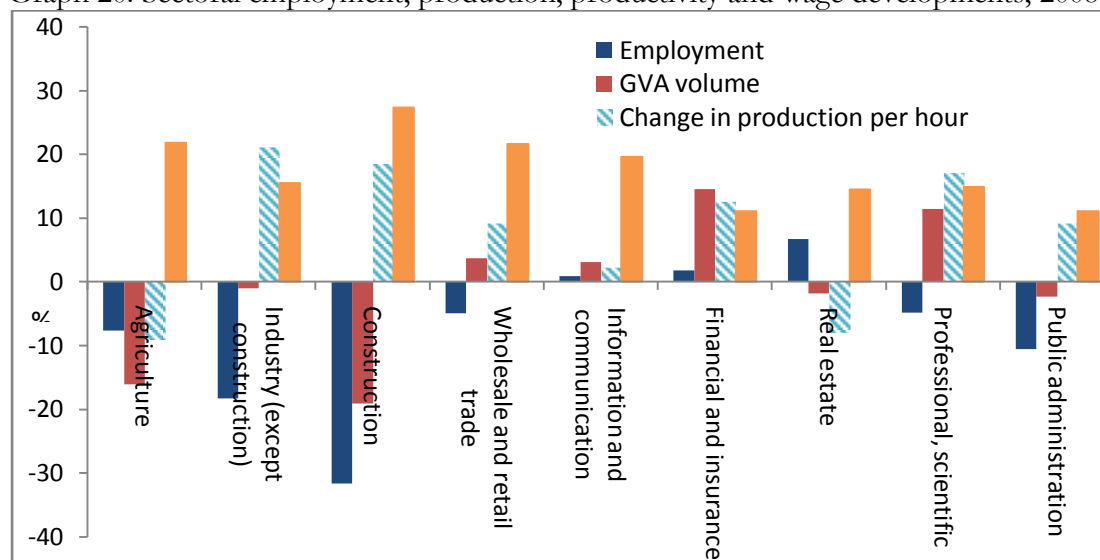
<sup>8</sup> Due to doubts on data reliability, a chart is not presented.



sector by 19 and 16%, respectively, while it was relatively constant in industry and even increased in some service sectors.

In turn, *employment* was cut over these years by more than 30% in construction but also by nearly 20% in industry, while it even marginally increased in some service sectors (Graph 20). This confirms that the burst of the housing bubble had a strong impact on the Bulgarian labour market,<sup>9</sup> but not only the construction sector was concerned.

Graph 20: Sectoral employment, production, productivity and wage developments, 2008- 2012

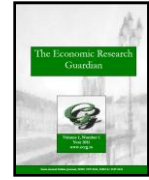


Source: European Commission

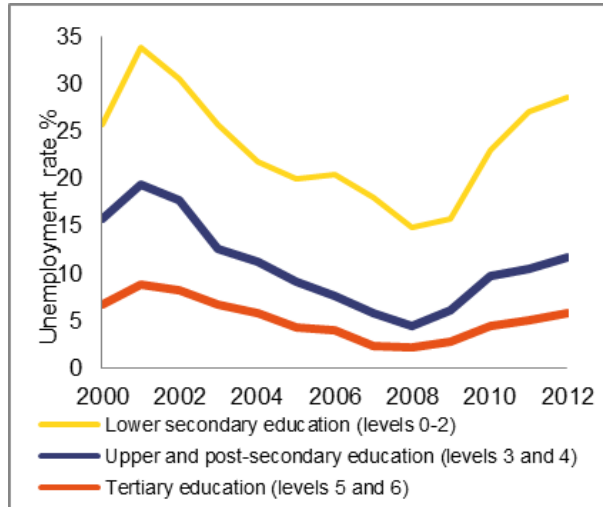
The impact of the downturn on employment and unemployment was correspondingly different between skill levels. While employment of low skilled employees dropped by nearly 40% over the same period, it fell by only 6% for high skilled employees. Similarly, the unemployment rate for low skilled stood at 27% in 2011, while for high skilled it was only 5% (Graph 21).<sup>10</sup> The latter might also be due to emigration as especially skilled labour has employment possibilities in other EU countries with higher wages, leading to a brain drain from Bulgaria. In addition, the high long-term unemployment rate that even over the boom years remained at about 50% of the total unemployment, indicates structural employability and skill issues on the Bulgarian labour market.

<sup>9</sup> For a model simulation of the impact of a housing crisis on the labour market see box I.2.3 of European Commission 2011.

<sup>10</sup> Following Estevao and Tsounta (2011), a skill mismatch index (SMI) can be computed representing the gap between the average proportion of the low-, medium- and high-skilled in the working age population and the corresponding proportion in employment. The skill mismatch is confirmed for Bulgaria, having a persistently high SMI, the second highest among all EU Member States.

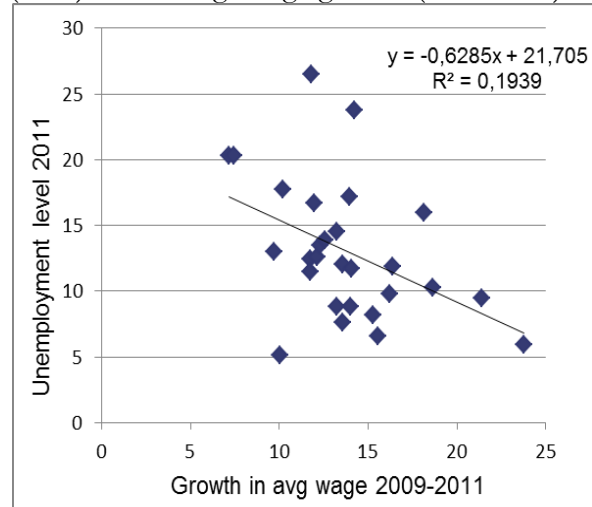


Graph 21: Unemployment by skill levels



Source: European Commission

Graph 22: Regional unemployment rate (2011) and average wage growth (2009-2011)



Source: European Commission

Regional variations in labour market conditions do affect corresponding wage growth rates, even if the correlation is not very strong (Graph 22). For example, in the capital region, the region with one of the lowest unemployment rates, average wages grew by about 10% per year and thus far above the national average. Consequently, some part of the average wage growth appears to be explained by wage increases in regions with a stronger and tighter labour market. However, it does not explain the relatively rapid wage growth in regions with an elevated unemployment rate.

Employers thus seem to have adjusted to the downturn by slashing excess labour with the lowest education attainment, weakest productivity and corresponding low wage levels. Purely statistically, this change in the composition of employment raises the average wage of the economy.<sup>11</sup> This effect seems to be confirmed by the sectoral wage and employment data, which shows that contrary to the usual intuition, on average the sectors most heavily hit by the crisis surprisingly show the highest average wage growth over 2008-2010 (Graphs 20 and 23)<sup>12</sup>. For example, the construction sector shows one of the fastest growth rates in average wages, by 27% over 2008-2010, while also having seen the strongest job cuts (34%) in a crisis context<sup>13</sup>. However, given that job cuts affect in parallel

<sup>11</sup> The whitening of the economy can have a similar statistical effect. Bulgaria is assessed to have the largest share of the shadow economy in the EU and the government has taken measures to improve tax compliance and enhance labour inspections. The legalisation of wages could play a significant role in average wage growth in some sectors, for example retail trade, where the social security minimum thresholds have been increased substantially. However, no concrete data is available to quantify those effects.

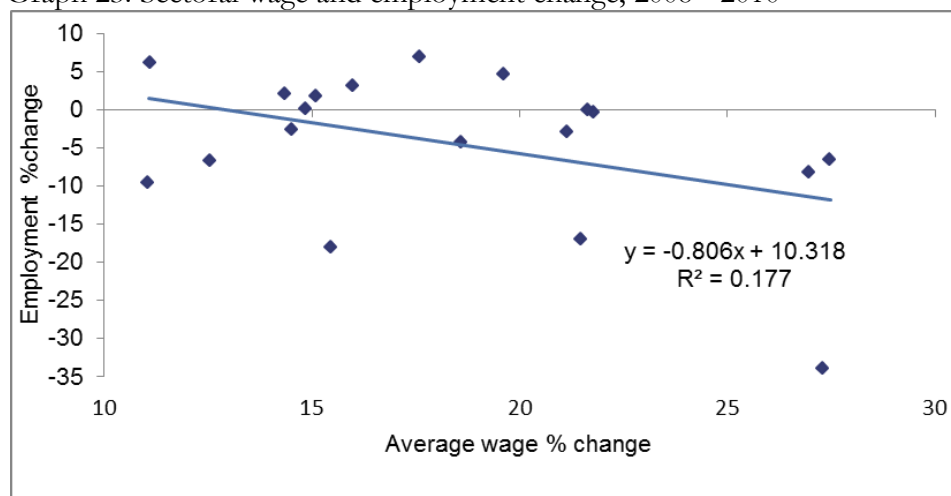
<sup>12</sup> It could also be argued that it is wage and ULC growth that drives employment trends, i.e. lower wages will add to labour demand and vice versa. However, in this particular case, we could expect that the job cuts brought about by the crisis, also through bankruptcies, would bid down wage growth in the same sectors and the weakening labour market would lessen wage pressures more broadly.

<sup>13</sup> In contrast, since 2012, average wage growth in the construction sector has halted and the sector records one of the lowest wage growth rates.



both average wages and productivity, this composition effect should in principle not apply to unit-labour costs.

Graph 23: Sectoral wage and employment change, 2008 - 2010



Source: European Commission

Overall, while wages in some skill groups and dynamic sectors have most likely increased in line with labour demand, institutional factors, discussed below, seem to hinder a wage growth adjustment in line with labour market needs in sectors and skill groups hit hardest by the downturn.

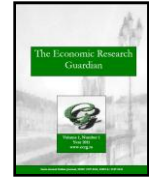
## 5. Institutional factors and labour market policies

The previous disaggregated analysis showed that while wage growth in some labour market segments seems justified, this does not hold for some regions, skill groups and sectors. This section will analyse if labour market institutions can help explaining this result. The lack of wage response during an economic and labour market crisis might indicate some important institutional constraints (for example rigid multiannual wage agreements, wage indexation, trade union dominance, public sector wage growth, etc.). Overall, these usual factors do not appear to play a major role in Bulgaria while some more country specific factors seem to matter.

Wage setting is relatively flexible in Bulgaria.<sup>14</sup> Wage bargaining takes mainly place at firm level and at individual contract level, with a relatively low coverage of collective wage agreements (about 14% of employees, Bulgarian National Bank, 2011). Adjusted bargaining coverage<sup>15</sup> amounts to 30% of employees, which is the lowest in the EU apart for the Baltic countries (Visser). Union density in

<sup>14</sup> See also Tzanov (2012).

<sup>15</sup> The adjusted bargaining coverage gives the share of employees covered by wage bargaining agreements as a proportion of all wage and salary earners in employment with the right to bargaining, expressed as percentage, adjusted for the possibility that some sectors or occupations are excluded from the right to bargain.



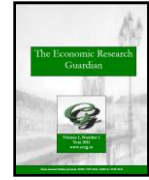
Bulgaria is 20% of wage and salary earners in employment, below the average of the 12 New Member States, but the average is pushed up by high union density in some of these countries. In fact, only 5 NMS have a higher union density. Consequently, while union density does not seem a driving force behind wage dynamics in Bulgaria, it cannot be regarded as exceptionally low either.

Duration of wage bargaining contracts normally is one year, i.e. allowing for taking changes in the economic conditions into account relatively swiftly. Similarly, the degree of wage indexation is rather limited. According to a survey conducted by the Bulgarian National Bank about 7% of firms use an automatic inflation based mechanism and about 17% of firms take inflation "implicitly" into account in their wage setting (Bulgarian National Bank, 2011).

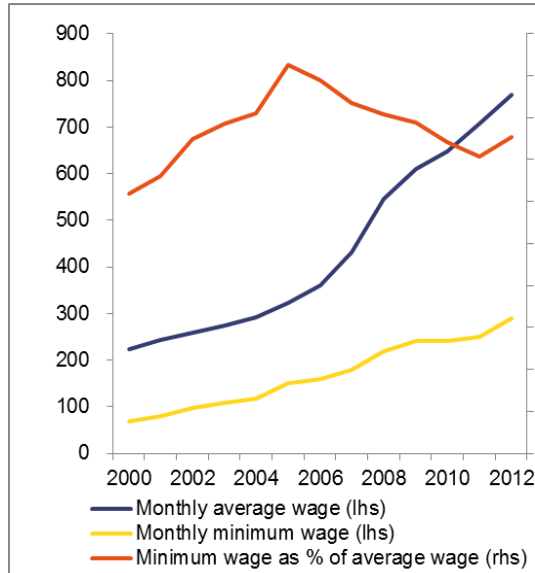
Also, the nation-wide minimum wage can hardly explain the wage-growth-puzzle over the crisis, at least up to 2011. The nation-wide minimum wage was frozen for two and a half years between 2009 and 2011 at about 122 euros per month. This brought the ratio between the minimum wage and the average wage down from more than 45% in 2005 to 35% in August 2011 (Graph 24).<sup>16</sup> However, since 2011, the minimum wage was increased strongly in several steps by a total of 30% to 159 euros as of January 2013. This might have influenced overall wage growth in those years. Nevertheless, the current minimum wage remains at one of the lowest levels in the EU, at par with Romania. Similarly, the share of employees receiving the minimum wage has fallen from 16% to 6% over 2005-2011 (Graph 25). This decline, however, should not be overstated and used to request large additional increases in minimum wages. While the absolute number of persons receiving the minimum wage has fallen in parallel by 200.000 persons, it is not clear if the employees receiving formerly the minimum wage (i) have been able to increase their wage beyond the minimum or (ii) if they had to be laid off as companies did not have sufficient orders and / or could not afford paying the minimum wage in the crisis. While the former would indicate that the minimum wage is less of a concern, the second would indicate that the minimum wage might have contributed to the increase in unemployment, particularly of low skilled. While the first probably holds for the boom years, the latter could be true for the downturn.

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<sup>16</sup> At first sight, the figure of 45% might seem relatively high in an international comparison, especially for a catching-up economy. However, part of this high number might be explained by the grey economy, i.e. by an artificially reduced figure for average wages due to undeclared wages.

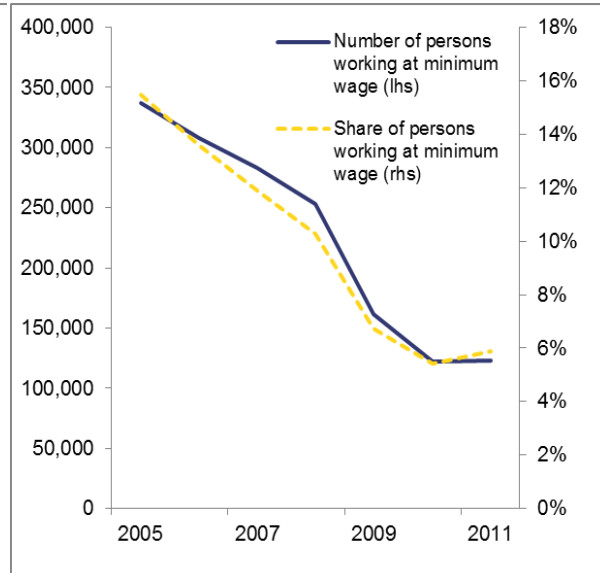


Graph 24: Minimum and average wages, leva, 2005 – 2012



Source: European Commission

Graph 25: Coverage of minimum wages, 2005 - 2011



Source: European Commission

Compared with the statutory minimum wage, the minimum thresholds for social security contributions seem to have a much stronger impact on the labour market. This system, implemented with the view to combat the shadow economy and improve tax collection, sets over 700 different minimum income thresholds (imputed wage) across about 85 sectors and 9 occupations for the calculation of social security contributions. Also, a maximum limit for social security tax applies, capped at a wage income of 2200 leva, which is over 1000 Euros per month<sup>17</sup>. All employees and also self-employed are covered by this system. The minimum thresholds are agreed between social partners, or in the case an agreement is not reached for some groups, these thresholds are administratively set by the government. While social security contributions have to be paid according to these thresholds, actual wages can be lower as long as they comply with the statutory minimum wage.

The declared wage of over one quarter of all employees is close to their respective minimum threshold (+/-10% around the threshold). This is substantially higher than the coverage ratio for the statutory minimum wage. The thresholds range from the minimum wage for some unskilled workers to more than 5 times the minimum wage for managers. While at first sight this dispersion could seem reasonable, in some sectors even for elementary occupations the thresholds are occasionally significantly above the statutory minimum wage. Consequently, the minimum thresholds are on average only about 20% below the average income in the same sectors/occupations.<sup>18</sup> Overall, in low paid sectors and occupations the minimum thresholds have a higher coverage and are closer to the average wage than in other sectors and occupations (Table 1).

<sup>17</sup> The social security tax rate is 30.3%, of which over half is paid by the employer.

<sup>18</sup> See European Commission 2013, p. 37.

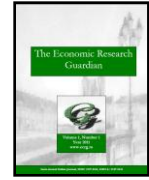


Table 1: Coverage of minimum thresholds and ratio to average income

	Share of employees with income at minimum threshold level (+/- 10%)	Minimum threshold income ratio to average income
TOTAL	27%	79%
Managers	8%	68%
Professionals	6%	70%
Applied specialists	10%	71%
Clerks	14%	75%
Service and retail workers, Skilled agricultural workers	36%	93%
Craft and related trade workers	27%	81%
Machine operators and assemblers	29%	83%
Elementary occupations	30%	94%

Source: European Commission 2013, Table 2

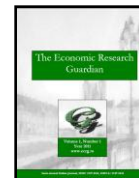
Note: Data calculated as weighted average across industry groups

These thresholds are commonly considered by social partners as indicative minimum wages by sector and occupation. Thus, the increases in thresholds have some impact on wage demands in the same sectors. While in principle the threshold increases should follow actual wage trends in the economy, there are some incentives to push for higher thresholds. Employee organisations have an incentive to ask for higher thresholds as this indirectly leads to higher wages. The government has also some incentives for increasing thresholds as this directly adds to tax revenues. At the same time, the potential adverse impacts on employment might be overlooked since those effects are less immediately evident.

In response to the crisis, the thresholds for some of the sectors and occupations severely affected by the crisis were frozen for several years, but they were not reduced. At the same time, most of the thresholds were increased substantially also over the crisis. The weighted average annual growth rates of the thresholds amounted to about 5% in 2010 and 7% in 2011, which likely had a role in influencing wage demands for the entire economy. Remarkably, the correlation between a change in employment and increases in thresholds in the same sectors and occupational groups is very weak (Graph 26). This might indicate that the increases in thresholds did not take sufficiently account of differences in sectoral and occupational employment conditions. Especially for the low skilled it appears that the thresholds did not allow for sufficient downward flexibility in the context of the economic crisis with doubling unemployment.

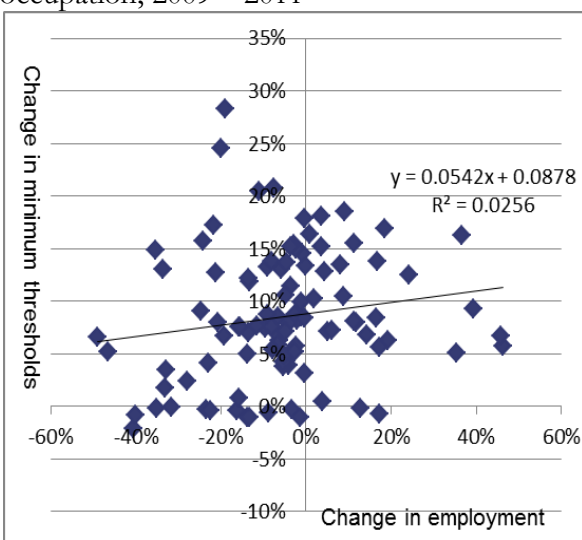
Taxes on labour put a wedge between the labour costs for enterprises and the net wage received by employees. Indeed, econometric analysis shows that the tax wedge is a key driver of structural unemployment in EU Member States (Box 1). Bulgaria has introduced a flat income tax of just 10%, the lowest in the EU and has been able to substantially reduce the tax wedge, including social security contributions to be paid by employers and employees. Over time Bulgaria's tax wedge has





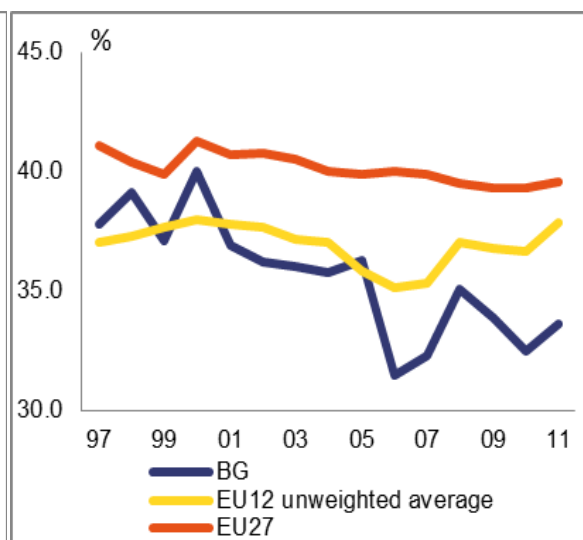
moved below the EU average (Graph 27). Social security taxes (aggregate tax rate of slightly over 30%) have a relatively larger share in the overall labour tax burden in Bulgaria given the very low flat income tax rate of just 10%. Crucially, the system of minimum social security thresholds, with a maximum cap at about 3 times the average wage, implies regressive taxation for some income groups (higher effective tax rates for the low-paid employees whose actual wage is below the social security income threshold and lower taxes for the high-paid). Therefore it also implies a higher tax wedge for the low-paid jobs. While the aim of the thresholds is to fight undeclared wages, paradoxically the regressive taxation effect could lead to an opposite outcome and push those jobs into the shadow economy where the actual received wage is below the threshold used for taxation.

Graph 26: Increase in minimum thresholds and employment change by sector and occupation, 2009 – 2011



Source: European Commission 2013, Graph 49

Graph 27: Tax wedge on labour income



Source: European Commission

Public wages might still contribute to wage pressure in the private sector, but recently to a lesser degree.<sup>19</sup> The aggregated public sector *wage bill* was frozen by the government for three years in a row, from 2010 to 2012. However, given the reduction of public employees, wages *per employee* in the public sector still grew by 10% in 2009, 5% in 2010 and another 3% in 2011. While these growth rates are lower than those in the private sector (13%, 7% and 11% respectively, see also Graph 29), wage *levels* in the public sector still seem to be above those in the private sector. On average, compared with the private sector, wages in the public sector were 28% higher in 2008 but the gap fell to 13% in 2011.

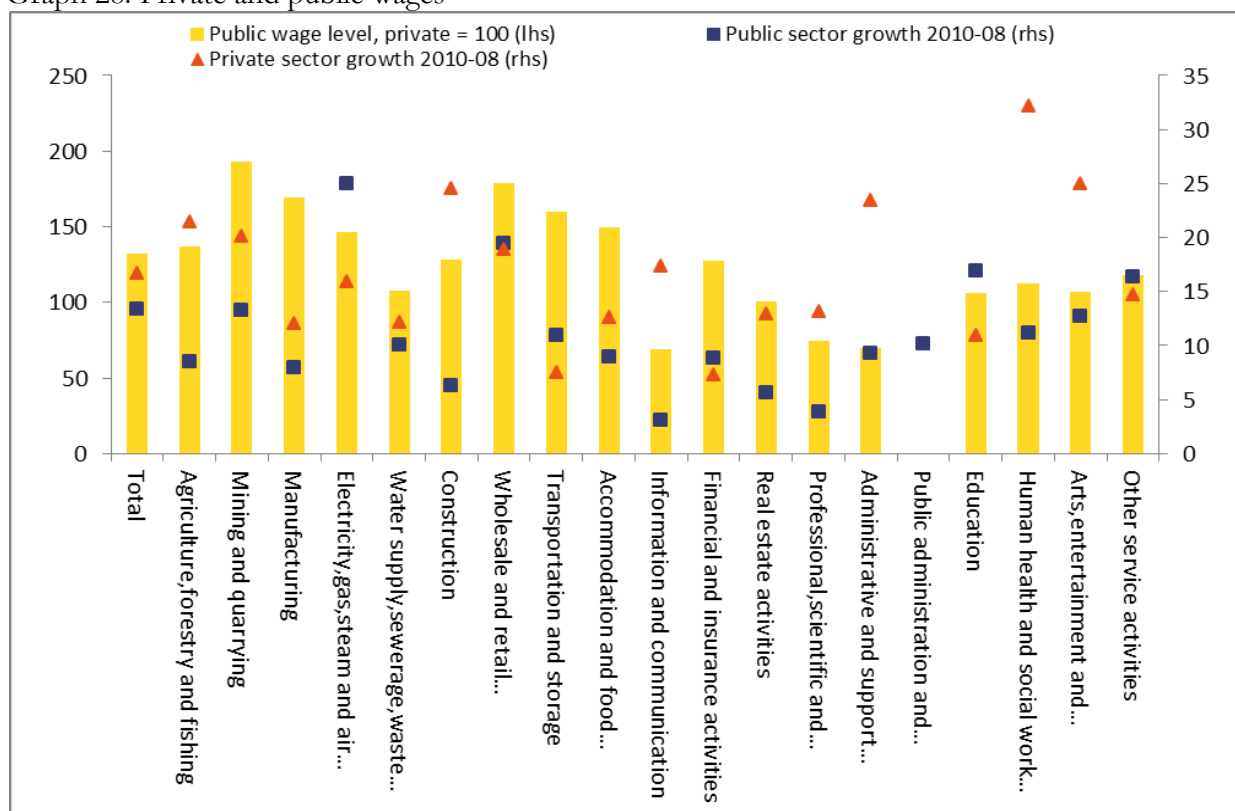
Relatively higher public wages compared with the private sector is a common phenomenon for other countries as well, explained by differences in types of employment and education level and likely some unregistered extra-payments in the shadow economy, which mostly relates to the private

<sup>19</sup> See also Tzanov (2012).



sector. A sectoral breakdown of public/private wage levels and growth rates is presented in Graph 28, showing wide heterogeneity, probably partly due to differences in the types of jobs held by public and private employees in each sector.

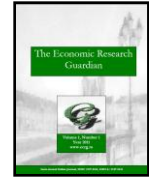
Graph 28: Private and public wages



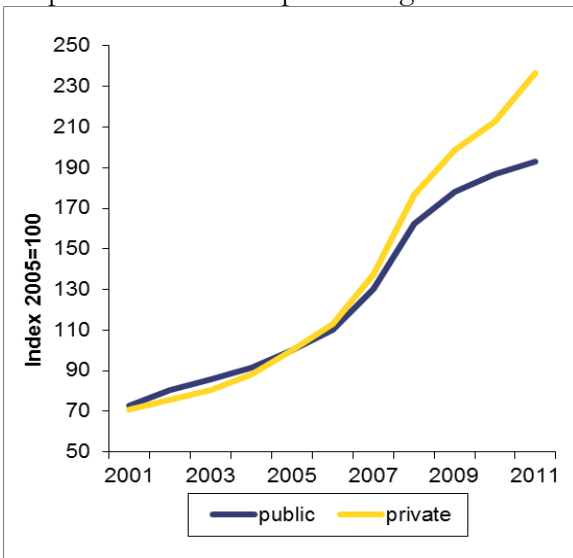
Source: NSI of Bulgaria

Going forward, it seems difficult to maintain a policy of public wage freeze for an extended period. The 2013 state budget foresees wage increases for some public sector professions, most notably military and police by 9% and teachers by 5%.

Besides these directly wage related indicators, various additional factors can influence both wage growth and unemployment. One of these factors is active labour market policies. Interestingly and in contrast to most other countries, in the midst of the downturn in Bulgaria expenditure for labour market policies have been substantially reduced, despite an increasing number of unemployed and, as described above, an increasing number of long-term unemployed and a widening of the skill and regional mismatches (Graph 30).

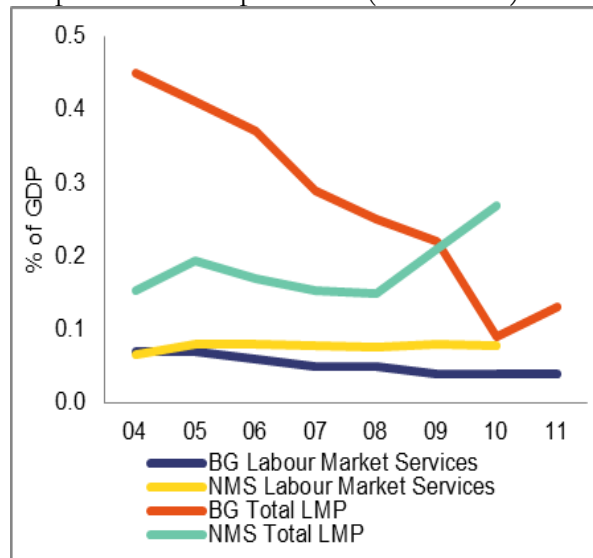


Graph 29: Private and public wages



Source: European Commission

Graph 30: LMP expenditure (% of GDP)

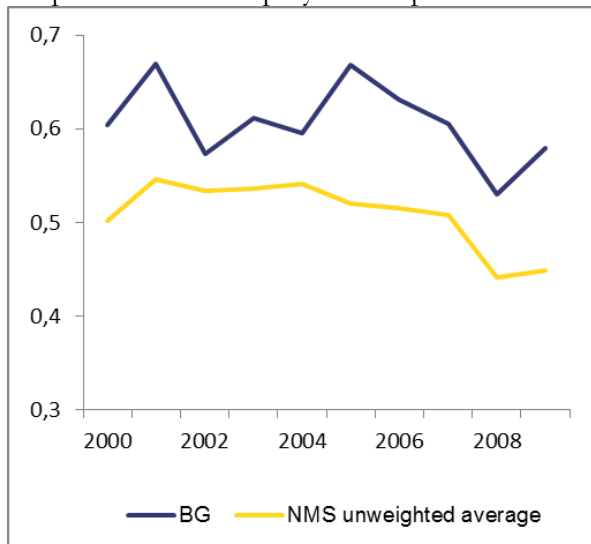


Source: European Commission

A generous unemployment benefit system can generate both some wage pressure and create obstacles to get employed. Graph 31 indicates higher net replacement rates in Bulgaria compared with other new Member States.

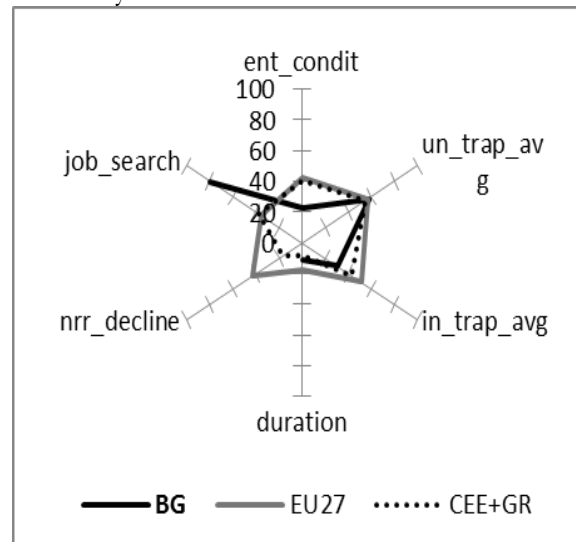
At the same time, Graph 31 shows that the overall generosity of the Bulgarian system is rather not a factor contribution to high unemployment or wage growth when looking at various dimensions: job search requirements, entitlement conditions, unemployment traps, inactivity traps and duration of unemployment insurance.

Graph 31: Net unemployment replacement rate



Source: OECD

Graph 32: Generosity of the unemployment benefit system



Source: OECD



### Box 1: Drivers of structural unemployment in Bulgaria

Structural unemployment represents the rate of unemployment experienced by an economy under "normal" circumstances. It reflects institutional and fiscal factors (e.g. unemployment benefits, tax rates). Empirically it cannot be observed and needs to be estimated, commonly using methods that rely on the concept of the Phillips curve. Graph 1 reports an estimate (so-called NAWRU, black line) using a method proposed by the OECD (see Elmeskov, 1993).<sup>20</sup>

In the run-up to the crisis, structural unemployment has decreased from 16% in 2001 to 8% in 2008. In the wake of the crisis, it then started to pick up again. Drivers of this change typically include factors that have a temporary (though possibly long lasting) impact on structural unemployment (e.g. effects of boom-bust patterns in the construction sector) and factors that have a permanent impact (i.e. change in labour market institutional settings such as generosity of unemployment benefits or the labour tax wedge).<sup>21</sup>

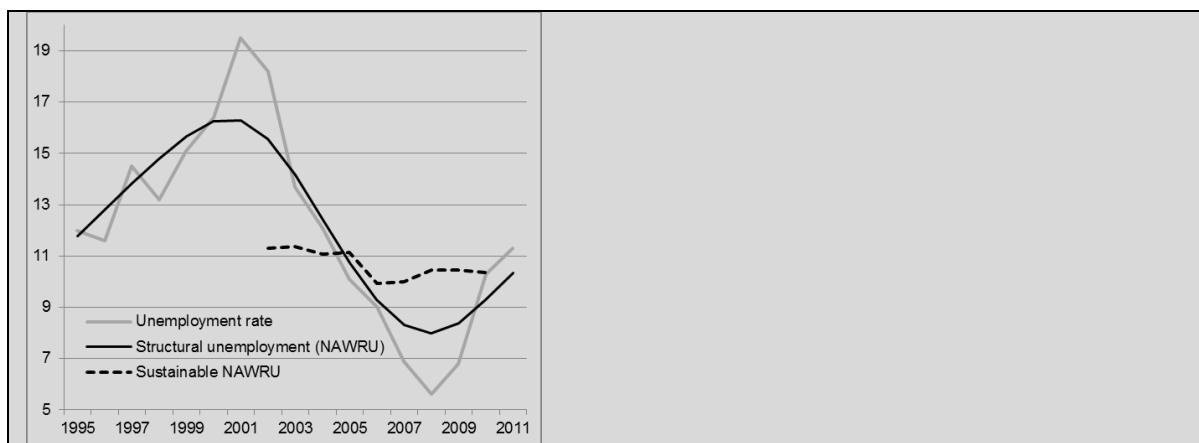
Empirical estimates of the NAWRU, however, seem to follow rather a smoothed trend of the actual unemployment rate than reflecting changes in institutional settings. To overcome this problem, a sustainable NAWRU can be estimated. Formally the following relationships can be defined:

- (1)  $U_t = T_t + C_t$
- (2)  $T_t = T_t^* + W_t$
- (3)  $T_t^* = c + \alpha_1 * LTW + \alpha_2 * UB + \alpha_3 * ALMP + \alpha_4 * UD$

where T and C stand for the NAWRU and unemployment gap, respectively, and T\* and W stand for sustainable level of NAWRU and effect of temporary (and persistent) shocks on the NAWRU. In the estimation of T\* LTW stands for labour tax wedge, UB for unemployment benefit replacement rate, ALMP for expenditure for active labour market policies as share of GDP and UD for union density.

<sup>20</sup> Commission services regularly computes structural unemployment estimates, in the context of the EC Macroeconomic Forecast. The estimate shown in the graph corresponds to computation performed for the autumn 2012 EC Macroeconomic Forecast exercise. For further details on the methodology see D'Auria et al. (2010).

<sup>21</sup> See Orlandi 2012 for a recent study on the drivers of structural unemployment developments in the EU.



In Bulgaria, it appears that boom-bust patterns related to the crisis and the bursting of the housing bubble explain most of the fluctuation in the NAWRU. Institutional features, instead, which measure the sustainable level of the NAWRU, have remained broadly stable, at around 10% (see graph, dotted line). In other words, a plausible path for the structural unemployment would be a return close to that level, once the effects of the crisis recede (i.e. over the medium run).

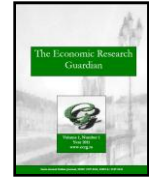
The main policy related determinants of this sustainable level of structural unemployment include the labour tax wedge and the generosity of the unemployment benefit scheme (high ALMP also contributes somewhat to reducing that level). Compared to other new Member States, Bulgaria shows a relatively low labour tax wedge but a relatively high unemployment benefits replacement rate (and relatively low ALMP intensity).

#### Labour market institutional factors - benchmarking Bulgaria

	Labour tax wedge	Unemployment benefits	ALMP
Bulgaria	32.5	65.9	0.03
Average across the new Member States	38.5	53.2	0.07

Note: 2010 data for labour tax wedge and ALMP. 2009 data for unemployment benefits replacement rate. To allow cross-country comparison and control for the cycle, ALMP is computed as ALMP expenditure per unemployed as a proportion of GDP.

Source: Tax wedge & ALMP: Eurostat, Unemployment benefit: Van Vliet and Caminada (2012).



## 6. Conclusions and policy considerations

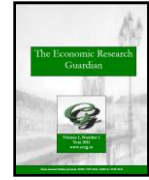
While the increase in average wages can partly be explained by stronger productivity growth in the context of a catching-up economy, wages continued to grow even faster than productivity. Consequently, Bulgaria has lost price competitiveness (measured by ULC deflated REER). Nevertheless, the observed average wage growth has apparently not (yet) hurt exports. Significant gains in export market shares indicate that the erosion of wage competitiveness was probably countered by other cost or non-cost factors, like gains in marketing efficiency or (possibly only temporarily) favourable export price trends. In addition, the rise of ULC was much slower in the tradable sectors than in e.g. service sectors (the manufacturing sector has both lower wage levels and growth rates), which also helps explaining the relatively strong export performance.

Whereas the buoyant wage dynamics could therefore be considered not yet harmful for external competitiveness or employment in some growth sectors, it could weigh on employment among the low skilled and poorer regions. Analysing labour market developments in a national perspective, adjustments to the crisis cannot be considered successful given the persistent rise in unemployment and difficulties in effective job reallocation. Employment cuts were unevenly distributed between sectors, geographic areas and skill categories. Job losses were concentrated among low skilled groups, poorer regions and construction sector while to a lesser extent in industry (much less for service sectors). Given the increase in long-term unemployment as well as skills and geographical mismatches, much of the current unemployment risks becoming structural.

While employment was sensitive to the crisis, average wage growth per employee appears much less sensitive and even excessively strong. Rapid wage growth was due to a combination of factors. A first group of factors only impact the statistical average even without actual wage increases. First, official data on average wages can be driven up without actually higher wage payments by a whitening of the economy via reduction in undeclared wages, potentially induced by increases in minimum social security thresholds. Second, the aforementioned structural changes in employment, whereby low skilled jobs are cut while high-skilled jobs are maintained, would raise the statistical average to some extent. However, these statistical upward-effects on the average wage cannot really explain the actual increase in ULCs as it should also increase productivity by about the same amount. The other group of factors are underlying the, partially even buoyant, actual wage increases. Actual received wages have also increased, impacted by productivity convergence from the lowest levels in the EU, skills and regional mismatches and by increases in minimum social security thresholds bidding up wages.

At first sight, the predominance of layoffs over wage cuts does not appear to be significantly influenced by institutional features as the Bulgarian labour market is in general relatively flexible. However, the exceptions are the system of minimum social security thresholds. More recently also the significant increases in minimum wages might have played some role.

The system of minimum social security thresholds functions as de-facto wage floors. Various minimum social payment floors are effectively set very close to the average wages prevalent in the



same sectors and occupations, especially concerning the low-wage segment where unemployment is the highest. The administrative rises to minimum thresholds therefore also affect the average wage as they act in practice as sectoral/occupational indicative wage floors. Consequently, the system might in effect price out some low-skilled segments and regions of the labour market as it does not allow for sufficient downward adjustment in the course of a crisis. In addition, the system implies regressive taxation (higher effective tax rates for the low-paid jobs and lower for the high-paid) and thus a higher tax wedge for low-paid jobs. Going forward, the system might usefully be carefully assessed and adjustments wisely balanced between on the one hand avoiding contributing to an increase in unemployment and on the other hand the aim to whiten the economy.

The nation-wide minimum wage dynamics can only to a limited extent explain the puzzle of strong wage growth in the crisis (2009-2010), but its impact might be more significant from 2011 onwards. While being frozen between 2009 and late 2011, minimum wages have been increased strongly over 2011-2013, by about 30%, making up for the previous freeze. While at first sight this might seem a social measure, in light of the strongly increasing unemployment for low skilled it could have unintended consequences. Going forward, it thus seems warranted to remain cautious with further strong increases of the minimum wage.

The government took action to improve fiscal balances by freezing the public sector wage bill and pensions for three years in row over 2010-2012. This will be partly undone by the 2013 state budget. Overall, a cautious public sector wage policy should be maintained going forward in order not to create wage pressures in the private sector.

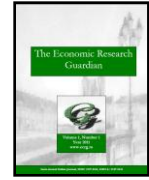
These passive measures, i.e. the recalibration of the minimum social security thresholds and at best cautious adjustments of minimum and public wages, should be combined with a wider set of measures. First, better targeted and more effective social policies could help alleviate potential negative social consequences while still allowing the labour market to adjust and increase employment possibilities for the low skilled. Second, addressing sectoral and educational mismatches will hardly be possible with wage adjustments alone, but needs to be amended by a comprehensive set of ALMPs, training measures and education policies.

## References

Bulgarian National Bank (2011). Wage-Setting Behaviour of Bulgarian Firms: Evidence from Survey Data, *Discussion Papers*. DP/87/2011.

D'Auria F, Denis C, Havik K, Mc Morrow K, Planas C, Raciborski R, Röger W, Rossi A (2010). The production function methodology for calculating potential growth rates and output gaps. *European Economy - Economic Paper*, 420, *European Commission*, July 2010.

Estevao M, Tsounta E (2011). Has the Great Recession Raised Structural Unemployment? *IMF Working Paper*, 11/105.



European Commission (2011). European Economic Forecast - Autumn 2011. *European Economy*, 6/2011.

European Commission (2012). In depth Review for Bulgaria. *Staff Working Paper*.

European Commission (2013). In depth Review for Bulgaria. *Staff Working Paper*.

IMF (2012). Productivity Growth and Structural Reform in Bulgaria: Restarting the Convergence Engine. *IMF Working Paper*, 12/131.

Maiväli M, Stierle M (2013). The Bulgarian labour market: Strong wage growth in spite of rising unemployment. *ECFIN Country Focus*. 10(2): 1-7.

Orlandi F (2010). Structural unemployment and its determinants in the EU countries. *European Economy - Economic Paper*, 455, European Commission.

Tzanov V (2012). *The Impact of the Crisis on Wages in selected EU Member States - Bulgaria: Is a restrictive wage policy the answer to the economic crisis?*, in: Schmidt, V. and D. Vaughan-Whitehead, *The Impact of the Crisis on Wages in South-East Europe*, 159-186.

Raleva S (2014). Impact of Labour on Economic Growth in Bulgaria (1991-2013). *Economic Alternatives*. (3): 5-14.

Van Vliet O, Caminada K (2012). Unemployment replacement rates dataset among 34 welfare states 1971-2009: An update, extension and modification of Scruggs' Welfare State Entitlements Data Set'. *NEUJOBS Special Report* No. 2, Leiden University.

Visser J (2011). Data Base on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts, 1960-2010 (ICTWSS).

Yorgova N (2011). Impacts of and experience with EU membership of the countries of Central, Eastern and South - Eastern Europe. Country study on Bulgaria. *Eastern Journal of European Studies*. 2(2): 169-188.