Labour Market Developments, Competitiveness and the Minimum Insurance Thresholds Influence

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Abstract

The unfavourable unemployment trends in Bulgaria following the economic crisis have led to the recognition of the need for greater wage flexibility. Available surveys, which have been concentrated on labour market flexibility in terms of institutions and legislation, largely conclude that the country's labour market is flexible and does not suffer from excessive regulations. Given the persistently high unemployment rate and employment decrease during the crisis period, with a relatively strong wage growth, this analysis aims to investigate to what extent the labour market results stem from cyclical economic developments. Furthermore, the impact of the system of minimum insurance thresholds and their annual update on employment developments has not been explored previously. The share of employees receiving the minimum wage in Bulgaria is quite small, which determines the low importance of the minimum wage. The minimum insurance thresholds therefore seem to have a stronger impact on the labour market due to a wider coverage and direct influence on entrepreneurs' labour costs, following their annual update. With regard to the above, the effect of the minimum insurance threshold increase was followed by economic activity and occupational status. Despite some regional evidence, the assessment of these effects by district level and enterprises size is yet to be carried out.

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Introduction

Given the persistently high unemployment rate and employment decrease during the crisis period, coupled with a relatively strong wage growth, this analysis aims to investigate to what extent the labour market results stem from cyclical economic developments and if the rise in labour costs undermines the conditions for alleviating the problem of unemployment. Alongside the economic mechanism rationale, the reasons for such developments may be found in the labour market regulations and institutions. Available surveys, which have been concentrated on labour market flexibility in terms of institutions and legislation, largely conclude that the Bulgarian labour market is flexible and does not suffer from excessive regulations. The impact of the system of minimum insurance thresholds and their annual update on employment developments has not been explored previously.

The analysis finds the following main conclusions:

- Both the overall employment and unemployment developments proved to have a strong reaction to the economic cycle changes, while fast unemployment growth has also reflected the strong pre-crisis overheating, which brought about unsustainably low unemployment rates;

- Job losses have been mainly concentrated in three economic industries – tradable (industry excluding construction), construction and the aggregate trade, transport and hotels and restaurants, and have been primarily driven by economic demand;

- The distribution of employment by occupational characteristics has provided grounds for the conclusion that job reductions have been more wide-spread among workers with a mid-to-relatively low level of qualification, which is visi-

ble in all of the sectors covered by this analysis and has supported productivity;

- The positive productivity growth differential to EU 27 gives a stable background for sustaining the long-term competitiveness of the economy. At the same time, the relative compensation per employee in PPS remained among the lowest in EU member states;

- The tradable sector, which is directly exposed to competitive pressure, managed to sustain its cost competitiveness. The manufacturing industry evidenced good flexibility in adjusting labour costs, thus closing the pre-crisis period wage-to-productivity gap. It has sustained its comparative advantage towards its EU peers in terms of cost competitiveness, relatively lower labour share and respectively higher profitability;

- Unemployment changes have a weak dependence on wage growth, in contrast to the strong unemployment/employment response to GDP developments;

- Labour cost developments by sector and the main drivers behind them revealed that they have appropriately adapted to the overall economic circumstances, while compensation per employee growth has strongly reflected the employment restructuring process towards more highly-skilled employment;

- Recent minimum wage increases were intended to compensate for the almost 3-year freeze, while the ratio of minimum to average wage ranked the country in the lowest positions among the EU member states. Given the almost reached pre-crisis minimum to average wage ratio, which is also close to the EU average, low-

skilled employment opportunities will not be undermined, in as much as minimum wage increases are in line with the average wage growth;

- Since their year of introduction (2003), minimum insurance thresholds annual developments have manifested a single outstripping pattern of increase when compared to the average insurance income in 2009, which stems from the bargaining process that takes place in the previous year. However, in the autumn of 2008 the symptoms of the economic crisis had yet to be felt and the negotiated double-digit growth of the minimum thresholds reflected the inertia of the previous years. Furthermore, the strong rate of increase could also have been attributed to expectations that the economic crisis would last for a shorter duration, given the postponed reduction in employment;

- On an aggregate level, the overall response of persons insured on minimum insurance thresholds over their increase failed to prove to be significant;

- Comparisons of thresholds developments, particularly for the lowest-skilled workers, by economic industries revealed that in the years prior to the crisis they had increased at a rate close to or even lower than the minimum wage growth, while the deviation came about in 2009. In some sectors, particularly construction, some labour-intensive manufacturing industries (in the food sector), hotels and restaurants, and the trade, the difference between threshold levels and the minimum wage is more substantial for the whole period under revision, given the high number of insured that receive minimum incomes;

- During the economic crisis period (2009-2011) a weak negative correlation between the thresholds' increase and low-skilled insured persons' dynamics by economic sectors has been estimated;

- Job number dynamics proved that for some sectors (such as trade and hotels and restaurants) the minimum thresholds increase during the crisis period was accompanied by an increase in employment for low-skilled workers in certain years;

- Generally, the minimum thresholds for the low-skilled in the export-oriented industries are close to the minimum wage, the number of insured receiving the minimum is low and the influence of the thresholds on the average insurance income is therefore insignificant. Thresholds have a more significant impact on industries represented by a high share of persons insured on the minimum, such as construction, trade, hotels and restaurants, and some labour intensive manufacturing industries (food and textile sectors);

- The effect of the minimum insurance threshold on low skilled employment was followed in selected economic activities, including trade, hotels and restaurants, manufacturing of textiles and land transport, in which the number of persons insured on minimum was the highest. Within the selected economic activities a comparison was made between groups of low paid workers, which were exposed to the same macroeconomic conditions and institutional framework therefore showing one possible impact of changes in minimum threshold on low-skilled employment. The evidence showed that the growth of MIT was associated with a reverse employment dynamic, pointing to the fact that other factors have been influenced. In some groups the growth of MIT was associated with an increase in insured persons, showing that there is no clear evidence that MIT dynamics have a negative impact on low-wage earners. In other groups the MIT increase was associated with a decrease in insured persons; however this was due to the negative dynamics of highly-skilled workers. The latter also means that following lower economic activity, employers adjusted their labour costs by decreasing the average insurance income, rather

than lowering employment. However, some groups on the minimum wage followed negative employment trends and further information by region and size of enterprises is needed in order to accept/reject one possible negative impact on micro enterprises and enterprises in the poorest regions, which are the most threatened in terms of lower economic activity;

- A negative correlation between the ratio of minimum thresholds to average wage and employment dynamics has been witnessed at a regional level, as, with certain exceptions, those districts where the ratio has increased above average for the economy also tend to have a higher decrease in employment;

- Although the situation on the labour market improved significantly between 2000 and 2008, regional differences and skills gaps persisted. The latter mainly reflected positive net emigration flows and high levels of long term unemployment accompanied by low levels of education and skills of the unemployed;

- In 2011 the highest unemployment rate was evidenced in the North Central region followed by the North-West, North-East and South Central regions. Recent developments by area showed a leading contribution from the provinces of Shumen, Smolyan, Razgrad, Vidin, Pazardzhik, Dobrich, Haskovo and Montana. On one hand the upward unemployment dynamic was related to a significant decrease in labour force. On the other hand, the high unemployment rate in some areas was accompanied by an increase in labour force, which in turn pointed to a significant rise in the numbers of unemployed. Bearing in mind that nominal wages continued to increase and even accelerated their growth rate, one may suggests that the minimum insurance threshold placed an upward pressure on wage dynamics. This is further confirmed by the fact that the share of the minimum insurance threshold was quite close to the average wage level.

1. Labour market, competitiveness and wage developments

1.1. Labour market 2009–2012 trends - strong dependence of employment and unemployment developments on the economic cycle

After a delay in the labour market reaction to the economic cycle reversal, employment started to decrease in mid-2009, a negative trend that continued until 2012. The standard accounting decomposition of GDP on the labour side (Figure 1) revealed that labour utilisation contribution to GDP dynamics has been persistently negative in the last four years manly driven by the drop in employment, even though the negative demographic developments have also contributed.[1] Consequently, the unemployment rate has risen to more than 12% in 2012, while compensation per employee decreased to about 8.7% on average. Given that the Bulgarian unemployment rate and wage growth are both currently higher than the EU average, a question has been raised about whether the employment and unemployment developments have been determined by the economic demand or whether they have been related to the relatively strong growth of wages, the latter undermining the conditions for alleviating the problem of unemployment.

Figure 1: GDP growth rate decomposed to labour productivity and labour utilisation
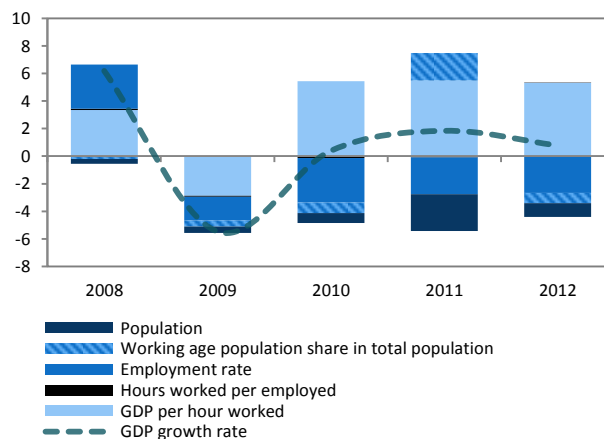
Source: MF

— Employment and unemployment reaction towards economic activity developments

Both the employment and unemployment dynamics have proven to have high elasticities to GDP developments, which give grounds for consideration that they are highly dependent on the economic cycle. A regression on the response of employment to the GDP dynamics estimated an elasticity of 0.6, while the reaction of unemployment to output performance has been even higher. The rise in UR over the cycle reversal also reflects the strong pre-crisis overheating, which led to unsustainably low levels of the UR of about 5% in the second half of 2008. Furthermore, there are modest chances for the economy to return to the pre-crisis growth model, based on a non-tradable sectors' boost, such as construction and real estates. In this way the UR turned back on its way to approaching its natural rate (after being close to it in the period 2003-2006 but deviated from it in 2007 and 2008) and nowadays is less than 1 percentage point higher than the structural one (Figure 3).

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[1] In 2011 population developments were strongly influenced by the 2011 Census figures, with the overall population decreasing by 2.7% year on year and a smaller working age population (15-64) contraction, thus determining the higher share of working age to total population compared to 2010.

(index, yoy)   (level, %)

UR (rhs)   GDP (lhs)   Employment(lhs)
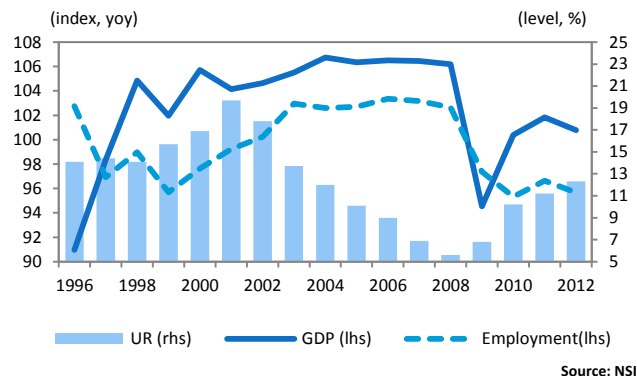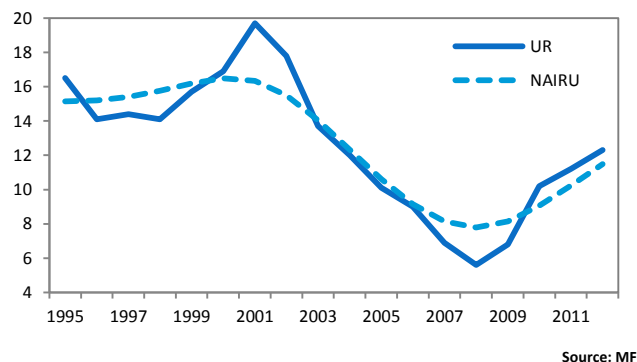
Source: NSI

Figure 3: UR and NAIRU, (%)

UR

NAIRU

Source: MF

—Sectoral employment reaction toward GVA developments

The overall employment loss over the period 2008 –2012 totalled 543.4 thousand and has been concentrated mainly in the tradable sector[2], construction and the aggregated trade, transport and hotels and restaurants sector, as job losses have been primarily driven by economic demand. Both the industrial sectors (tradable and construction) have demonstrated high positive elasticities of employment to GVA changes, 0.65 and 0.56, respectively, which could explain the immediate downturn reaction of employment to crisis influence on output.

Figure 4: GVA and employment dynamics in the tradable sector, %, year on year (yoy)

GVA

Employment

Source: NSI
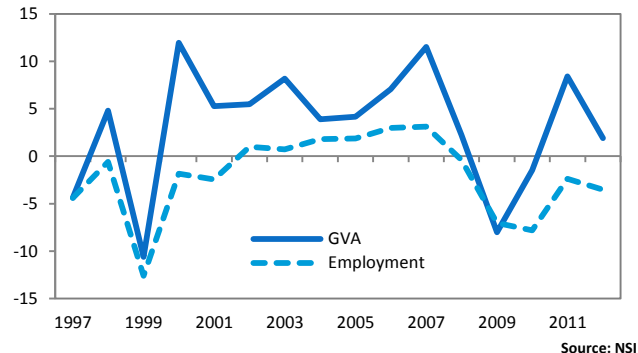
Figure 5: GVA and employment dynamics in the construction sector, %, year on year (yoy)

GVA

Employment

Source: NSI
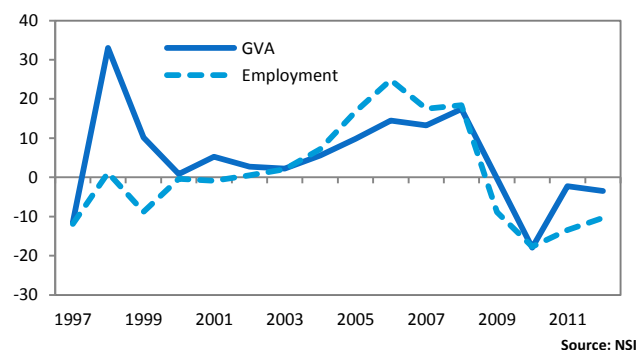
Figure 6: Index of GVA and employment in construction, 1996=100

$y = 0.5531x + 16.585$
$R^2 = 0.7763$

Source: NSI, MF
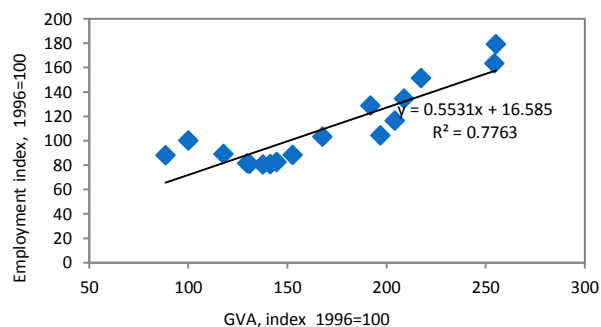
Employment in the manufacturing sector experienced some recovery in 2011, after the 2010 peak in employment reduction (Figure 4), due to the higher number of employees under labour contracts (by 0.7%[3] yoy). Thus the rise in exports and increased foreign demand supported the hiring of labour in the export-oriented processing industries. However, with the new cycle of foreign demand decrease since late-2011 processing firms have again had to

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[2] Industry, excluding construction.

[3] According to Annual survey on enterprises.

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lay-off staff and the overall sector's employment decrease has gradually gathered pace to 3.5% on average. This supports the theory that manufacturing employment developments closely follow the economic cycle movements[4]. This is also true for the construction sector, which has continued to be hit by low demand, despite the implementation of infrastructural projects which supported the increase in civil construction production during 2012. Construction employment has not yet shown any signs of recovery, which could explain the still strong decrease in work force (Figure 5).

Figure 7: GVA and employment dynamics in the trade, transport and hotels and restaurants sector, % yoy

Source: NSI
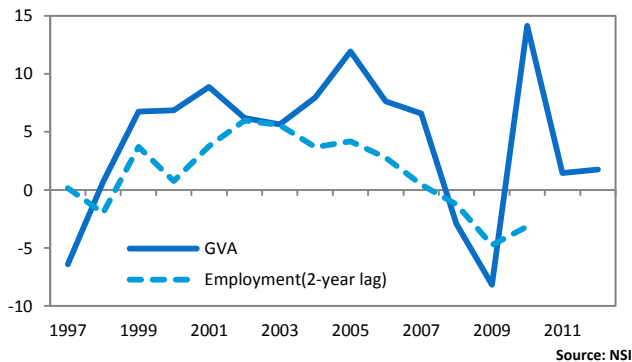
Figure 8: Index of GVA and employment in the trade, transport and hotels and restaurants, 1996=100

$$y = 0.3605x + 65.166$$
$$R^2 = 0.8825$$

Source: NSI
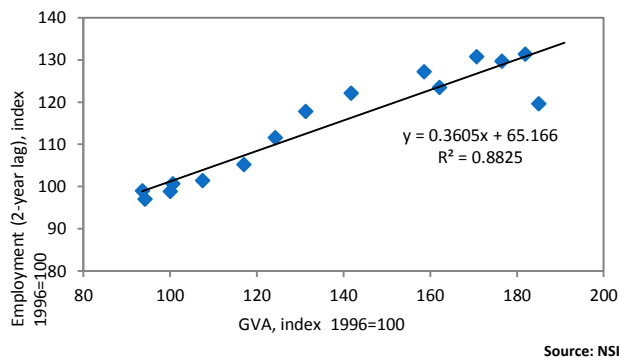
Compared to the tradable and construction sectors, the aggregate trade, transport and hotels and res-

taurants have a smaller response of employment to GVA developments, which is estimated to be significant in a two-year lag, with a coefficient of about 0.4. This supports the theory that the decrease in employment has gradually gathered pace. In 2012 some deceleration in the decrease of employment has been registered due to the recovery of trade employment.

— Employment development by occupations

Employment distribution by occupational characteristics provided grounds for consideration that job losses have been mainly concentrated among workers with a mid – to - relatively low level of qualification. This has been confirmed in all sectors that are of interest to the present analysis. While in the trade, transport and hotels and restaurants sectors job reductions have been more widespread among the elementary and clerical support workers, in the industrial sectors (tradable and construction) employment decrease has been distributed among the elementary, plant and machines operators, and craft and related trades workers, following the specifics and nature of jobs in the respective industries.

Figure 9: Employment change by occupations over 2008–2012 (thus. persons)

Source: NSI

The reduction of relatively low-skilled jobs has been justified by the aspiration of companies to enhance their efficiency, which has supported the rise in

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[4] If we regress employees' number dynamics in manufacturing industry on GVA developments, the correlation is almost perfectly elastic (0.9) compared to a regression between the overall industry excluding construction employment numbers and GVA growths.

productivity gains and the competitiveness of the Bulgarian economy.

1.2. Competitiveness and wage developments – sustained competitiveness gains, albeit the relatively strong wage increases

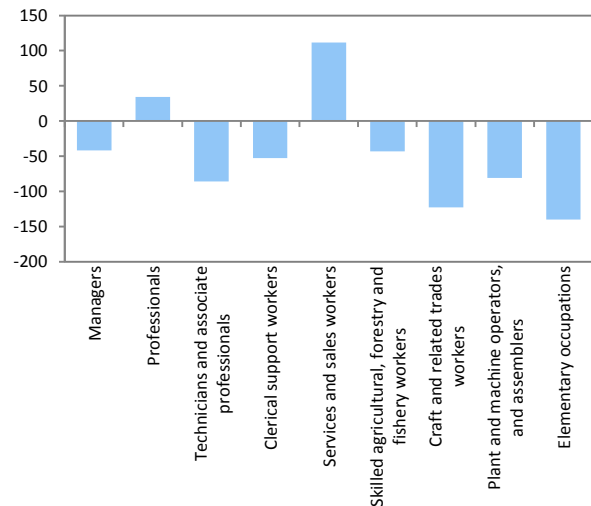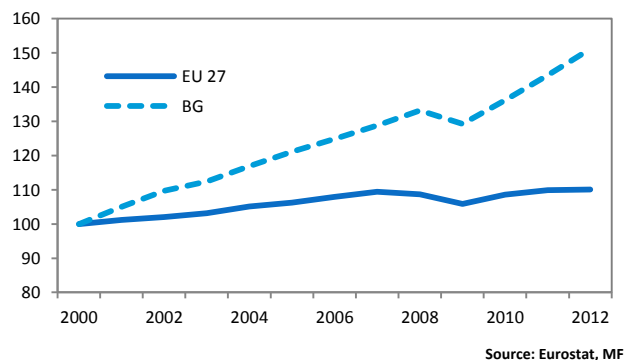Theoretically, an economy's competitiveness, especially in a fixed exchange rate regime, is basically dependent on the presence of stable productivity gains increases and a flexible labour market, enabling easy and fast adjustment of labour costs against economic shocks and wage growth being in line with productivity developments.

— Background for sustaining competitiveness

Bulgaria sustains a positive productivity growth differential relative to EU 27, however labour share remains lower. The Bulgarian economy has experienced an ongoing relatively faster productivity growth compared to EU 27 for more than a decade, following the income convergence process (Figure 10). Regardless of this, labour share in GVA remained among the lowest in EU member states. Furthermore, the gap between productivity and compensation per employee remains (Figure 11)[5].

Figure 10: Productivity growth, 2000=100

Source: Eurostat, MF

Figure 11: Relative compensation per employee and productivity (PPS), EU 27=100

Source: Eurostat, MF
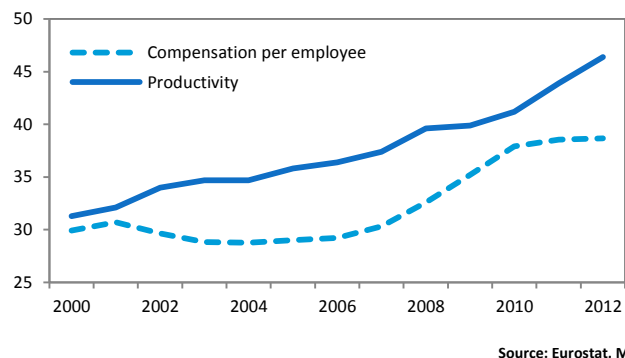
— Real unit labour cost developments overall and per industry

In 2007 and 2008, prior to the economic crisis, real unit labour costs (RULC) were on an upward trend, which continued during 2009 and 2010, however different factors contributed to these developments. In the pre-crisis years the boom economic cycle was behind the remarkable double-digit growth rates of wages, which were further pushed up by some structural mismatches between the supply and demand of labour in certain industries and economic activities. With the bust cycle of the economy wage growth decelerated, following the labour costs adjustment process, however RULC and NULC were still increasing, as some industries needed more time to adapt to the economic environment. In 2011 and 2012 the RULC had already decreased, while NULC growth narrowed to the pre-overheating period rate of increase and was finally reduced to the insignificant 0.2% growth in 2012.

Figure 12: Real compensation per employee vs. productivity in industry (excl. construction), %, yoy

* Deflated by private consumption deflator

Source: NSI, MF

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[5] As GDP per person employed is measured in PPS relative to EU 27=100, compensation per employee is also relative to EU 27 and divided by GDP per capita in PPS to make both indicators comparable.

Manufacturing of basic metals

Manufacturing of machines and equipment

Source: NSI, MF
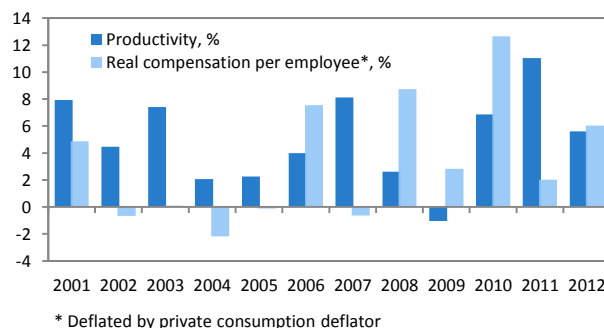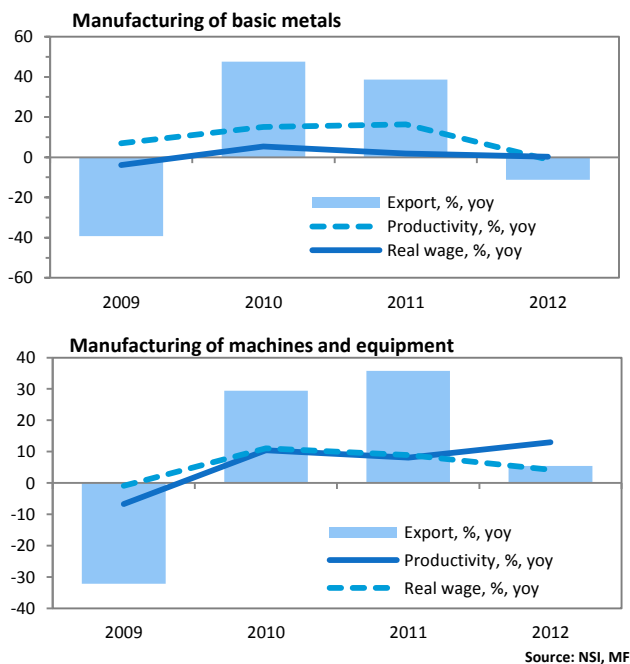
The rise in the overall ULC is not necessarily at-tributed to competitiveness loss, in as much as the tradable sector sustains its cost competitiveness. The relatively strong overall wage growth has not eroded external competitiveness, as it is mostly determined by some non-tradable sectors, influ-enced by employment restructuring compositional effects and more accurate reporting of wages. At the same time, the Bulgarian manufacturing indus-try evidenced good flexibility in adjusting labour costs and gradually closed the pre-crisis wage to productivity gap, thus strengthening its cost com-petitiveness (Figure 12). This was additionally con-firmed by most of the manufacturing subsectors and especially the main export-drivers, such as pro-cessing of machinery and equipment and of basic metals[6] (Figure 13).

Furthermore, the Bulgarian industrial sector has accumulated cost competitiveness gains for more than a decade and proved a sustained comparative advantage (towards EU 27) in terms of cost-competitiveness (RULC developments), relatively

lower labour share and respectively higher profits, the latter having reached and sustained their 2007 share in GVA (Figures 14, 15 and 16).

Figure 14: **Real unit labour cost in industry (excl. construc-tion), index 2005 =100**

Source: Eurostat, MF
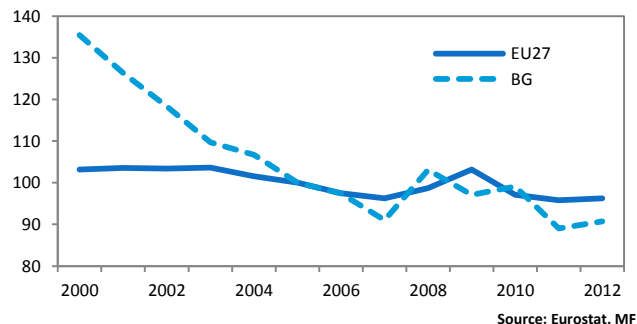
Figure 15: **Share of compensation of employees in GVA in industry (excl. construction)**

Source: Eurostat, MF
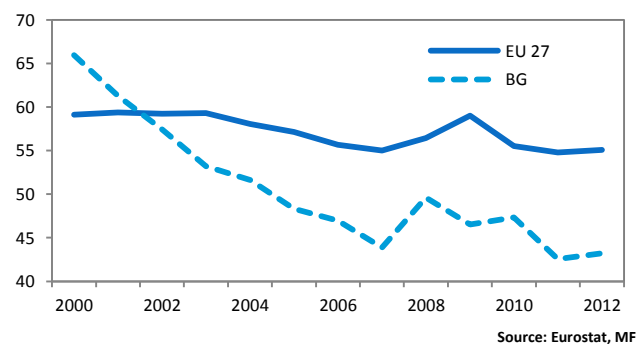
Figure 16: **BG gross operating surplus share and dynamics in industry (excl. construction)**

Gross operating surplus share in GVA in industry (excl. construction), %

Gross operating surplus dynamics , %, yoy

Source: NSI, MF

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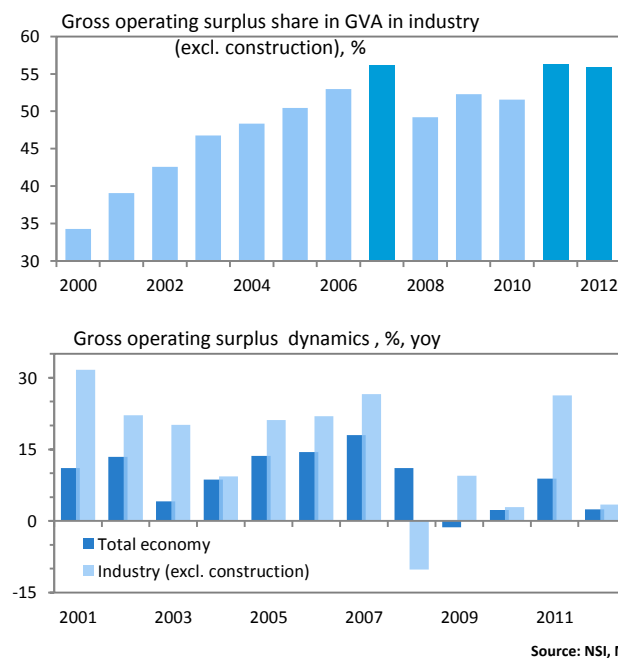
[6] Disaggregated calculations on the wage-productivity gap are based on the short-term statistics of production and employment.

—Wage growth and productivity developments

Generally, wage growth has to be in line with productivity developments so as to reveal a correspondence between supply and demand of labour and to ensure that the labour market does not place pressure on wage developments. For an entire 8-year period between 1999 and 2006, the overall real compensation per employee growth had been below the productivity gains increases. That trend reversed in 2007 and the gap widened until 2009. During the first year of the economic crisis, it was the delayed employment reaction to GDP contraction, on the one hand, which caused productivity to decrease. On the other hand, even though the cost adjustment process led to a slowdown in the rate of nominal compensation per employee growth, it stood somewhat high following the inertia coming from the previous years, collective bargaining agreements, usually being signed for a one to two-year period, agreements over the minimum insurance thresholds update, and job reduction mostly spread over the lowest skilled, the latter technically enlarging the overall average wage. Since 2010 productivity has improved and over the last two years (2011 and 2012) wage growth in real terms was below productivity gains dynamics.

Figure 17: Productivity vs. real compensation per employee, 1999=100

Source: NSI, MF
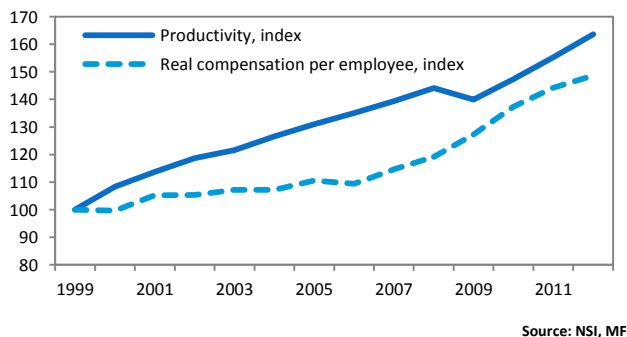
— Relationship between unemployment and wage growth

The simultaneous steep rise in unemployment and wage growth raised doubts about whether the rate of increase in wages does not put pressure on un-

employment. The UR responds negatively to changes in wages at a coefficient of less than 0.1%. Given the previous estimation on the vigorous unemployment/employment reaction to GDP developments we could conclude that the sharp increase in unemployment, respectively employment reduction, has been primarily driven by the economic cycle.

Figure 18: Relationship between UR and WR
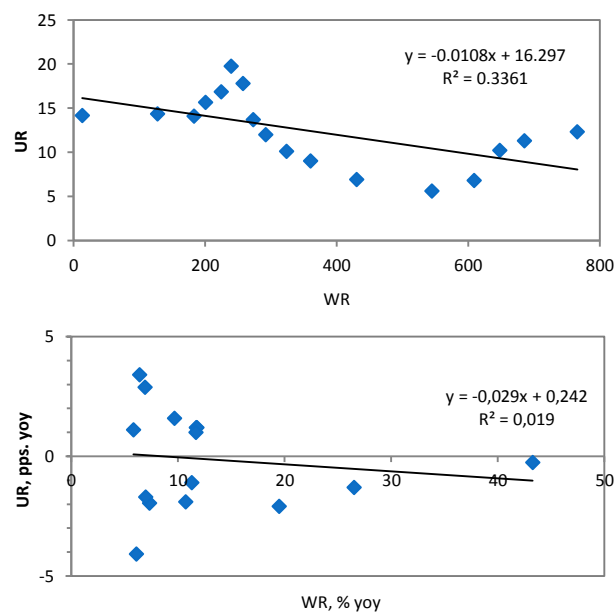
Source: MF

— Wage developments and factors underlying economic industries

As the overall wage growth actually reveals wage developments across different sectors, its proper assessment would necessitate examining trends in the compensation of employees/wage bill and employment across sectors, with a focus on those identified where job losses predominate.

Since 2009 the increase in compensation per employee has gradually stabilised. It fell from a nominal 16.3% rate in 2008 to 5.6% in 2012, and there was a one-off deviation from this trend in 2010[7]. However, we cannot generalize these overall growth rates as increases in the actually received

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[7] As can be seen from the next table compensation per employee growth grew in 2010 yoy, which was broadly driven by the tradable sector and the trade, transport and hotels and restaurants developments which will be discussed separately in the upcoming paragraphs.

wages throughout the economy, as the latter may also be associated with particular industries and respective years.

Figure 19: Compensation of employees, compensation per employee and employment, %, yoy

|	2008			2009			2010			2011			2012		
	Compens ation, %	Compens ation per employee %	Employee s%	Compens ation, %	Compens ation per employee %	Employee s%	Compens ation, %	Compens ation per employee %	Employee s%	Compens ation, %	Compens ation per employee %	Employee s%	Compens ation, %	Compens ation per employee %	Employee s%
Total	19.6	16.3	2.8	5.8	9.4	-3.3	5.1	11.2	-5.5	5.1	8.6	-3.1	1.0	5.6	-4.3
Agriculture	33.0	21.5	9.5	20.8	22.8	-1.6	1.6	8.4	-6.2	16.5	13.1	3.0	6.5	17.3	-9.2
Industry	19.5	15.6	3.4	-1.5	7.1	-8.0	1.3	13.8	-11.0	2.3	7.7	-5.0	5.3	11.4	-5.5
Manufacturing (industry excl. construction)	15.9	16.5	-0.6	-3.4	4.4	-7.4	6.2	15.4	-8.0	4.2	6.7	-2.4	5.6	9.8	-3.8
Construction	34.6	15.3	16.8	5.2	16.5	-9.7	-14.7	6.3	-19.7	-5.4	10.3	-14.2	4.1	18.3	-12.0
Services	19.3	16.8	2.1	9.1	9.6	-0.5	7.0	9.4	-2.2	6.0	8.7	-2.4	-1.0	2.6	-3.5
Trade, transport, hotels and restaurants	10.4	6.8	3.3	11.6	10.3	1.1	14.4	15.2	-0.7	6.5	12.7	-5.4	-4.9	-1.5	-3.4
Information and communication	109.4	96.9	6.3	14.9	17.7	-2.3	12.5	9.6	2.7	15.6	10.7	4.5	4.8	7.7	-2.7
Finance and insurance activities	34.2	14.7	17.0	5.2	2.4	2.7	-3.0	-7.5	4.8	5.4	3.8	1.5	-8.7	-2.9	-6.0
Real estates	50.8	30.3	15.7	16.4	12.8	3.2	2.8	-13.1	18.3	5.0	4.7	0.3	-13.0	10.0	-20.9
Professional and technical activites; administrative and support services activites	7.3	-5.0	13.0	10.4	8.7	1.5	7.6	11.9	-3.9	9.9	8.0	1.7	0.7	8.9	-7.5
Public administration and defence	17.2	22.7	-4.5	4.3	7.0	-2.5	2.9	8.2	-4.9	2.3	4.4	-2.0	2.7	2.4	0.2
Arts, entertainment and recreation	22.3	18.7	3.1	37.9	46.1	-5.6	-4.0	3.3	-7.1	9.3	7.6	1.7	9.3	23.9	-11.8

Source: NSI, MF

Manufacturing wages seem to have been driven by the market mechanism. Following the reversal of the EU demand cycle, local manufacturing industries started discharging workers, allowing for a reduction in labour costs during 2009, while the growth in compensation per employee levelled out to below 4.4%, from 16.5% in 2008. Since the beginning of 2010 processing industries started to recover from the recession. Pursuing competitiveness improvement on the foreign markets, enterprises raised capacity utilisation and productivity, which enabled an increase in wages. Thus, the higher yoy wage growth in the tradable sector in 2010, when the decrease in employment was the highest, was backed by a rise in productivity and strong export performance. The base effect of the higher wages started to fade in 2011 and, along with the gradual regain in employment, caused a strong decrease in the compensation of employees and that per employee. The new downturn in the foreign demand cycle since late-2011 has forced enterprises to reinforce the reduction of employment. At the same time, the overall wage bill growth remained close to its 2011 rate of increase, suggesting that the accel-

eration in the increase of the wage bill per employee could have been due to the stronger rate of employment reduction, mainly concentrated among the low-skilled workers.

Figure 20: Export, productivity and employment development in the tradable sector, % yoy
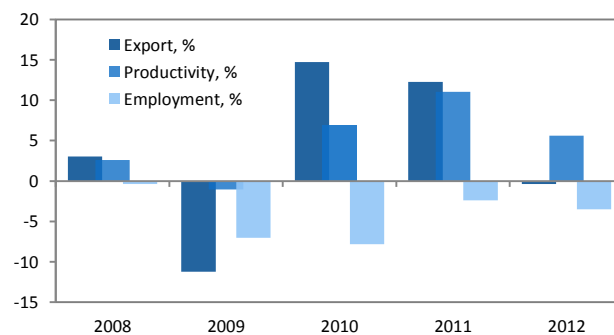

Source: NSI, MF

Figure 21: Wage bill per employee, wage bill and employee's developments in the tradable sector, % yoy
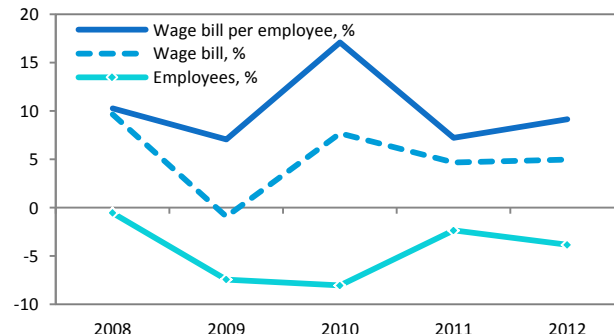
Source: NSI, MF

Construction was among the sectors with the highest simultaneous growth in wages and employment reduction. However, a regression in the response of the sector's employment to both GVA and compensation per employee changes (in nominal terms) proved a weak negative reaction (-0.1) to the one-year lagged wage dynamics, while the reaction to output developments was estimated to be positive and high (0.4). Estimations in the opposite direction about how the compensation per employee dynamics is related to changes in employment revealed a significant response of wage developments to the one-year lagged employment. The latter has been proved by the difference in figures for compensation per employee and compensation of employees', as the 2009 decrease in employment was not accompanied by an immediate slowdown of wage growth with it happening in 2010 instead, assisting the compensation of employees' reduction. As the overall wage bill continued to decrease in 2011 and made an insignificant rise in 2012, the hastened pattern of wage growth over the last two years is related to a compositional employment effect, resulting from reducing the lowest-skilled workers.

Figure 22: Employment and wage developments in construction, % yoy
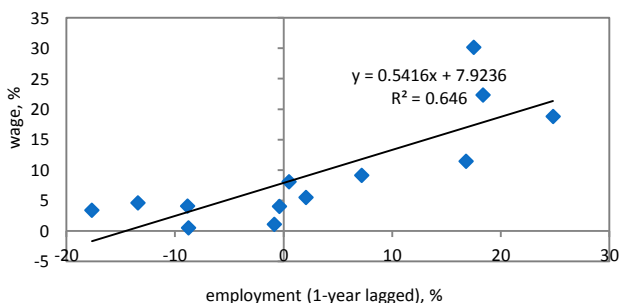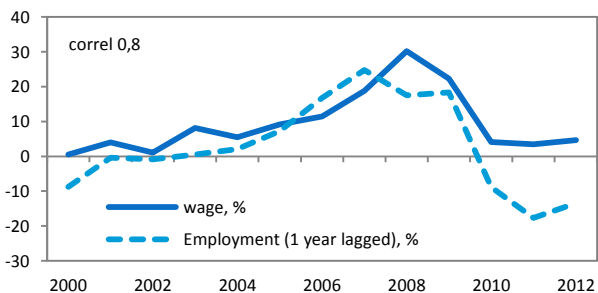
The trade, transport and hotels and restaurants sectors started to feel the negative pressure on labour costs later as compared to the industrial subsectors. At the same time, it sustained a relatively high growth rate of compensation of employees in 2009 and 2010, which then stabilised during 2011 and even declined in 2012. The estimated response of the sector's employment on compensation per employee and nominal output dynamics demonstrated almost equal significant coefficients of the explanatory variables but at a negative indicator for the compensation per employee and a positive indicator for the output growth, both at a 2-year lag. While the reaction of employment to the economic cycle was expected and already confirmed in the first section of the analysis, the same pattern of response to compensation per employee but with a negative sign might signify that part of the decrease in employment was due to wage increases. However, the sector's developments during 2009 and 2010 could not justify this. In 2009 employment was still on the increase. It started decreasing in 2010 but GVA registered a real growth of over 14% and productivity gains of over 15% (the most significant increase since 1996) came in support of the still strong compensation per employee growth. In 2011 the further decrease in employment contributed to the considerable slowdown in the compensation of employees growth yoy, while the increase in compensation per employee still stood quite high, supported by the process of redistribution of jobs towards more highly-skilled persons (Figure 31). During 2012 both the compensation of employees and per employees saw a decrease as compared to the previous year.

Figure 23: Real compensation per employee, productivity and employment in trade, transport and hotels and restaurants, % yoy
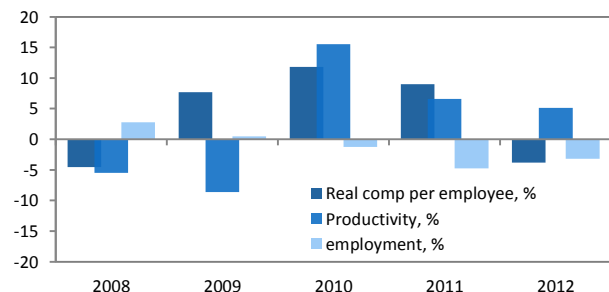
2. Minimum wage, minimum insurance threshold and their influence on employment

2.1. Minimum wage in Bulgaria and its impact on employment

The statutory minimum wage in Bulgaria is determined through tripartite collective negotiations. Many countries vary the minimum wage level, mainly by age, job tenure, region, industry and occupation. Within Europe, 20 of the 27 member states have some form of statutory minimum wage. Among the seven countries without national legislation multiple minimum wage levels are instead agreed by social partners in sector-based collective agreements, albeit with varying coverage of the workforce. Post crises unemployment trends not only in Bulgaria but also in Europe have led to the recognition of the need for greater wage flexibility, which in turn has contributed to a decline in the minimum wage that is relative to average wages in most European countries.

The most straightforward indicator of the importance of minimum wages is the ratio of the minimum wage to the average wage. The higher the ratio the better the relative position of minimum wage workers, but it also creates potentially harmful employment effects. The Kaitz index provides a useful means of comparing the relative level of a country's minimum wage, both over time and across countries. It is defined as the minimum wage as a ratio of gross median earnings. Both the OECD and Eurostat provide estimations of the Kaitz index for European countries. The empirical evidence suggests a negative relationship between the value of a country's minimum wage and the incidence of low wage employment, defined as the

percentage of employees earning less than two thirds median earnings. The estimated correlation index is -0.432. Countries with a higher minimum wage relative to average earnings generally have a lower incidence of low wage work than countries with a low value MW. The percentage of workers affected is also a critical parameter that influences the impact of the minimum wage. The larger the fraction of workers at or near the minimum wage, the stronger the effect the increase of the minimum will be. The impact of increasing the minimum wage depends on the elasticity of demand for low-skilled workers.

During the period 2011-2013 the minimum wage increased by 29.2% in total and its share in the average wage is expected to return to the pre-crisis level (of about 40% in 2008). The number of insured receiving the minimum wage has decreased and accordingly, their share in the overall employees' number lowered to 6% in 2011, which is quite a small ratio when compared to that of insured on the minimum thresholds, corresponding to 22.4%. If we assume that the minimum to average wage ratio has already reached that of the period prior to the economic crisis, when both indicators grew strongly, and this ratio is furthermore comparable with the average for the EU member states (being between 40 and 42%), then the employment opportunities for the low-skilled would not be suppressed, if the minimum wage increase goes in line with that of the average wage growth.

The minimum wage was frozen from 2009 throughout most of 2011, and the recent increases were intended to compensate for this, as the minimum to average wage ratio in Bulgaria strongly

decreased, ranking the country in the lowest positions among the EU member states.

Figure 24: Minimum to average wage ratio, %
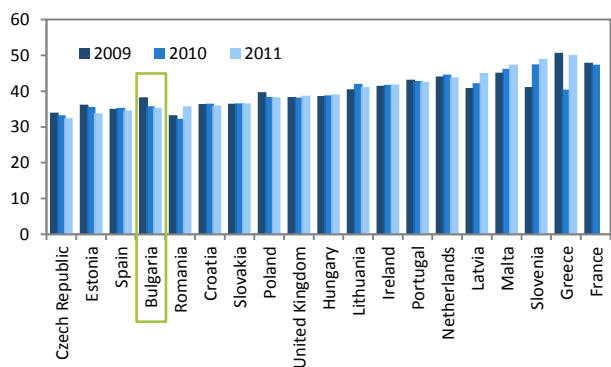
2.2. Minimum insurance thresholds and their impact on employment

— General overview of the system and recent developments

The statutory minimum wage cannot be used to estimate the effect of the minimum insurance threshold on employment in Bulgaria. Despite the relatively high value of the Kaitz index, the share of employees receiving the minimum wage is quite small, which determines the relatively low importance of the minimum wage. The minimum insurance thresholds therefore seem to have a stronger impact on the labour market due to a wider coverage and direct influence on entrepreneurs' labour costs, following their annual update. As the minimum wage is actually the threshold below which the minimum insurance income cannot fall, it is important to discover whether its recent increase could be an obstacle for job creation, especially for low-skilled workers.

Minimum insurance thresholds were introduced in 2003 in order to enlarge social security contributions, while combating the shadow practices among wage payments. Generally, it is admissible that the employer pays a wage below the threshold, given that it is above the minimum wage. Increases in thresholds have been negotiated between employers and employees' unions on a market-based prin-

ciple following the agreement of both the parties. One area where a reason for breaking the market principle agreement could be found is the increase in thresholds in those industries where no agreement has been concluded and the government decides on the thresholds actualization. The administrative increases in most years were equal to those negotiated, with a few exceptions, such as in 2010 and 2012, when they were smaller than negotiated. However, this practice was cancelled in 2012, as no administrative increase was introduced for 2013. Over the years the number of economic industries with elaborated minimum thresholds has gradually increased to currently 85 and for those where agreements were concluded, this happened only recently or since 2012, covering 68% of all economic industries and 73% of all insured persons in 2013.

Figure 25: Minimum insurance thresholds developments, selected figures

	2007	2008	2009	2010	2011	2012	2013
Increase in the average MIT, % yoy							
	13.30	26.24	29.60	5.63	6.83	5.91	3.1
Increase in the average MIT for concluded agreements, % yoy							
	12.60	24.97	26.60	4.85	5.60	7.00	4.54
Administrative increase in MIT, % yoy							
	12.60	24.97	26.60	2.20	5.60	4.50	0
Number of economic industries with elaborated MIT							
	73	73	73	74	76	85	85
Number of economic industries with concluded MIT							
	51	52	44	43	30	50	58
Share of persons covered by concluded agreements, %							
			70.3	68.5	64.9	61.7	73.3

The rate of increase in the minimum and average insurance income stayed close, with 2009 being the only exception. The minimum and average insurance income dynamics meant that in the year after the thresholds establishment the rate of increase in the minimum thresholds slightly outstripped that of the average incomes being based on the aspiration to cover part of the undeclared incomes. In the following two years (2005 and 2006) both indicators grew at an equal rate, while in 2007 and 2008 the average insurance income outpaced that of the minimum one led by the economic overheating and the persistence of labour shortages of a higher qualification. The single more vigorous difference in

both indicators' dynamics has been recognised in 2009, when the minimum insurance thresholds developments considerably outpaced the average insurance income growth. However, given the downward correction in 2010 and the equal rate of increase in 2010 and 2011, the difference in 2009 had to do with the bargaining process, which usually takes place in the autumn of the previous year. However, in the autumn of 2008 the symptoms of the crisis had not yet been felt and the negotiated double-digit growth of the minimum thresholds reflected the inertia of the previous years. Furthermore, the expectations of that time were probably that the economic crisis would last for a shorter duration, which could be also proved by the certain postponed employment and job reduction.

Figure 26: **Minimum, average insurance income and average wage dynamics, %, yoy**

Source: NSSI, MF
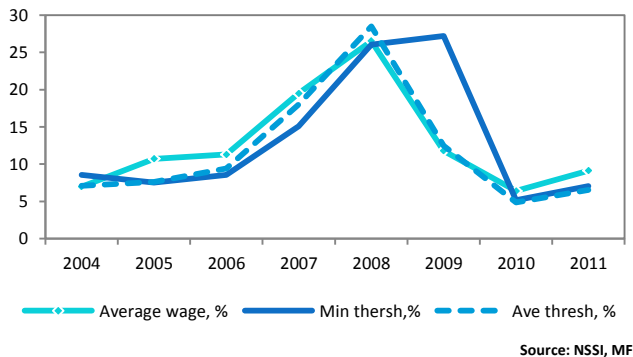
— Dependence of insured on the minimum over thresholds increase

This section aims to display the reaction of the overall insured on the minimum over the thresholds increase. If we assume that minimum thresholds behave like minimum wages, then theoretically, if they are set unrealistically high this might have a negative impact, particularly on low-skilled employment due to their low productivity and might make it harder for the most vulnerable groups to find jobs.

The estimated overall response of the persons on minimum insurance thresholds over their increase failed to prove to be significant. The relationship is even weaker if we look at it the other way or at how

the employment change refers to the decision on the minimum thresholds update.

Figure 27: **Minimum insurance thresholds and number of insured on the minimum, %, yoy (2004–2011)**

$$y = -0.0612x + 8.3431$$
$$R^2 = 0.0013$$

Source: MF based on NSSI figures
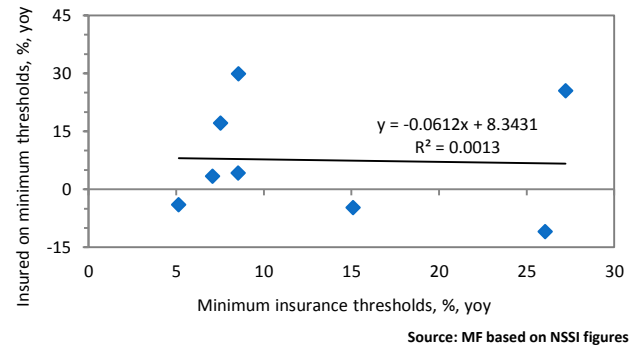
— Minimum thresholds developments by economic industries and reaction of low-skilled employment

The analysis of the sectoral minimum thresholds focuses on the low-skilled employees[8] and recognises a different pattern of development in the years before and after the crisis.

A comparison between the minimum thresholds for the lowest-skilled by economic industries and the minimum wage revealed that in the years before the crisis (prior to 2009) the minimum thresholds had increased at a rate close to or even lower than the minimum wage growth, in general. Of the 12 observed economic industries[9] one or two demonstrated outstripping rate of thresholds' increase in isolated years. These were in particular activities such as manufacturing of clothing, of machines and equipment and of chemical products, where the difference between the minimum

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[8] Low-qualified workers following the occupational groups of profession classifications.

[9] Industries, being a subject of this analysis have been chosen on the principle of covering a sufficient and representative number of insured persons: processing and preserving of meat and fish products; manufacturing of bakery and farinaceous products; manufacturing of clothing; manufacturing of chemicals and chemical products; manufacturing of fabricated metal products, except machinery and equipment; manufacturing of machinery and equipment; manufacturing of electrical equipment; manufacturing of furniture; construction; wholesale and retail trade; repair of motor vehicles; accommodation, food and beverage service activities; travel agencies; other passenger land transport. We should pay attention to the fact that some industries have been split and new ones have emerged throughout the years.

threshold and minimum wage is insignificant – between 5 BGN and 10 BGN. Even though the minimum insurance income dynamics during most of the years prior to the crisis is close to that of the minimum wage, in several sectors, particularly construction, the examined industries in the food manufacturing sector (meat and bread), hotels and restaurants, and the trade, the difference between thresholds and minimum wage is more substantial – between 20 BGN and 40 BGN (the highest being in construction). These however are the sectors where the share of employees around the minimum threshold is the largest, which could explain the higher deviation from the minimum wage.

Figure 28: **Share of persons insured on minimum thresholds (2011)**

Economic activity	Share of persons insured on MIT, %
Manufacturing of meat products	35.8
Manufacturing of bread products	39.1
Manufacturing of wearing apparel	35.8
Manufacturing of chemical products	14.2
Manufacturing of metal products	6.9
Manufacturing of computer products	12.1
Manufacturing of machines and equipment	7.2
Construction buildings	26.4
Trade	32.1
Hotels and restaurants	26.2
Transport	28.8

Source: NSSI

In the first year of the crisis (2009) almost all industries demonstrated outstripping and even double-digit growth rates of the minimum thresholds for the lowest-skilled, given a slower increase of the minimum wage (9.1%). Thus, with the exception of part of the export-oriented industries, there was an extension in the difference between the thresholds levels and the minimum wage. Only the construction sector registered a decrease in the minimum threshold yoy due to workers going on to part-time employment. In 2010 the minimum thresholds growth rates were corrected downwards, however the minimum wage was kept at the level of the previous year, which maintained the persistent deviations in most industries. In 2011 construction and the export-oriented industries reported a decrease in the minimum thresholds, with parts of the latter

such as manufacturing of metal products and machines and equipment reaching an even lower threshold than the minimum wage, indicating a transition to part-time employment. Only the trade and hotels and restaurants sectors outpaced the minimum wage increase.

The persistent deviation of the minimum thresholds levels by industries from the minimum wage during the crisis created a necessity to investigate how they have influenced employment.

Estimations revealed a weak negative correlation during the crisis between the thresholds' increase for the low-skilled and insured persons' dynamics by economic industries.

Figure 29: **Increase in minimum thresholds for the low-skilled and insured persons dynamics by sectors, average 2009–2011, %**

$$y = -0.2624x + 2.9919$$
$$R^2 = 0.0065$$
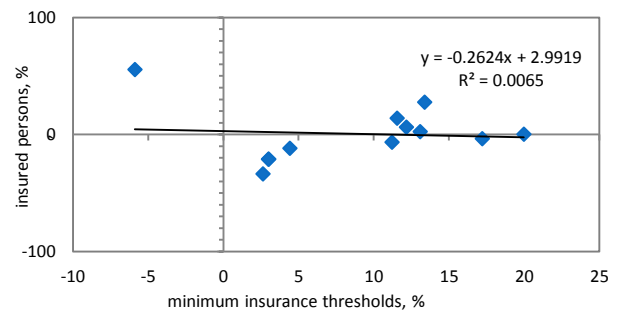
Source: MF

Furthermore, comparisons between the minimum insurance thresholds increase and the number of job dynamics[10] for the low-skilled workers revealed that since 2009 jobs have been on a downward rate of development but some industries such as trade increased the number of low-skilled jobs in 2009, when there was a double-digit minimum threshold increase, and similarly, a positive growth of jobs was registered in the hotels and restaurants sector in 2011.

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[10] According to NSI figures on job numbers.

Figure 30: Low-skilled job dynamics by industries, % yoy
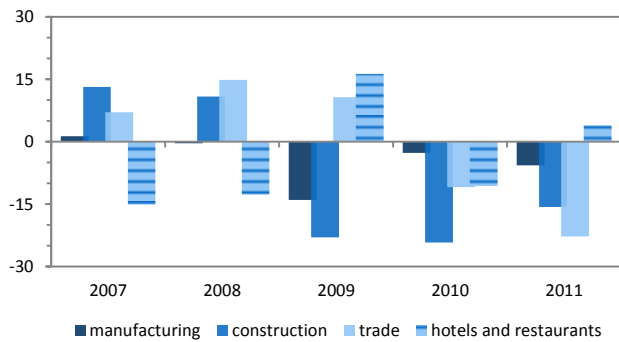
Figure 31: Occupied job dynamics by sectors and professions, (2011), thus. people
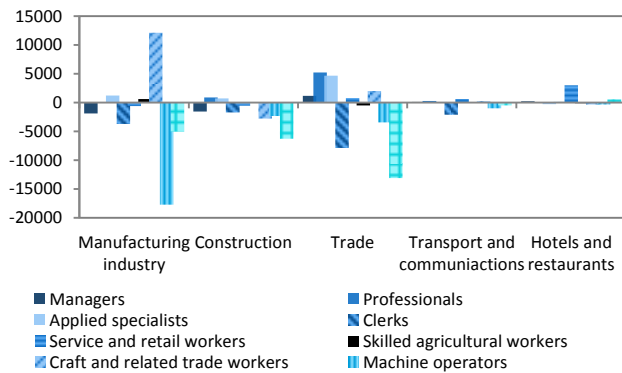
A process of employment redistribution from low-skilled towards high-skilled occupations has been in place, irrespective of the similar thresholds increase. The most representative sector for this distribution is trade, where the increase in occupied jobs of highly-skilled workers compensated for the decrease in low-skilled jobs during 2011 and 2012. It should be noted that this happened irrespective of the approximately equal increase in the minimum thresholds for managers, professionals and applied specialists (between 8 and 10.5%) and the lowest-skilled workers (10.4%). This also shows the sustained high wage growth until 2011.

— Analysis of thresholds' impact on low-skilled employment in selected economic industries

The choice of retail, hotels and restaurants, manufacturing of textiles and land transport for this analysis includes sectors that cover large numbers of low-wage workers and/or are closely related to minimum wage policy developments.

Figure 32: Ratio of minimum threshold to average income in selected industries (%)

2003	2004	2005	2006	2007	2008	2009	2010	2011
Trade								
84.0	83.9	79.9	78.2	74.7	69.5	78.6	80.7	82.9
Hotels and restaurants								
95.4	92.0	95.1	95.6	95.2	95.0	103.4	106.3	108.0
Manufacturing of textiles								
67.3	80.3	83.0	81.2	79.8	85.0	97.1	94.8	92.6
Land transport								
72.8	70.3	170.3	75.4	70.0	71.9	80.8	85.7	87.8

The choice of these specific sectors is also motivated by the low coverage rate of collective agreements. Indeed, the analysis of the collective wage bargaining system in various countries clearly showed that effective minimum exists in sectors with a high degree of union coverage. Therefore, industrial sectors with a relatively low level of coverage are preferable to those with a high proportion of organised workers when choosing valid sectors. Data on the structure of enterprises from 2011 showed a leading share of micro and small enterprises, which suggests that the selected economic activities evidenced a low degree of union coverage.

Figure 33: Structure of enterprises, non-financial economy, by size class in selected industries (%), 2011

	Micro	Small	Medium	Large	Total
Trade	94.5	4.9	0.5	0.1	100
Hotels and restaurants	90.7	8.2	1.0	0.1	100
Manufacturing of textiles[11]	58.1	28.6	11.7	1.6	100
Land transport	91.8	6.9	1.1	0.2	100

In order to follow the effect of minimum insurance threshold on employment in Bulgaria, we chose groups of workers that are exposed to the same macroeconomic conditions and institutional framework. Assuming that the selected groups are similar to the highest possible degree, an influence of the minimum insurance threshold on employment can be obtained. Within the selected economic activities the comparison was made between groups of low-

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[11] Based on the last available Eurostat data (2008).

wage workers, thus showing one possible impact of changes in minimum threshold on low-skilled employment.

Trade

In the period 2003-2011 the share of persons insured at the minimum insurance level in trade varies around 20-30% with the highest level of 31.2% reached in 2004 and the lowest of 19.8% in 2008. Of the persons receiving minimum insurance threshold two occupational groups hold the largest contribution. The share of service and retail workers in 2003-2011 was between 59.9% and 68.0% and those of elementary occupation varies between 14.5% and 23.5%. From this point of view these groups will have the most influence in terms of employment and minimum insurance developments. In order to investigate one possible effect of changes in minimum insurance threshold on employment we will compare these groups, bearing in mind that they cover low-wage workers and their share in 2011 amounted to 82.5%. The main findings on link between MIT and employment developments in trade are as follows:

- In the pre-crises period the share of service and retail workers followed a downward trend from 67.5% in 2004 to 59.9% in 2008. The employed with elementary occupation also decreased in 2008, however the total insured numbers in trade increased in the period under consideration, which suggests a process of employment restructuring from low to medium- and high-skilled wage workers;

- During the period of the crisis (2009-2011) the minimum insurance threshold increased by a similar rate in the two selected low wage groups, however the employed numbers followed different dynamics;

- In 2010 and 2011 the minimum insurance threshold for service and retail workers was increased by 7.5% and 11.1%, respectively, which corresponded to an increase in insured numbers of 2.5% and 13.2%. One may say that the rising share of the respected group follows a process of restructuring from medium and higher to low-skilled employment. However, this means that following lower economic activity employers adjusted their labour costs by decreasing the minimum insurance threshold, rather than employment decrease;

- By contrast the increase in minimum insurance threshold for workers with elementary occupation (4.8% and 10.8% in 2010 and 2011, respectively) was associated with a decrease of 12.6% and 23.2%;

- The latter pointed to the fact that low-skilled employment developments are influenced by factors other than the minimum insurance threshold increase;

- However, further information by region and size of enterprises is needed in order to accept/reject one possible negative impact on micro enterprises and enterprises in the poorest regions, which are the most threatened in terms of lower economic activity.

Figure 34: Selected indicators related to MIT in trade

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total insured numbers									
Number	245537	246210	280573	290277	330675	363653	349452	349981	340898
% change, y/y		0.3	14.0	3.5	13.9	10.0	-3.9	0.2	-2.6
Persons insured on minimum threshold (+/-10%)									
Number	76723	82197	86116	80270	80253	71831	94631	93747	97751
% change, y/y		7.1	4.8	-6.8	0.0	-10.5	31.7	-0.9	4.3
Share in total number	31.2	33.4	30.7	27.7	24.3	19.8	27.1	26.8	28.7
Minimum insurance threshold									
Level (BGN)	154	168	174	189	211	261	347	370	411
% change, y/y		8.8	3.7	8.9	11.3	23.9	32.8	6.8	11.0

Source: NSSI, MF

Figure 35: Groups with leading shares by occupation in trade

	Service and retail workers			Elementary occupation		
	Share	Numbers. % change	MIT. % change	Share	Numbers. % change	MIT. % change
2003	65.7			21.2		
2004	67.5	10.1	13.3	21.9	10.5	7.7
2005	63.7	-1.1	0.0	22.2	6.3	7.1
2006	66.6	-2.5	8.8	18.7	-21.4	6.7
2007	65.1	-2.3	10.8	19.2	2.6	12.5
2008	59.9	-17.6	24.4	23.5	9.6	25.0
2009	60.5	33.1	31.4	22.3	25.0	37.8
2010	62.7	2.5	7.5	19.7	-12.6	4.8
2011	68.0	13.2	11.1	14.5	-23.2	10.8

Source: NSSI, MF

Hotels and restaurants

Minimum insurance threshold and employment developments in the hotel and restaurant sector followed a similar pattern as compared to trade. In 2003-2011 the total insured numbers followed an upward trend with the exception of 2008, when the value of the indicator slightly decreased by 0.1%. In the period under consideration the share of persons insured on a minimum threshold was 24-25% on average. Similar to trade, of the persons receiving minimum insurance threshold two occupational groups hold the largest contribution - service and retail workers and those of elementary occupation, with shares of 76.9% and 12.3%, respectively, on average. These groups made the biggest impact in terms of employment and minimum insurance developments. In order to investigate one possible effect of changes in minimum insurance threshold on employment selected groups are compared, bearing in mind that they are exposed to the same macroeconomic conditions and institutional frame-

work, cover low-wage workers and have displayed similar rates of minimum threshold increase. The main findings on minimum insurance and employment developments in hotels and restaurants are as follows:

- In the pre-crises period both the number of service and retail workers and those of elementary occupation in hotels and restaurants decreased in 2007 and 2008. The total insured numbers increased, which suggests a process of employment restructuring from low to medium- and high-skilled wage workers;

- In 2009-2011 the minimum insurance threshold increased by a similar rate in the two selected low wage groups, which also corresponded to an increase in employed numbers;

- In 2010 and 2011 the minimum insurance threshold for service and retail workers increased by 4.8% and 12.7% and the number of persons receiving minimum wage grew by 6.2%

and 17.3%, respectively. Of the workers with elementary occupation the rate of increase on minimum threshold was 4.8% and 10.8%, which corresponded to an increase in insured numbers of 13.8% and 10.3%. The rising share of the respected groups could be related to a process of restructuring from medium and higher to low-skilled employment. However, similar to trade, this means that following lower economic activity employers adjusted their labour costs by decreasing the minimum insurance threshold, rather than decreasing employment of low wage workers;

- Recent developments point to the fact that low-skilled workers in hotels and restaurants were not negatively influenced by the minimum insurance threshold increase;

- Similar to trade more detailed information by region and size of enterprises is needed in order to follow any negative impact on disaggregated levels, including micro enterprises and enterprises in the poorest regions.

Figure 36   Selected indicators related to MIT in hotels and restaurant

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total insured numbers									
Number	175248	132793	131473	128685	130431	118583	98987	91321	95130
% change, y/y		-24.2	-1.0	-2.1	1.4	-9.1	-16.5	-7.7	4.2
Persons insured on minimum threshold (+/-10%)									
Number	10195	17610	21468	18564	16424	18413	25208	26961	30148
% change, y/y		72.7	21.9	-13.5	-11.5	12.1	36.9	7.0	11.8
% in total number	5.8	13.3	16.3	14.4	12.6	15.5	25.5	29.5	31.7
Minimum insurance threshold									
Level (BGN)	112.2	139.0	151.4	164.8	183.6	238.8	302.3	309.0	329.9
% change, y/y		23.8	8.9	8.9	11.4	30.1	26.6	2.2	6.8

Source: NSSI, MF

Figure 37:   Groups with leading shares by occupation in hotels and restaurant

	Service and retail workers			Elementary occupation		
	Share	Numbers,% change	MIT,% change	Share	Numbers,% change	MIT,% change
2003	84.1			7.9		
2004	79.8	6.8	7.7	11.5	63.6	7.7
2005	76.6	30.4	14.3	13.4	57.7	10.7
2006	76.1	12.7	9.4	13.9	17.4	9.7
2007	77.0	-12.4	20.0	10.9	-31.7	11.8
2008	77.2	-11.8	23.8	10.0	-19.8	15.8
2009	73.7	8.7	23.1	13.9	58.9	22.7
2010	73.7	6.2	4.7	14.9	13.8	3.7
2011	74.1	17.3	13.4	14.1	10.3	14.3

Source: NSSI, MF

Manufacturing of textiles

In the period of 2003-2011 the number of insured persons in the manufacturing of textiles followed a downward trend with the exception of 2007 and 2011. In the period under consideration the share of persons insured on the minimum threshold reached 31.7% in 2011. Within the respected activity three occupational groups insured on the minimum were selected – crafts, machine operators and assemblers

and elementary occupied, with shares of 45.6%, 30.0% and 15.0%, respectively, on average for the whole period. These groups are expected to make the largest impact in terms of employment and minimum insurance developments. In order to investigate one possible effect of changes in minimum insurance threshold on employment we will compare these groups, bearing in mind that they are exposed to the same macroeconomic conditions

and institutional framework, cover low-wage workers and have displayed similar rates of minimum threshold increase. The main findings on minimum insurance and employment developments in manufacturing of textiles are as follows:

- In the pre-crises period the number of persons on minimum wage in the selected group decreased, however since 2008 it has experienced a gradual increase;

- The observed trends in employment were associated with significant growth of MIT in 2008 and 2009, followed by a slowdown in the growth rate during 2010 and 2011;

- In 2008-2010 the upward dynamics of the number insured on minimum threshold was associated with decreasing total insured numbers, pointing to the fact that the adjustment process was carried out through employment decrease. On the other hand the rising share of persons on minimum wage showed that employers adjusted part of their labour cost by lowering the average insurance income;

- More detailed information by region and size of enterprises is needed in order to follow any negative impact on disaggregated levels, including micro enterprises and enterprises in the poorest regions.

Figure 38: Selected indicators related to MIT in manufacturing of textiles

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total insured numbers									
Number	175248	132793	131473	128685	130431	118583	98987	91321	95130
% change, y/y		-24.2	-1.0	-2.1	1.4	-9.1	-16.5	-7.7	4.2
Persons insured on minimum threshold (+/-10%)									
Number	10195	17610	21468	18564	16424	18413	25208	26961	30148
% change, y/y		72.7	21.9	-13.5	-11.5	12.1	36.9	7.0	11.8
% in total number	5.8	13.3	16.3	14.4	12.6	15.5	25.5	29.5	31.7
Minimum insurance threshold									
Level (BGN)	112.2	139.0	151.4	164.8	183.6	238.8	302.3	309.0	329.9
% change, y/y		23.8	8.9	8.9	11.4	30.1	26.6	2.2	6.8

Source: NSSI, MF

Figure 39: Groups with leading shares by occupation in manufacturing of textiles

	Craft and related trade workers			Machine operators and assemblers			Elementary occupation		
	Share	Numbers, % change	MIT, % change	Share	Numbers, % change	MIT, % change	Share	Numbers, % change	MIT, % change
2003	45.2			31.4			12.8		
2004	47.2	80.4	22.7	32.2	76.9	31.8	12.8	73.0	18.2
2005	46.9	21.1	11.1	24.5	-7.3	3.4	20.7	97.0	15.4
2006	48.5	-10.6	10.0	25.4	-10.4	6.7	17.0	-28.7	6.7
2007	44.3	-19.2	10.3	28.5	-0.6	12.5	15.9	-17.5	12.5
2008	40.5	2.5	30.2	32.0	25.8	30.0	15.2	7.5	30.0
2009	44.8	51.4	26.6	30.6	30.9	26.6	14.4	29.5	26.6
2010	46.8	11.9	2.2	32.2	12.6	2.2	13.0	-3.3	2.2
2011	46.0	9.8	7.6	33.6	16.7	7.3	13.5	15.5	5.7

Source: NSSI, MF

Land transport

In the period 2003-2011 the number of insured persons in land transport followed an upward trend with the exception of 2009. On the other hand, persons insured on a minimum insurance threshold increased in the period 2008-2011 as their share gradually stepped up, reaching 26.0% in 2011. As a result the employment structure was transformed from high to low-wage workers. Three groups of workers have been selected in order to investigate the impact of minimum insurance on low-skilled

employment developments – service and retail workers, machine operators and assemblers and elementary occupied. Of the numbers of persons on minimum wage the selected groups covered 8.2%, 68.0% and 7.1% on average for the period 2003-2011. These groups will have largest impact in terms of employment and minimum insurance developments. In order to investigate one possible effect of changes in minimum insurance threshold on employment we will compare these groups, bearing in mind that they are exposed to the same macroeconomic conditions and institutional framework, cover low-wage workers and have displayed similar rates of minimum threshold increase. The main findings on minimum insurance and employment developments in land transport are as follows:

- In the period 2008-2011 the group of machine operators and assemblers displayed a significant increase in both minimum insurance threshold and number of persons on minimum wage. In 2011 the latter covered 74.5% of the total number of persons insured on MIT within land transport. On the other hand the number of insured in the respected activity pointed to the fact that there is no clear evidence of a negative impact of MIT on low-skilled employment;

- MIT in the other two groups - service and retail workers and elementary occupation followed a

similar rate of increase, however the dynamic of numbers insured on minimum wage was different. In 2010 and 2011 the minimum insurance threshold for service and retail workers increased by 7.1% and 5.7%, respectively, and the change in number of persons receiving minimum wage was -11.4 and 21.8%. The workers with elementary occupation followed a downward trend in both years (-8.1% and 17.7%, respectively);

- All three groups were exposed to same macroeconomic conditions and institutional framework, bearing in mind that they cover the same activity and low-wage workers, they each evidenced different employment dynamics, despite the similar MIT dynamics. From this point of view, similar to trade, following lower economic activity the employers adjusted their labour costs by decreasing the minimum insurance threshold, rather than a decrease in employment of low-wage workers;

- Similar to trade more detailed information by region and size of enterprises is needed especially within the groups that displayed a negative employment dynamic in order to follow any negative impact on disaggregated levels, including micro enterprises and enterprises in the poorest regions.

Figure 40: Selected indicators related to MIT in land transport

	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total insured numbers									
Number	53441	58260	60695	61468	71066	76374	71001	71184	72498
% change, y/y		9.0	4.2	1.3	15.6	7.5	-7.0	0.3	1.8
Persons insured on minimum threshold (+/-10%)									
Number	10162	9467	8018	12158	11498	15620	16602	17174	18825
% change, y/y		-6.8	-15.3	51.6	-5.4	35.8	6.3	3.4	9.6
Share in total number	19.0	16.2	13.2	19.8	16.2	20.5	23.4	24.1	26.0
Minimum insurance threshold									
Level (BGN)	157	159	164	181	203	261	344	373	393
% change, y/y		1.2	3.2	10.5	11.9	28.8	31.9	8.3	5.4

Figure 41: Groups with leading shares by occupation in land transport

|	Service and retail workers			Machine operators and assemblers			Elementary occupation			
	Share	Numbers, % change	MIT, % change	Share	Numbers, % change	MIT, % change	hare S	Numbers, % change	MIT, % change	
2003	13.7			55.1			10.5			
2004	9.4	-36.2	0.0	62.9	6.4	0.0	7.7	-31.3	0.0	
2005	10.1	-9.3	7.1	60.1	-19.0	0.0	8.2	-9.8	15.4	
2006	8.3	25.3	6.7	68.0	71.5	12.5	7.0	29.7	6.7	
2007	7.0	-20.6	12.5	72.0	0.1	11.1	6.9	-7.0	12.5	
2008	6.5	27.4	22.2	73.9	39.4	30.0	5.6	11.0	22.2	
2009	6.8	11.2	27.3	71.4	2.6	34.6	7.1	33.3	27.3	
2010	5.9	-11.4	7.1	73.6	6.7	7.1	6.3	-8.1	7.1	
2011	6.5	21.8	5.7	74.5	11.0	5.6	4.7	-17.7	5.7	

Source: NSSI, MF

3. Regional outlook on unemployment, wage and minimum threshold developments

3.1. Unemployment development

Regional disparities have been in place even before the crisis and persisted over the last years. Comparison of regional unemployment levels reveals a strong divergence among districts. About half of the districts have an unemployment rate that is higher than the national average even before 2009, mainly witnessed within the northern part of the country (North-east, North-west and North-central regions). Despite there being a certain rearrangement among districts, this status quo also persisted in 2011.

Figure 42: Regional unemployment rate in 2008 and 2011, %
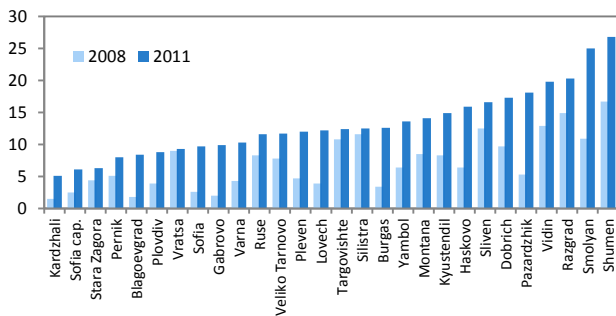
Source: NSI

On the one hand upward unemployment dynamics in certain districts were related to a significant decrease in labour force. On the other hand, the high unemployment rate in other districts was accompanied by a labour force increase, which in turn pointed to a significant rise in numbers of unemployed. Bearing in mind that nominal wages in that areas continued to increase and even accelerated their growth rate one may suggests that the minimum insurance threshold put an upward pressure on wage dynamics. This is further confirmed by the fact that the share of the minimum insurance threshold was relatively quite close to the average wage level.

3.2. Structure of enterprises and employment by statistical region

Enterprise developments in 2011 were more favorable as compared to the previous year. Both South-West and South-East regions reported positive dynamics of enterprises, which was a result of an increase in the number of micro enterprises. The North-West region made the largest contribution to the negative dynamics of enterprises, followed by the North-East and North Central regions. Unfavourable developments were influenced mainly by the decrease in micro enterprises, while small enterprises also contributed in the latter two regions.

In terms of employment all statistical regions registered a lower rate of decrease in employed numbers in the previous year. The largest negative contribution was made by the South-West region as a result of the significant negative employment trends in medium-sized enterprises. Micro enterprises also contributed, albeit to a lower extent. In 2011 large-sized enterprises in all statistical regions with the exception of the North Central region were on a positive trend. Employment growth evidenced micro- and small enterprises in the South-East region as well as medium-sized enterprises in the North Central region.

— North-West region

The North-West region made the largest contribution to the negative enterprise developments in 2011. The number of enterprises there decreased by 2.6% and their share in total enterprises in the non-financial economy lowered to 7.6%. Enterprises dynamic by size showed a leading negative impact

of micro enterprises (-2.6%). followed by medium-sized enterprises (-0.6%). The number of large and small enterprises increased by 2.0% and 1.5%, respectively. The number of employment in the North-West region deceased by 0.5% in 2011 and accounted for 7.5% in total. Following the 2011 enterprise developments, the employed numbers reduced in micro and medium-sized enterprise (-2.6% and -0.4%, respectively). Employment in large and small enterprises followed an upward trend, with a rate of increase of 1.3% and 0.9%. The main findings in the North-West regional developments are as follows:

- The North-West region evidenced the lowest number of enterprises, which corresponded to a share of 7.5% in total non-financial enterprises in 2011. The same is true for large-scale enterprises (5.9%);

- In 2011 the share of investments is also the lowest – 5.5%;

- Labour productivity in the region is about 80% of the average in the economy;

- The number of employees is on a negative trend even in the period prior to the crisis;

- The unemployment rate in 2011 was 12.5%, which is 1.3 percentage points higher than the average for the total economy. At the same time nominal wage growth in the region significantly slowed its rate of increase, reaching 2.9%;

- The employment decrease in 2009 and 2010 was mainly influenced by negative developments in medium and large-sized enterprises. Micro enterprises followed the changes in economic activity with a certain time lag reaction;

- In 2011 the number of employees followed a positive trend (0.4%), which pointed to the fact that the upward unemployment dynamic was related to a lower labour force. This is also true for the period prior to the crisis;

- The 2011 upward dynamic in the number of employees was accompanied by a nominal increase in labour productivity, pointing to a revival in economic activity. This was further confirmed by positive trends in turnover, production and even investments.

— North-Central region

In 2011 the number of enterprises in the North-Central region decreased by 1.2% and their share in the total non-financial enterprises was 9.4%. All groups of enterprises there declined with the exception of small-sized enterprises. The employed numbers in the region slowed their rate of decrease to 0.8% and the size of the region in total economy in terms of employment was 9.7%. In the period under consideration the region was the only one to evidence a negative dynamic related to employment in large-sized enterprises (-3.6%). Employment in SMEs remained close to its previous year level with a leading positive contribution, coming from medium-sized enterprises (2.8%). By contrast, the number of employed in micro and small enterprises decreased by 1.3% each. The main findings in the North-Central regional developments are as follows:

- The North-Central region evidenced the second lowest number of enterprises, which corresponded to a share of 9.7% in the total non-financial enterprises in 2011. The share of large-scale enterprises followed the same pattern (7.4%);

- In 2011 the share of investments was quite low within all of the economic regions – 6.8%;

- Labour productivity in the region is about 77% of the average in the economy;

- The unemployment rate in 2011 was 12.9%, which is 1.7 percentage points higher than the average for the total economy. At the same time nominal wage growth in the region significantly slowed to 5.8% - below the average level in the country;

- The employment decrease in 2009 and 2010 was mainly influenced by negative developments in medium, large and small-sized enterprises. Micro enterprises followed the changes in economic activity with a certain time lag reaction.

— North-East region

In 2011 the number of enterprises in the North-East region decreased by 1.2% and their share in the total non-financial enterprises was 13.6%. All groups of enterprises there declined with the exception of large-scaled enterprises. The employed numbers in the region slowed their rate of decrease to 0.6% and the size of the region in total economy in terms of employment went to 11.7%. Employment in large enterprises increased by 2.3%, while SMEs continued to display a negative employment dynamic. Employed numbers in micro, small and medium enterprises decreased by 1.5%, 0.4% and 2%, respectively. The main findings in the North-East regional developments are as follows:

- In 2011 the number of enterprises in the North-East region corresponded to a share of 13.6% in the total non-financial enterprises. The share of large-scale enterprises was 11.9%;

- In 2011 the share of investments was almost double as compared to the North-West and North Central regions – 10.1%;

- Labour productivity in the region was about 95% of the average in the economy;

- The number of employees is on a negative trend since 2008;

- The unemployment rate in 2011 was the highest within the regions at 15.5%, which is 3.4 percentage points higher than the average for the total economy. At the same time nominal wage growth in the region significantly slowed to 6.7%. which was close to the average level in the country;

- The employment decrease in 2009 and 2010 was mainly influenced by negative developments in medium and large-sized enterprises. Micro enterprises followed the changes in economic activity with a certain time lag reaction;

- The upward unemployment dynamic was related to a lower labour force. This is also true for the period prior to the crisis.

— South-East region

In 2011 the number of enterprises in the South-East region increased by 0.4% and their share in the total non-financial enterprises was 14.3%. All groups of enterprises there followed an upward trend with the exception of medium-scaled enterprises. The latter also negatively influenced employment. Those employed in medium enterprises decreased by 4.6%, thus contributing to the overall decrease of 0.9% in the sector. The number of employed in micro and small enterprises decreased by 0.1% in both groups, while large enterprise employment remained relatively constant based on the previous year. In terms of employment the size of the region in total economy went to 13.3%. The main findings in the South-East regional developments are as follows:

- In 2011 the number of enterprises in the South-East region increased and corresponded to a share of 14.3% in the total non-financial enterprises. The share of large-scale enterprises was 11.5%;

- In 2011 the share of investments was 11.9%, which is close to the value of the indicator in the North-East region;

- Labour productivity in the region is about 92% of the average in the economy;

- The number of employees is on a negative trend since 2009;

- The unemployment rate in 2011 was 11.6%, which is slightly above the national average. At

the same time nominal wage growth in the region significantly slowed to 6.5%;

- The employment decrease in 2009 was mainly influenced by negative developments in medium, small and large-sized enterprises, while the micro enterprises contributed positively. In 2010 persons employed in large enterprises were on a positive trend while the rest of the enterprise groups followed a negative trend;

- Both the North-East and South East regions were exposed to similar macroeconomic conditions, although the unemployment rate there followed quite different developments.

— South-West region

In 2011 the South-West region – the largest in terms of operating companies, was on a positive trend for the second year running. Enterprises there increased by 0.9%, which corresponded to a share of 37.2% within the non-financial business economy. The recent positive trend was influenced by micro and large enterprises, while the small and medium ones followed a downward trend. Unlike other enterprises the number of employed in the region, which covered the highest share of total employment in non-financial economy (40.7%), decreased by 0.9%. The main contributors to the observed negative development were medium-sized (-5.6%) and micro enterprises (0.9%). The South-West region could be characterised as a region with the highest level of employment within large enterprises (30.9%). In 2011 employed numbers there increased by 1.6%, while those in small enterprises remained constant in comparison with 2010. The main findings in the South-West regional developments are as follows:

- In 2011 the South-West region made the largest positive contribution to the enterprises dynamic as it accounted for 37.2% of all non-financial enterprises. It is a leading region in terms of large enterprises, whose share was 44%;

- The region holds the highest share of investments – 53.3% in 2011;

- Labour productivity in the region was about 92% of the average in the economy;

- The number of employees was only in a negative trend in 2010;

- The unemployment rate followed an upward trend after the crisis, however in 2011 it remained lower than the national average;

- The employment decrease in 2010 was mainly influenced by negative developments in small and medium-sized enterprises.

— South-Central region

In 2011 the number of enterprises in the South-Central region decreased by 0.6% and their share in the total non-financial enterprises was 17.8% - twice lower than in the South-West region. All groups of enterprises there declined with the exception of large-size enterprises. The numbers of employed in the region slowed their rate of decrease to 0.3% and the size of the region in total economy in terms of employment went to 17.1%. Employment in large enterprises increased by 1.1%, while SMEs continued to display a negative employment dynamic. Employed numbers in micro, small and medium enterprises decreased by 0.7%, 0.1% and 0.9% respectively. The main findings in the South-Central regional developments are as follows:

- In 2011 the number of enterprises in the South Central region decreased and corresponded to a share of 17.8% - the second largest region in terms of both enterprises and employment;

- In 2011 the share of investments was the lowest in all regions at 5.6%;

- The same is true in terms of labour productivity, which was about 75% of the average in the economy;

- The number of employees is on a negative trend since 2009;

- The unemployment rate in 2011 was 12.7%, which was 1.5 percentage points above the national average. At the same time nominal wage growth in the region significantly slowed to 5.6%;

- The employment decrease since 2009 was mainly influenced by negative developments in medium, small and large-sized enterprises, while the micro enterprises contributed positively. In 2010 persons employed in large enterprises were on a positive trend and the rest of the enterprise groups followed a negative trend.

In regions with a higher than national average unemployment rate, the number of young unemployed increased, therefore displaying an unemployment rate within the group under consideration in the range of 30-34%. Developments in 2011 by district showed the highest unemployment rate in Shumen, Smolyan, Razgrad, Vidin, Pazardzhik, Dobrich, Haskovo and Montana. Several factors influenced the latest unemployment dynamic. On the one hand, the labour force in some districts decreased, which put an upward pressure on the unemployment rate. On the other hand increasing unemployment in Vidin, Razgrad, Shumen and Smolyan was accompanied by a growth in labour force, pointing to the fact that the unemployed numbers there rose significantly. Despite this the average wage in the districts under consideration was very close to the minimum insurance threshold. From this point of view the impact of minimum insurance increase places direct pressure on labour costs, thus the adjustment process was carried out only through employment decrease. However, further information on MIT by regions is needed in order to confirm the above statement. In 2011 the wage dynamics within the districts with the highest unemployment followed different patterns, which could be divided in three groups. There was a significant deceleration and even marginal decrease of wages growth in Smolyan and Vidin. In Pazardzhik, Shumen, Dobrich, Montana the rate of wage increase remained lower than the average for the economy. Only Haskovo and Razgrad were among the those districts, which reported a strong wage growth.

Figure 43: Regional labour market indicators in the regions and districts with the highest unemployment rate, 2011

	Total	North-West	North Central	North East	South Central
Unemployment rate	11.2%	12.8%	12.8%	15.4%	12.9%
15-24 age group	25.0%	33.6%	30.2%	32.6%	31.8%
By district		Vidin (19.8%) Montana (14.1%)	Razgrad (20.3%)	Shumen (26.8%) Dobrich (17.3%)	Smolyan (25.0%) Pazardzhik (18.1%) Haskovo (15.9%)
Labour force	-2.3%	-3.0%	-1.0%	-2.3%	-2.9%
By district		Vidin (2.6%) Montana (-6.4%)	Razgrad (0.7%)	Shumen (0.9%) Dobrich (-3.5%)	Smolyan (0.7%) Pazardzhik (-3.7%) Haskovo (-12.2%)
Wage growth	5.8%	2.9%	5.8%	6.7%	5.6%
By district		Vidin (2.0%), 26* Montana (4.3%), 18	Razgrad (6.9%), 3	Shumen (4.6%),16 Dobrich (5.2%), 19	Smolyan (-0.2%), 28 Pazardzhik (4.6%), 15 Haskovo (6.4%), 7

*The number shows the rank of the respective district in terms of wage growth. From this point of view, a rank 26 of total 28 districts corresponds to the second lowest rate of wage increase.

Source: NSI, Eurostat

## 3.3. Dependence of regional employment on wage and thresholds increase

This section aims to investigate whether the regional employment dynamics are negatively correlated with the increase in minimum thresholds.

The average country's ratio of minimum income to average wage for the period of 2008 to 2011 equals 57.5% and only 5 districts have been below or very close to the average (Vratsa, Varna, Stara Zagora, Sofia and Sofia cap.). **Estimations reveal a negative correlation between the ratios' increase and employees' number dynamics, as those districts where the ratio of minimum income to average wage increased faster than the average for the economy, tend to also have a faster decrease in employment, with just a few exceptions.**

As the overall average wage level for the economy is strongly dependent on several districts which tend to bolster the aggregate wage, the above analysis has also been applied given recalculated weighted average wages, excluding the figures for Vratsa, Varna, Stara Zagora, Sofia and Sofia cap. With the help of this approach, the ratios of minimum income to average wage by districts are more evenly distributed, and with a far smaller deviation to the economy's average. However, even in the case of exclusion of the above mentioned outliers, the negative correlation between the rise in minimum income to average wage and employment developments by districts over the period of 2008 to 2011 persists.

Figure 44: Relation between the change in the ratio of minimum income to average wage and employees' developments by regions over 2008 to 2011, %

y = -0.4491x - 7.6818
R² = 0.1257
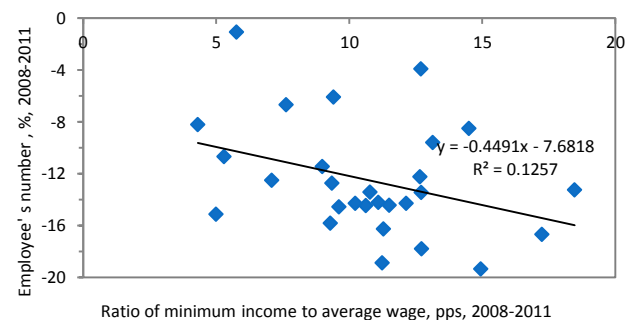
Source: MF

Bibliography

Rutkowski, J. (2003), „The Minimum Wage: Curse or Cure", The World Bank.

Kroeger, H. (2010), „The Employment Effect of Industry-Specific, Collectively-Bargained Minimum Wages", Rheinish-Westfalishes Institut fur Wirtshaftung (RWI).

Grimshaw, D. & Rubery, J. (2010), „Minimum Wage Systems and Changing Industrial Relations in Europe (comparative report) ", DG Employment, Social Affairs and Equal Opportunities, European Commission.

OECD Employment Outlook (1998), „Making the most of the minimum: statutory minimum wages, employment and poverty (Chapter 2) ".

MLSP, „Flexibility and security in the Bulgarian labour market – status and perspectives", Project „Flexicurity in Bulgaria – support for applying the national pathway" VS 2008/0632 (available in Bulgarian).

GVG, BILSP (May 2005), "Flexibility and modernization of the labour market. Comparative analysis of the Labour code and other applicable documents in the field of labour law" (available in Bulgarian).

L. Dimitrov, A. Nikolova, P. Dimitrova (2006), „Labour market flexibility in Bulgaria" (available in Bulgarian).

Mart Maiväli, Michael Stierle (June 2003), "The Bulgarian labour market: Strong wage growth in spite of rising unemployment", ECFIN, European Commission.

Klaus Schwab, Havier Sala-i-Martín, World Economic Forum, "The Global Competitiveness Report 2012-2013".