Wage Rigidities and Jobless Recovery in Slovakia: New Survey Evidence[1]

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Introduction

The main features of the recent recovery in Slovakia were similar to the rest of the EU. Output recovered slowly and unevenly across sectors. Employment had hardly reached its pre-crisis level even by 2013. At the same time, employee compensations developed quite positively, going hand in hand with output. The economic literature offers some explanations for the specific features of the recent recoveries in Europe. New-Keynesian models attribute sluggish adjustment mostly to demand shocks originating from uncertainty and the zero lower bound on interest rates (Galí et al. 2012). While for weak job creation, downward wage rigidities are typically blamed. A closer look at the crisis reveals a very uneven impact both across and within sectors. First, the relocation of job opportunities across sectors joint with barriers to labour mobility between professions can lead to permanent layoffs. These barriers are often viewed as the main cause of jobless recoveries.[2] Second, there is a vast literature emphasizing the different business cycle impacts on small versus large firms. The advantages from firm size are thought to emerge via smaller adjustment costs[3] or less binding financial constraints.[4] This implies that labour cost adjustments after the crisis may be heterogeneous by firm size.

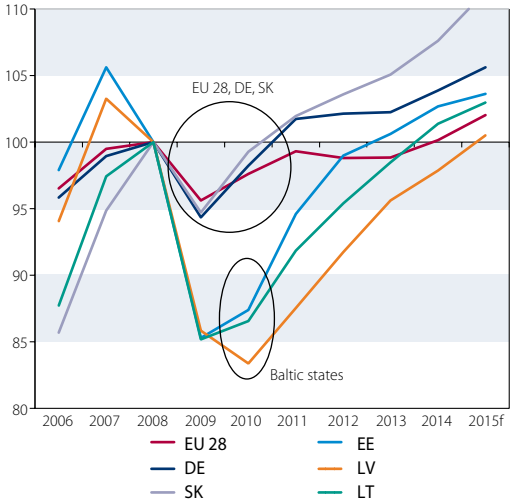
The main aim of this paper is to shed more light on the determinants of labour cost adjustment in Slovakia during the recovery period 2010-2013. To do so, we use a new firm-level survey dataset to estimate a model of labour cost adjustment channels. We compare mainly the roles of demand shocks, wage rigidity factors and adjustment costs related to firm size.

1 *This article summarizes the main results of the NBS Occasional Paper by Tóth and Vaľková (2015).*
2 *The term "jobless recovery" emerged among market analysts and economists after the 1990-91 and 2001 recessions in the U.S. According to Schreft and Singh (2003), the recoveries of GDP after those recessions were accompanied by a much slower employment growth than predicted by forecasting models. While these models were based on data on earlier business cycles.*
3 *See for example Moscarini and Postel-Vinay (2012, 2013).*
4 *See for example Gertler and Gilchrist (1994) and Bernanke et al. (1996).*

Macro-Level Developments During the Recent Recovery

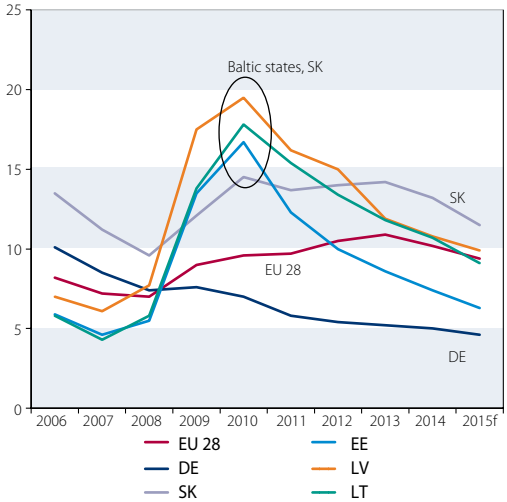
The macroeconomic impacts of the recent crisis were relatively diverse across the European Union. Regarding real activity (Figure 1), the EU 28 economy fully recovered its pre-crisis level of output by 2011. In terms of GDP, the least affected EU members belonged to the core of the EU, such as Germany, France, the U.K., Austria and the Benelux countries. In addition, as the Central European new member states maintain tight trade linkages to the core, most of them enjoyed an export-led

Figure 1 Real GDP (2008=100)



Source: Eurostat, EC–Ameco (2015f).

Figure 2 Unemployment rate (%)

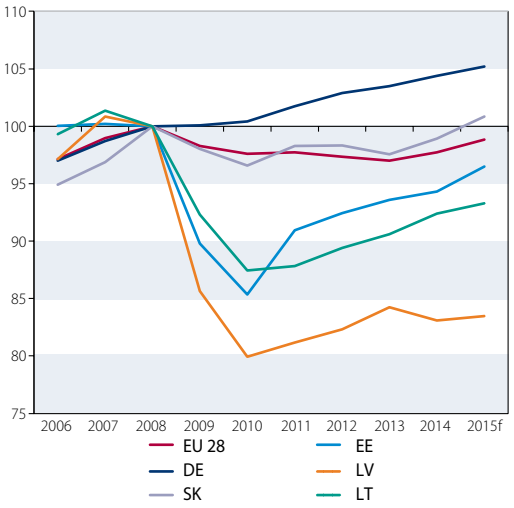


Source: Eurostat, EC-Ameco (2015f).

recovery following the crisis. The latter group includes the Czech Republic, Slovakia and Poland, with the exception of Hungary. In contrast, not all of the EU 28 managed to recover their pre-crisis output levels in a few years period. First, the global demand shock hit the GIIPS economies rather hard uncovering also their fiscal imbalances. Next, Finland's weak rebound spilled over to the Baltic states through their trade ties. This lead to a persistent dip of economic activity in Estonia, Latvia and Lithuania, which represent the hardest hit group of economies in terms of lost real GDP levels.

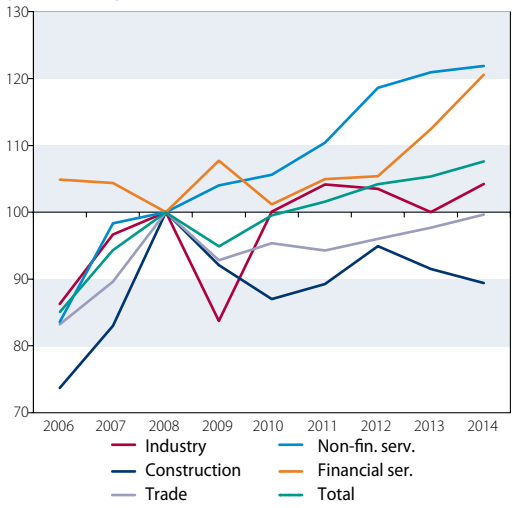
Regarding labour market developments, the impacts of the crisis were also heterogeneous across Europe. Unemployment rates in the EU 28 generally increased during the post-crisis period with some notable exceptions of a falling rate, e.g. in Germany (Figure 2). The upward trend in unemployment rates and the fall in employment (Figure 3) suggest that job destruction was the prevailing strategy overall to cut labour costs. This story is complemented by the increasing level of employee compensations in the EU 28 economy (Figure 4). However, alternative paths of labour market adjustments can also be observed. In the Baltic states, unemployment exploded temporarily (Figure 2) and both employment and compensations plummeted as a response to the foreign demand shock (Figures 3 and 4). This may indicate the high flexibility of labour markets, in particular that of wages and dismissals, compared to other EU countries. Large wage cuts and the revival of output enabled the gradual decrease of unemployment rates in the Baltics. In the observed spectrum of labour market outcomes Slovakia

Figure 3 Employment (2008=100)



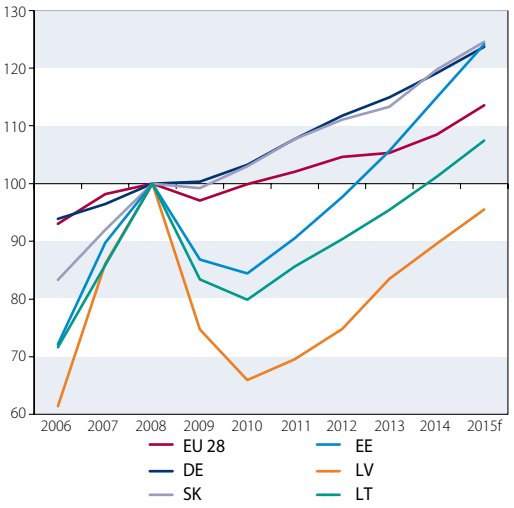
Source: Eurostat, EC–Ameco (2015f).

Figure 5 Gross value added by sectors, Slovakia (2008=100)



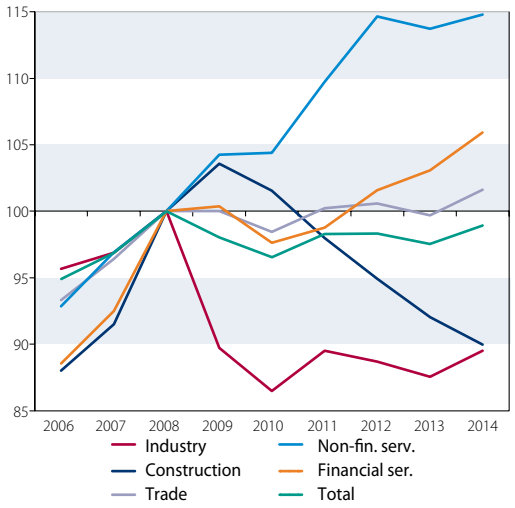
Source: Eurostat.

Figure 4 Compensations (2008=100)



Source: Eurostat, EC-Ameco (2015f).

Figure 6 Employment by sectors, Slovakia (2008=100)



Source: Eurostat.

stood close to the EU average. This meant a jobless recovery of economic activity together with increased employee compensations at a cost of persistently high unemployment.

The post-crisis recovery in Slovakia was characterized by marked differences across sectors. On one hand, both financial and non-financial services made a positive contribution to value added as well as job creation (Figure 5 and Figure 6). On the other, construction and industry remained below their pre-crisis levels of employment. The above differences suggest a reallocation of job opportunities between sectors, namely from industry and construction to services. Imperfect worker mobility across occupations leads to structural unemployment, which is one of the potential causes of jobless recoveries (Kolesnikova and Liu, 2011).

The Survey Dataset

The survey used in this paper investigated labour cost and price adjustment strategies of Slovak firms during the period 2010-2013. Data was collected at the end of 2014 in cooperation with the Wage Dynamics Network (WDN). This research network is operated by the consortium of EU central banks and is coordinated by the European Central Bank. The current wave of the survey is the third overall, while the National Bank of Slovakia is participating for the second time since 2009. The qualitative data contained in this survey is a unique source of information that cannot be substituted with standard firm-level data. The additional value added of the current wave of the survey comes from studying labour cost and price adjustments during the recent recovery. This particular timing allows us to study factors behind firm-level adjustments to aggregate shocks.

To collect the survey data, a sample of 7999 active private-sector enterprises with more than five employees was randomly selected from the Slovak Statistical Office's firm registry using stratified sampling. Firms were distributed into forty strata according to ten sectoral groups and four firm size categories (see Table 1 below). Agriculture, education and public services were excluded. The National Bank of Slovakia contacted the sampled firms via traditional mail and e-mail at the end of November 2014. Respondents filled in the online questionnaire during December 2014 and January 2015. The final sample consisted of 621 companies with at least one respondent in each stratum. The overall response rate reached almost 8%.[5]

Determinants of Labour Cost Adjustments

In this section we compare the relative importance of external shocks, wage rigidities and different firm-level characteristics for the choice of margins to adjust labour costs. In particular, we examine firms' decisions to cut base wages, bonuses, the number of workers and hours worked as a set of binary response models. This means, the base and flexible components of adjusting compensations and labour input are distinguished. By estimating an econometric model we can, for example, contrast the effects of a demand drop and scarcer external finance on firm-level choices of labour cost adjustment channels. Next, we can test whether limitations to wage flexibility, e.g. collective agreements or inflation indexation rules, avoid wage cuts, lead to short time work or layoffs. Firm-level characteristics, such as foreign ownership, exporting status or firm size may proxy for lower

5 *More details on the survey as well as descriptive results from the dataset can be found in Tóth and Vaľková (2015).*

Table 1 Number of firms in the realized sample by sectors and size

		Firm size by the number of employees					
Sector	NACE 2	5-19	20-49	50-199	≥ 200	Total	Response rate
Food, beverages, tobacco	10-12	1	5	6	1	**13**	4.7%
Textile, wood, paper, printing	13-18	3	6	16	8	**33**	8.0%
Chemicals, plastics, metals	19-25	10	21	34	16	**81**	11.2%
Electron., machinery, equipment	26-33	4	12	32	17	**65**	10.1%
Water and energy supply	35-39	3	2	7	5	**17**	11.1%
Construction	41-43	19	17	15	3	**54**	6.3%
Trade	45-47	49	39	30	11	**129**	5.9%
Transport, accommodation	49-56	16	24	21	7	**68**	6.5%
Other non-financial services	58-82	54	35	33	14	**136**	8.4%
Financial services	64-66	3	7	9	6	**25**	27.2%
Total		**162**	**168**	**203**	**88**	**621**	7.8%
Response rate		4.0%	9.1%	12.9%	15.4%	7.8%	

Source: WDN Survey (2014), NBS.

adjustment costs related to hiring and firing. Hence we can ask, whether those special groups of firms benefit from more wage flexibility and find it easier to terminate work contracts. In the remainder of this section we first describe the list of indicators included in the model. Second, we discuss the main estimation issues and finally the key findings are summarized.

First, the model is composed of three groups of regressors common to all adjustment channel equations. The group of firm-level characteristics contains a binary indicator of foreign ownership, exporting status (assumed if more than 20% of sales come from abroad), two firm size dummies for medium (50-199 employees) and large firms (more than 200 employees), binary indicators of prevailing workforce type according to skills and collar, and finally the percentage of employees earning the minimum wage. The second group is associated with external shocks, of which we included decreases in demand, availability of external finance and customers' ability to pay. The third group of explanatory variables are related to wage rigidities. We considered the existence of collective agreements signed on the firm- or higher level. Further, indicators of downward nominal wage rigidities (wage freezes) and real wage rigidities (inflation indexation rules) are added. We also test whether price flexibility, approximated by the frequency of price changes, helps avoid labour cost cuts, or on the contrary it forces firms to adjust labour costs. Finally, all equations contain constant terms and sector-specific fixed effects.

Second, our setup requires addressing the following estimation issues: the four response variables are binary, mutually non-exclusive and potentially correlated with each other. According to Greene (2012), the most suitable approach in this case is the multivariate probit (MP) model[6], where all equations are estimated jointly. The MP is built on multiple latent variables, each of them observed with the value of one, if the latent variable is greater than zero. In case of a MP, the probability distribution driving positive outcomes of the latent response variables is multivariate normal. This feature of the MP allows the latent variables, as well as their binary observations, to be correlated with each other. The model is estimated by simulated maximum likelihood and robust standard errors can also be computed. We use employment weights in the effort to obtain representative results.

Third, estimates of the four labour cost adjustment equations are reported in Table 2. Among firm-level characteristics approximating

Table 2 Determinants of labour cost adjustment channels, multivariate probit estimates

Cuts in:	Base wages	Bonuses	Number of workers	Hours worked
Firm-level characteristics:				
Foreign ownership	-0.485	0.044	0.505**	0.246
Exporting status	-0.188	0.197	-0.023	0.469*
Medium-sized firm (50-199 empl.)	0.808***	0.856***	0.313*	0.102
Large firm (>200 empl.)	0.465	1.369***	0.420*	0.109
Prevalence of HS BC workers	-0.501*	-0.234	0.040	0.004
LS WC workers	-0.029	-1.154**	-0.758**	0.093
HS WC workers	0.469	0.387	0.125	-0.555
LS BC (baseline)				
% of minimum wage earners	0.009*	0.018***	0.007*	-0.001
External shocks (decrease in):				
Demand	1.203***	1.090***	0.920***	1.402***
Availability of external finance	0.592**	0.444	0.260	0.400
Customers' ability to pay	0.135	-0.054	-0.026	0.148
Wage rigidity factors:				
Firm-level collective agreement	-0.971***	0.010	0.306	-0.048
Higher-level collective agreement	0.212	-0.272	0.982***	1.452***
Wage freezes	0.004	0.421	0.212	1.252***
Inflation indexation rules	0.169	-0.384**	0.427**	0.890***
Frequency of price changes	0.331	0.412**	0.034	-0.110
Number of observations:	601	601	601	601

Source: Authors' calculations.
*Note: The asterisks *,**,*** denote significance levels at 10%, 5% and 1% based on robust standard errors. Constants and sectoral dummies were included. HS BC – LS BC stand for high/low skilled white/blue collar workers respectively. LS BC workers are the baseline case. Average marginal effects are reported. Employment adjusted estimates.*

6 *In case of continuous response variables the MP has an analogy to the seemingly unrelated regressions (SUR) model.*
7 *Both foreign-owned and exporting firms are less likely to cut base wages, though the associated coefficients are not statistically significant.*
8 *High-skilled white collar: managers, professionals, technicians, associate professionals (ISCO 1-3).*
Low-skilled white collar: clerical support, service and sales workers (ISCO 4-5).
High-skilled blue collar: craft workers, machine operators, assemblers (ISCO 7-8).
Low-skilled blue collar: elementary occupations, e.g. labourers in various sectors (ISCO 9).

higher productivity and lower adjustment costs, firm size plays a key role. A medium to large firm size is positively associated with all cost-cutting channels, except hours worked. This implies fewer barriers for larger firms to adjust labour costs. From the policy point of view this may suggest that stricter employer regulations can hurt smaller firms disproportionately more. Turning to foreign-owned and exporting firms, the former are more likely to sack workers while the latter decrease hours worked with a higher probability, other things equal[7].

According to our results, firms' labour cost adjustment practices differ for some worker types. Low-skilled white collar[8] workers are less prone to get fired and their bonuses are cut more rarely compared to the baseline case of low-skilled blue collar workers. Similarly, base wages of high-skilled blue collar workers are cut with the lowest probability compared to the rest. Turning to firms employing a higher share of workers earning the minimum wage, we found an increased probability of all cost cutting channels, except hours worked. This outcome is somewhat counterintuitive for base wage cuts, but is in line with our expectations for flexible wage components. In case of the higher probability of firing, the result suggests minor rehiring costs for the typically low-skilled minimum wage earners.

Further, considering the impact of external shocks on the probability of labour cost adjustment, demand shocks stand out clearly. Their dominance is broadly based across all adjustment channels and holds also in terms of impact size. At the same time, the presence of a financial shock matters only to base wage cuts and its effect is about half of the demand shock's effect.

Looking at wage rigidity factors, only collective agreements signed at the firm level seem to prevent base wage cuts. Other factors, as higher-level agreements, wage freezes or inflation indexation rules do not limit wage adjustments significantly. However, those factors tend to induce firing and cuts in hours worked. Finally, a higher frequency of price changes is positively associated with cutting base wages and bonuses, while the effect is statistically significant only for the latter channel. This suggests that firms use bonuses as a buffer for price volatility on product markets.

Conclusion

The aim of this paper was to test the determinants of labour cost adjustments by Slovak firms during the recent recovery period from 2010 to 2013. We used a new dataset from a firm-level survey, which was conducted in cooperation with the Wage Dynamics Network of the European Central Bank. To sum up the main findings, estimates from our econometric model highlight the importance of demand shocks in explaining labour cost adjustments. Further, the estimates confirm the role of collective agreements and wage rigidities in forcing firms to downsize their labour inputs instead of cutting worker compensations. Finally, the model provides evidence that large and foreign owned firms face fewer barriers to adjusting their labour costs. In other words, the presence of unions, downward wage rigidities and the leading role of large firms seem to be the main explanation for the jobless recovery in Slovakia following the crisis.

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