Base Wage Rigidities

Evidence from a survey of Slovak firms

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Abstract

Building on a unique survey of how Slovak firms adjust wages and prices, this paper studies the extent to which Slovak wages are rigid and the determinants for both nominal and real wage rigidity. Compared to other countries included in the survey, Slovakia has nominal base wage rigidity that is one of the highest and real base wage rigidity that is also relatively high. Apart from looking at the anecdotal evidence, I run multinomial logit regressions to capture the relationship between real wage rigidity, nominal wage rigidity, flexible wages and a number of firm-specific and institutional characteristics. Regression results suggest that the prevalent skill-level of the workforce matters: firms with mainly low-skilled blue-collar workers face lower probabilities of wage rigidities than firms with white-collar workers. Collective bargaining coverage is also a significant determinant. Firms covered by firm-level unions face higher probabilities of both types of wage rigidities compared to firms not covered by any level of collective bargaining. On the other hand, firms facing sectoral level unions have more flexible wages than those without any collective bargaining.

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1. INTRODUCTION

Wage rigidities are often blamed for causing higher unemployment rates in Europe, compared to the U. S. (Nickell, 1997), however there is no abundance of empirical evidence. The usual argument is based on a premise that labour market rigidities, such as minimum wages, collective agreements, and lay-off restrictions, prevent companies from cutting wages which leads to increased number of lay-offs, fewer firms in the marker, or alternatively, smaller sized firms, than would be otherwise optimal. Another detrimental effect of wage rigidity is the fact that wage rigidity restricts adjustment to shocks within a currency union Mundell (1963). Finally, wage rigidity may also be the reason for price stickiness as documented by The Inflation persistence network (IPN) organized by the ESCB (Altissimo et al. (2006)).

A unique opportunity to study the wage rigidities, their implications and how labour costs are adjusted by Slovak firms was provided by a survey on wage and price setting behaviour conducted under the supervision of the National Bank of Slovakia and Wage Dynamics Network (WDN). A harmonized questionnaire was carried out by 20 national central banks between the end of 2007 and the first half of 2009 in order to deepen the understanding of wage-setting practices, the frequency of price and wage changes, and the linkages between the wage and price rigidities in EU context. Thus, it is possible to study not only the country-specific determinants and implications but, due to the harmonized questionnaire, also to compare the findings with practices in other countries.

Building on the collected survey data, the first part of the project aims at quantifying the incidence and identifying the determinants of nominal and real wage rigidities faced by Slovak firms.[2] Apart from looking at the anecdotal evidence, I run multinomial logit regressions to capture the relationship between real wage rigidity (RWR), nominal wage rigidity (NWR) and flexible wages (FW) and a number of firm-specific and institutional characteristics. These include size, prevailing type of workforce, share of employees with permanent contract, sector, tenure structure, bonus payments, price competition, collective bargaining and employment protection legislation.

First of all, survey data suggest that base wages in Slovakia are more rigid that is the average in the European Union. This is true for both nominal and real wage rigidity. Anecdotal evidence suggests that rigidity is increasing with the firm size and is most often found in firms with prevailing high skilled blue collar workers. This is not confirmed by the regression results. Regression results imply that; when controlling for firm-specifics and other important determinants; size does not matter. Furthermore, Slovak firms employing mainly blue collar workers face lower probabilities of wage rigidities than those employing white collar workers. This finding is in line with other studies conducted on a larger sample of countries. In addition, collective bargaining also plays a significant role. To be more specific, firms facing sectoral level of collective bargaining tend to be subject to both nominal and real wage rigidity less often than those that are not subject to any level of collective bargaining when controlling for the firm and worker characteristics. However, the opposite is true for firm level unionization. Not surprisingly, firms with growing revenues face on average lower probabilities of nominal wage rigidity compared to firms with lower revenues. Finally, the use of bonus payments decreases the probability of real wage rigidity and increases the probability of both nominal wage rigidity and flexible base wages.

This paper is organized as follows. Section 2 provides a short overview of the relevant literature.

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[2]The second part of the project looks at the firms that were able to cut base wages and on alternative margins that can be used to reduce labour costs. These results are reported in Červená (2012).

In Section 3 I discuss the survey, Slovak specifics and general findings that can be deduced from the data. Section 4 is dedicated to both nominal and real wage rigidities, their determinants and implications when faced by Slovak firms. Section 5 concludes.

2. LITERATURE OVERVIEW

In the last decade, a considerable effort has been dedicated to both theoretical and empirical research studying the reasons for wage rigidities and their implications for both the labour markets and monetary policy makers. Understanding wage rigidities is important as it has impact on a number of important aspects of the economy. First, it is important to understand it from the monetary policy perspective, as wage rigidity may lead to inflation persistence and reduce the efficiency of monetary policy tools. Tobin (1972) argues that if central banks set inflation rate targets too low, they may harm the labour markets and impair their functioning. Furthermore, moderate levels of inflation help overcome the problems with wage adjustment in firms with workers reluctant to undergo base wage cuts. Akelof et al. (1996) argue that if inflation is too low, downward nominal wage rigidity pushes wages above optimal levels and causes higher unemployment. Thus, the second important perspective is the labour market perspective.

2.1 PAPERS LINKING THEORY AND EMPIRICAL EVIDENCE

There exists a wealth of theoretical literature that is trying to explain why wages are downward rigid. However, there is only a limited amount of empirical studies. Amongst the most influential and most often cited belong Blinder and Choi (1990) and Campbell and Kamlani (1997) using the U. S. data, Agell and Bennmarker (2007), Agell and Lundborg (1995) and Agell and Lundborg (2003) using Swedish data and Franz and Pfeiffer (2006) for German data.[3]

Empirical studies usually work with two types of data. Institutional data (time series) are used in order to calculate the wage change distributions and thus estimate the extent of (downward) wage rigidity. Alternatively, micro level survey data with questions related to the number of wage cuts or freezes and reasons preventing wage cuts are used. The questions are usually formulated in such a way that the link between the reasons and corresponding theories is easily identifiable.

Campbell and Kamlani (1997) identify the theories of wage rigidity and group them into a number of categories in order to investigate their empirical relevance. They analyze the strength of five prominent economic theories that have been developed in the last decades to shed some light on (nominal) wage rigidities. More specifically, authors propose a set of questions that are related to the contract theory, implicit contract theory, efficiency wage theory, fair wage theory and insider-outsider theory in order to asses how they perform. These theories are summarized in Table 14 in Appendix.

Authors control for different types of workers (less/more skilled blue collar, less/more skilled white collar), size of firm, level of unionization and finally the type of production (goods/services), as reasons for wage rigidities may vary across the sample. The most prominent explanation seems to be the adverse selection as it applies to resignations and the notion that wage cuts generate negative feelings among workers towards the firm which in turn makes workers exert less effort reducing the productivity. Keeping firm-specific human capital in order to lower the

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[3]For a summary of the findings see Franz and Pfeiffer (2006).

hiring and training costs seems to play an important role as well, especially for firms with a large share of white collar workers. On the other hand, implicit theory may be a reasonable explanation for blue collar and less skilled workers. Shirking or insider-outsider theory did not seem to play a significant role.

A principal shortcoming of the Campbell and Kamlani (1997)) paper and other older studies is related to the sample selection. Usually, the samples are small and not selected randomly, i.e. they are not representative. Newer studies such as Agell and Bennmarker (2007) and Franz and Pfeiffer (2006) follow the methodology and questions asked by Campbell and Kamlani (1997) closely but apart from making the firm sample representative, they ask additional questions, such as detailed information on legal type of collective wage agreements and labour contracts of firms as control variables. In addition, they use econometric statistical methods, logistic regressions, to asses the influence of various firm specific characteristics on the wage rigidity.

According to Franz and Pfeiffer (2006), German firms believe that the level of unionization is an important determinant of wage rigidity for low skilled workers. For this group of workers, the implicit wage theory is also supported. On the other hand, human capital and negative signals to new hires are considered relevant for high skilled workers. Turnover costs and decrease in morale leading to reduced effort are theories that are found to be applicable to all skill groups. Swedish survey results presented in Agell and Lundborg (2003) suggest that the reasons for wage rigidity differ significantly between firms of various sizes and types of workers. German and Swedish results are more in line with each other as opposed to the findings for USA.

2.2 RECENT EMPIRICAL STUDIES

Babecký et al. (2009) investigate which firm-level or institutional factors may be responsible for nominal and real wage rigidities. Using WDN survey data, as we do in this paper, they consider firms to be subject to nominal wage rigidity if they have frozen base wages at some point in the last 5 years prior to the survey. Firms that have an automated link between base wages and (past or expected) inflation are considered to face real wage rigidities. Note that by construction, firms should not experience both nominal and real wage rigidities at the same time.

In general, firms are more often subject to a wage indexation rather than wage freezes (17% vs. 10%) but both shares vary substantially across countries. While wage freezes are more common in non-euro area countries, the opposite is true for euro area countries, i.e. indexation is more frequent. Results suggest that the level of collective bargaining plays an important role in case of real wage rigidities but not in the case of nominal. On the other hand, nominal wage rigidities are closely tied to a proportion of employees with permanent contracts, the effect being even more prominent in countries with stronger labour regulations. The share of high skilled/low skilled workers also seems to be an influential determinant. High-skilled white collar workers face rigid wages more often than the low-skilled white collar or any blue collar workers. Finally, the length of employees contracts matters.

Caju et al. (2007) and Caju et al. (2009) study wage rigidities in Belgium. They employ a methodology similar to Babecký et al. (2009) and study the differences in base wage rigidities faced by Belgian firms. They study whether these differences can be explained by differences in workforce composition, competition, technology and wage bargaining institutions. They find evidence of strong real wage rigidity and very low/almost non-existent nominal wage rigidity,

which is present only for workers with very low wages. Downward real wage rigidity is significantly higher for white collar and young workers, it decreases with age and with increasing income level, with the exception of very low income levels. Furthermore, it is more prevalent in smaller firms and in firms with lower turnover.

2.3 SLOVAK FIRMS AND WAGE RIGIDITY

According to Gertler and Senaj (2008) tthere were only three studies prior to 2008 that estimated any type of wage rigidity in the context of Slovakia. Namely Blanchflower and Oswald (2000), Huitfeldt (2001) and Babecký (2008). Gertler and Senaj (2008) is the first comprehensive paper studying rigid wages in the context of Slovakia. They choose two approaches and apply the methodology on both micro and aggregated data. They find that both nominal and real (downward) wage rigidity is small and that the hourly compensations are rather flexible. Another more recent study Gertler (2010) also confirms their findings. Furthermore, Gertler (2010) finds that overall wage flexibility is driven by the wage flexibility of higher skilled employees, while this paper finds that wages of white collar workers are less flexible. Note however that Gertler (2010) is working with overall compensation of employees whereas this paper employs base wages and thus the difference in the findings.

3. DATA AND GENERAL OVERVIEW

Data used in this study were collected as part of a collective effort initialized by the Wage Dynamics Network organized under the ESCB. To be more specific, Wage Dynamics Network (WDN) is a research network made up of staff of European Union national central banks, as well as ECB with two main objectives. First, to identify the sources and features of wage and labour cost dynamics, that are most relevant for monetary policy. Second, to clarify the relationship between the wages, labour costs and prices, both at the firm and macroeconomic level. The objectives of the network were inspired by the finding of Inflation Persistence Network (IPN) that cross-sector differences in the frequency of price changes were highly negatively correlated with the labour share, suggesting that the wage and labour costs stickiness may be a driving element responsible for the slow adjustment of prices.

A survey group of the WDN network prepared a harmonized questionnaire which consisted of **core** and **non-core** questions. Core question were obligatory for the countries taking part in the survey while non-core questions could be entirely skipped or modified. There were 20 countries that took part in the initial round of survey and 10 countries[4] carried out a follow-up survey that aimed at identifying how firms reacted to the current crisis. Out of the 20 countries[5], 17 conducted the survey in the first round between the end of 2007 and the first half of 2008 (i.e. before the onset of the current crisis), while three countries joined the network in the later stage and conducted the survey in the first quarter of 2009. These countries are, apart from Slovakia, Cyprus and Bulgaria.

Slovak survey was carried out under the supervision of National Bank of Slovakia by a market research company MVK. It was a face-to-face interview type survey in which 1,432 firms were interviewed. The response rate was rather high and reached impressive 56%. To be

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[4]Follow-up survey was conducted by Austria, Belgium, Czech Republic, Estonia, France, Italy, Luxembourg, Netherlands, Poland and Spain.

[5]First round countries include Austria, Belgium, Czech Republic, Estonia, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, Luxembourg, Netherlands, Poland, Portugal, Slovenia and Spain.

more specific, the final sample contains as many as 802 firms that cover 13.4% of employees in the economy. The original questionnaire was slightly modified with omitted blocks of questions regarding the entry wage setting, perceived easiness of labour cost adjustment and cost-cutting strategies.[6] A number of questions was left out in order to make the questionnaire more straightforward and understandable for managers filling it out and thus to increase the response rate.

Overall, the questions in the questionnaire can be divided into three categories. First, firm specific questions that include questions on the level of unionization, number of employees, worker turnover (number of employees that left/joined the company in the last year), prevailing type of workforce (high/low skilled blue collar workers, white collar workers), shares of permanent/temporary contracts, tenure length of employees, share of labour costs, profits (compared to previous year), industry and region in which the firm operates. Second category is related to the wage setting behaviour of firms. There are questions related to the wage indexation to the past/present inflation, frequency and timing of wage adjustments, wage cuts/freezes and reasons for/against their use, and alternative margins for labour cost adjustment. Finally, the third category (which we will not discuss in this paper) are the questions concerning the price setting behaviour of firms. More specifically, the questions include queries about income shares (domestic, export EA, other), price setting principles, competition (implied and perceived), frequency and timing of price changes and the link between price and wage changes.

Table 1: Percentage of firms with collective wage agreement, by country

	Any	**Firm**	**Higher**	**EPL**
Austria	97.79%	23.42%	96.18 %	1.93
Belgium	99.39%	35.26%	97.88 %	2.18
Czech Republic	54.01%	51.44%	17.50 %	1.96
Estonia	12.14%	10.42%	3.45 %	2.10
Spain	100.00%	16.90%	83.10 %	2.98
France	99.94%	58.68%	98.80 %	3.05
Greece	92.55%	18.44%	85.88 %	2.73
Hungary	19.02%	18.98%	0.00 %	1.65
Ireland	72.45%	31.35%	68.28 %	1.11
Italy	99.64%	42.93%	99.55 %	1.89
Lithuania	24.45%	23.96%	0.88 %	NA
Netherlands	75.50%	30.05%	45.44 %	1.95
Poland	20.01%	18.69%	4.06 %	1.90
Portugal	62.15%	9.88%	58.95 %	3.15
Slovenia	100.00%	25.68%	74.32 %	2.51
Slovakia	57.37%	56.62%	19.15 %	1.44

Table presents percentages of firms that have any level of collective bargaining (firm, higher or both), firm level, and higher level collective bargaining, respectively. The last column refers to the index of overall strictness of employment protection as published in the OECD (2008). Data are employment weighted.

The following industries are present in the sample (employment weighted)[7]: *manufacturing*

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[6]Slovak questionnaire consists of 26 out of 41 questions in the original questionnaire. For further information on Slovak questionnaire, consult the Appendix.

[7]For more details on weighting scheme refer to the Appendix.

46.92% out of which light industry 12.77%, heavy industry 14.51% and cars and machinery industry 19.64%, *energy* 3.59%, *construction* 5.28%, *trade* 13.22%, *financial intermediation* 8.43% and *business services* 22.57 %, including market services 20.78% and non-market services with 1.79%. Note that sectoral composition of the firms does not entirely reflect the true sectoral employment structure. Sectors such as agriculture, education and public services were intentionally not included. The sample is comprised of firms with more than 10 employees.

Slovakia is subject to medium coverage of collective bargaining. Overall, slightly more than half of the firms face any level of collective bargaining (be it a firm level or a sectoral level collective bargaining). As can be seen in Table 1, this is somewhere in between the high levels of collective bargaining in the western countries (almost 100%) and the low levels of collective bargaining in CEE countries (only around 20%). Unsurprisingly, levels are similar to those in Czech Republic. In CEE countries, the prevailing type of collective bargaining is at the firm level, as is the case in Slovakia and Czech Republic. However, Slovakia and Czech Republic have substantially higher levels of coverage. Western firms tend to be covered more by higher levels of collective bargaining.

Babecký et al. (2009) find that euro area countries[8] have on average 94.2% coverage by any level of collective bargaining, 87.3% higher level collective bargaining and 35.6% firm level collective bargaining. While Austria, Belgium, France, Greece, Italy and Slovenia have almost 100% coverage, countries like Estonia, Lithuania, Poland, Hungary only around 20%. Non euro area countries have on average a coverage of 27.7% by any level of collective bargaining, 6% by higher level and 26.3% by firm level collective bargaining.

Table 2: Percentage of firms with collective wage agreement

	Firm size					Workforce			
	10-19	20-49	50-199	200+	Total	LS BC	HS BC	White	Total
Any	16.9%	19.9%	36.0%	70.3%	**57.4%**	58.5%	61.8%	32.1%	**54.6%**
Firm	16.2%	19.5%	35.3%	69.5%	**56.6%**	58.5%	61.8%	31.0%	**54.4%**
Sector	2.5%	3.6%	9.2%	24.9%	**19.1%**	19.0%	23.3%	13.9%	**20.2%**
N	105	270	285	142	**802**	142	387	189	**718**

Table presents percentages of firms that have any level of collective bargaining (firm, higher or both), firm level, and higher level collective bargaining, respectively. Left side of the table looks at size structure of firms, where numbers indicate number of employees. Right side considers prevailing type of the workforce. LS BC, HS BC and White stand for low skilled blue collar, high skilled blue collar and white collar workers respectively. Data are employment weighted.

The structure of collective bargaining faced by Slovak firms can be seen in Table 2 and Table 3. It is obvious that the level of unionization increases with the firm size, be it at a firm or a sector level. These percentage increases are very strong. For instance, while very small and small firms tend to be unionized at the firm level only in 16.2% and 19.5% respectively, medium sized firms in 35.3% and large firms in almost 70%. Higher level unionization affects mostly large firms where almost 25% are covered as opposed to approximately 3% coverage of small firms.

Furthermore, looking at the workforce composition, we can see that the firms with prevailing white collar workers tend to be less unionized. This is true for both types of unionization, however the difference is stronger at the firm level. As for the industries, firms operating in heavy industry, energy industry and partially market services are more likely to be unionized,

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[8]Note that results do not include data for Slovakia as they were not available when the study was conducted. Moreover, Slovakia was not a member of the euro area in the period studied by Babecký et al. (2009).

Table 3: Percentage of firms with collective wage agreement, by sector

	light	heavy	cars/mach.	energy	construction	trade	fin. intermed.	mrkt services	non-mrkt serv.	Total
Any	54.6%	70.3%	59.3%	89.1%	31.6%	57.6%	28.0%	62.3%	44.3%	**57.4%**
Firm	54.4%	70.3%	59.3%	89.1%	30.5%	57.6%	28.0%	59.0%	44.3%	**56.6%**
Sector	13.5%	23.4%	16.4%	58.4%	9.8%	19.4%	10.9%	22.4%	3.7%	**19.1%**
N	110	87	102	41	101	101	30	173	57	802

Table presents percentages of firms that have any level of collective bargaining (firm, higher or both), firm level, and higher level collective bargaining, respectively. Table looks at a sectoral structure. Data are employment weighted.

than firms in other sectors. On the other hand construction firms, financial intermediation and non-market services tend to be unionized considerably less.

4. REAL/NOMINAL WAGE RIGIDITIES

In this section, I examine the wage rigidities, as faced by Slovak firms. First, I look at the anecdotal evidence and compare it with what was found by other studies. Second, I run multinomial logit regressions in order to find out what are the determinants of both nominal and real wage rigidities, as opposed to flexible wages.

I take the definition of nominal and real wage rigidities from Babecký et al. (2009). They associate nominal wage rigidity with base wage freezes assuming that the inability of firms to cut base wages may be (except for menu costs of changing wages) the only reason for wage freezes. Real wage rigidity is then associated with automatic indexation of base wages to both the past and expected inflation. I am well aware of the possible shortcomings of these definitions. However, given the structure of questionnaire they seem to be the best choice. Furthermore, the analysis is complemented in Červená (2012) by looking at the firms that managed to cut base wages and by studying alternative margins for labour cost reduction.

Table 4 summarizes the incidence of real and nominal wage rigidities in firms across the European Union. Moreover, it also covers the weak indexation (firms that have both formal and informal link between wages and expected/past inflation) and percentage of firms that actually cut base wages. Countries with most prominent nominal wage rigidities include the Czech Republic (26.6 %), the Netherlands (23.2 %), Estonia (21.7 %) and Slovakia (20.9 %). Real wage rigidity is present in Belgium (98.2 %) and Spain (54.8 %) (which is consistent with institutional settings), followed by Slovenia (23.5 %)), Greece (21.5 %) and Slovakia (21.1 %). On the other hand, in most of the countries base wage cuts are very rare. Countries with the smallest number of firms that cut wages include Spain (0.06%), Italy (0.71%), Ireland (1%), Portugal (1.01%) and the Netherlands (1.43%). the other side of the spectrum, Slovakia leads with the highest percentage of firms that cut wages (8.53%), followed by the Czech Republic (8.37%) and Lithuania (8.28%).

Note, however, that the Slovak data should be considered with caution when comparing with those from other countries. One may argue that since the data were collected at the beginning

Table 4: Percentage of firms that face NWR, RWR and cut wages, by country

	NWR	RWR	Weak Idx	Cuts
Austria	13.16%	9.82%	22.02%	3.00 %
Belgium	11.84%	98.23%	98.23%	3.10%
Czech Republic	26.55%	11.91%	59.05%	8.37 %
Estonia	21.66%	4.53%	53.77%	3.05 %
Spain	2.44%	54.81%	70.69%	0.06 %
France	7.05%	10.19%	32.26%	2.46 %
Greece	13.28%	21.47%	46.11%	N/A
Hungary	5.90%	11.19%	31.52%	2.64 %
Ireland	8.72%	9.39%	31.39%	1.00 %
Italy	3.87%	1.72%	5.77%	0.71 %
Lithuania	19.82%	10.73%	48.57%	8.28 %
Netherlands	23.23%	0.00%	0.00%	1.43 %
Poland	9.86%	7.04%	29.97%	4.61 %
Portugal	14.95%	9.04%	50.91%	1.01 %
Slovenia	2.94%	23.53%	60.53%	2.45 %
Slovakia	20.89%	21.14%	60.64%	8.53 %

Table presents percentages of firms that face either nominal wage rigidity or real wage rigidity. The third column refers to firms that apply strict indexation to the inflation or have informal links to it. The last column refers to the percentage of firms that cut base wage in the last five years. Data are employment weighted.

of 2009 the numbers that we see already reflect the reaction of firms to the global economic and financial crisis. In my opinion this is not true. First of all, the reference year for the survey was 2008 and 5 years prior. In 2008 Slovakia enjoyed an impressive GDP growth of 6.4% and the unemployment rate reached a long time minimum of 8.4%. Second, the fall of GDP at the beginning of 2009 was not fully the result of economic and financial crisis[9] It occurred mostly because of the so called 'gas' crisis where a number of large Slovak firms had to temporarily shut down production due to the interruptions in natural gas supply from Russia via Ukraine due to disagreements between these two countries. Finally, the data are in line with the Czech experience, where the Czech National Bank conducted the survey well before the onset of the crisis.

Slovakia is one of the countries with the highest incidence of both nominal and real wage rigidities. In sectoral structure, while light and heavy industries are sectors with the highest percentage of firms that have frozen base wages over the last 5 years, i. e. nominal wage rigidity; cars and machinery, energy and market services are sectors with the highest levels of automatic base wage indexation, i.e. real wage rigidity. On the other hand, firms in financial intermediation and trade sectors tend to face real wage rigidities less often than firms in other sectors. The same is true for the energy industry, financial intermediation and non-market services in case of nominal wage rigidities. We can say that in general, firms in financial intermediation, trade and construction sectors are least affected by any form of base wage rigidity. On the contrary, cars and machinery and heavy industries suffer from wage rigidities more often than firms in other sectors.

Western region of Bratislava is the region with the lowest share of firms that have experienced

[9]For the evolution of Slovak real GDP growth refer to the Appendix.

Table 5: Wage rigidities, by sector

	light	heavy	cars& mach	energy	construction	trade	fin. intermed.	mrkt services	non-mrkt serv.	Total
RWR	14.60%	24.67%	32.83%	30.65%	14.08%	8.46%	2.32%	27.91%	16.49%	**21.14%**
Weak idx	52.76%	58.43%	83.55%	75.65%	57.07%	51.01%	32.86%	60.14%	71.36%	**60.64%**
NWR	29.57%	32.21%	17.59%	11.18%	17.09%	20.50%	12.30%	17.76%	13.91%	**20.89%**
RWRvNWR	37.62%	51.02%	45.53%	41.55%	29.35%	27.75%	14.63%	36.78%	30.40%	**37.27%**
WeakIDXvNWR	65.17%	74.68%	85.14%	76.43%	68.45%	68.50%	42.52%	65.48%	75.05%	**69.82%**
N	110	87	102	41	101	101	30	173	57	**802**

Data are employment weighted.

Table 6: Wage rigidities, by region

	BA	TT	TN	NR	ZA	BB	PO	KE	Total
RWR	12.68%	30.22%	32.46%	21.96%	33.14%	27.88%	13.59%	12.99%	**21.14%**
Weak idx	55.18%	62.61%	77.63%	74.44%	73.77%	76.36%	43.87%	43.00%	**60.64%**
NWR	12.99%	23.20%	20.92%	25.53%	15.58%	16.20%	37.58%	24.46%	**20.89%**
RWRvNWR	23.16%	44.23%	48.86%	37.35%	44.90%	35.27%	46.67%	36.86%	**37.27%**
WeakIDXvNWR	60.11%	70.46%	86.06%	78.11%	78.15%	78.89%	70.89%	57.76%	**69.82%**
N	213	84	76	66	83	72	93	115	802

Data are employment weighted.

base wage freezes or indexation of base wages to the past/expected inflation. As for the in-cidence of nominal wage rigidity, it is followed by firms in central Slovakia; Banská Bystrica and Žilina regions; where wage freezes have been used considerably less than elsewhere. On the other hand, firms in Nitra, and two eastern regions, Košice and above all in Prešov have frozen wages more often than is the national average. However, in Poprad and Košice (east-ern Slovakia), these rigidities are partially offset by low incidence of real wage rigidities. Real wage rigidities affect firms in Žilina, Trnava and Trenčín the most. Overall, Bratislava is by far the region least affected by any form of wage rigidity. Firms in Košice and surprisingly also in Banská Bystrica regions face rigidities less often than is the country average. However, in case of Banská Bystrica it appears that the real wage rigidity is present in the form of weak indexation. Trenčín region (western) has the highest proportion of firms with any form of wage rigidity, both in formalized and non-formalized way (i.e. strong and weak indexation).

Table 7: Wage rigidities

	Firm size					Workforce			
	10-19	20-49	50-199	200+	Total	LS BC	HS BC	White	Total
RWR	14.3%	15.3%	16.2%	23.8%	**21.1%**	15.6%	24.9%	19.7%	**21.4%**
Weak idx	37.4%	40.2%	55.2%	65.4%	**60.6%**	51.1%	70.7%	49.2%	**61.2%**
NWR	15.8%	11.1%	16.4%	23.7%	**20.9%**	18.5%	23.4%	14.7%	**20.3%**
N	105	270	285	142	**802**	142	387	189	**718**

Data are employment weighted.

Use of both strict and weak indexation of wages to the past/present inflation is increasing with the firm size. This is also almost true for the incidence of wage freezes with the exception of small firms. It is also notable that firms with prevailing high skilled blue collar workers tend to be affected by both nominal and real wage rigidities more often than firms with low skilled blue

collar or white collar workers.

Table 8: Wage rigidities

	Export			Worker turnover			
	None	**Export**	**Total**	**Outflow**	**Same**	**Inflow**	**Total**
RWR	14.4%	25.5%	21.8%	19.9%	23.3%	21.8%	21.1%
Weak idx	50.5%	65.8%	60.6%	59.2%	54.0%	65.5%	60.6%
NWR	14.9%	23.8%	20.8%	29.3%	12.2%	13.8%	20.9%
N	322	470	792	314	229	259	802

Data are employment weighted.

Firms that lost employees during the reference year (2008), were also much more prone to wage freezes. To be more specific, 29.3% of firms with net outflow of workers have frozen wages as opposed to 12.2% or 13.8% respectively for firms with no net change or net inflow of workers. Furthermore, firms that do not export any of their products have frozen wages less often than those that do. The same is true for strict wage indexation. More specifically, export oriented firms index wages to the past/present inflation considerably more often than those without any export ties.

4.1 MULTINOMIAL LOGIT

Finally, I study the determinants of both real and nominal wage rigidities. In order to do this I employ a multinomial logit regression. The multinomial logit model is specified as follows:

$$p_{ij} = \frac{\exp\left(x_i'\beta_j\right)}{\sum_{l=1}^{m} \exp\left(x_i'\beta_l\right)}, \; j = 1, \cdots, m \tag{1}$$

where x_i are case-specific regressors. The model ensures that $0 < p_{ij} < 1$ and $\sum_{j=1}^{m} p_{ij} = 1$. Furthermore, for identification to be achieved, β_j is set to zero for one of the categories of dependent variable and this category is then called the base category. Note that it is important to choose the base category carefully, as all the estimated parameters are interpreted relative to that category.

Coefficients obtained from a multinomial logit regression can be interpreted in the same fashion as results obtained from a binary logit model. However, the comparison is now made relative to the base category. That is, assuming base category to be j, a positive coefficient for an outcome k means that the alternative k is more likely than alternative j. This type of comparison is useful especially if the base category is natural. Second possible line of interpretation follows from a transformation of the coefficients into the so called 'odds ratio', which indicates how much more/less likely the given alternative is. The comparisons are again made relative to the base category. In our case, we have chosen flexible wages as the base category.

Finally, it is important to keep in mind that, due to non-linearity of the model, estimated β parameters do not represent the marginal effects. From above we get that:

$$\frac{\partial p_{ik}}{\partial x_i} = p_{ik}(\beta_k - \overline{\beta}_i), \tag{2}$$

where $\overline{\beta}_i$ is probability weighted average of β parameters. As p_{ik} varies with x_i, marginal effects vary with evaluation points. Furthermore, signs of regression coefficients do not correspond

with the signs of marginal effects (as they depend on the difference of the coefficient and weighted average of the rest of the coefficients). Usual practice is to calculate marginal effects at either mean value or at representative value or to calculate an average marginal effect. In what follows, I report marginal effects at the mean.

4.2 RESULTS OF MULTINOMIAL LOGIT REGRESSION

In this subsection, I present the results of multinomial logit regressions. A dependent variable takes values 0, 1 and 2 indicating whether a firm has flexible wages (FLEX), faces nominal wage rigidity (NWR) or real wage rigidity (RWR) respectively. As already mentioned, I associate real wage rigidity with automatic indexation of base wages to past/expected inflation and nominal wage rigidity with base wage freezes. The rest of the wages are then assumed to be flexible. Furthermore, when constructing the dependent variable, I assume that the states of nominal and real wage rigidities are mutually exclusive, i.e. I delete the observations where a firm has an automatic link between wages and inflation and the firm has indicated wage freeze over the period of last 5 years.[10]

First, I build a baseline model for the regression analysis. In the baseline model I control for labour force composition, share of labour costs in total costs, share of permanent workers, industry in which a firm operates and the firm size. As the level of collective bargaining may play a role in determining whether a firm faces wage rigidities (as documented in previous studies), I augment the baseline model by taking into account also the levels of unionization. In what follows, I run a number of additional regressions including various possible determinants of wage rigidities, such as the level of profits relative to the profits in previous year, worker turnover, use of bonuses, tenure of workers and the level competition and assess the relevance of these determinants.

Table 9 presents the regression results of two baseline models. The baseline model controls for standard firm characteristics. The model is then augmented by institutional characteristics in the form of collective bargaining participation. I report marginal effects at mean values for all three categories of firms: those with flexible wages and those that face real and nominal wage rigidities.

From the results we can see that **relative to the base category** white-collar workers), firms employing majority of blue-collar workers (both low skilled and high skilled) are less likely to be subject to both types of rigidities. Increasing probability of flexible wages and decreasing probability of real wage rigidity is highly significant for low skilled blue-collar workers. Higher wage rigidity for white-collar workers is directly comparable with the findings of Babecký et al. (2009) who find the same pattern on a larger sample of European countries. The results are also in line with the findings of other studies mentioned in Section 2[11].

Furthermore, even though significant only at 10% significance level, the increasing share of labour costs in total costs leads to decrease in the probability of nominal wage rigidity and increased probability of real wage rigidity. Size of the firm does not seem to play a significant role. However, level of unionization does. Inclusion of the explanatory variable increases the fit of the model as indicated by the pseudo-R^2 and marginal effects for higher level of collective bargaining are significant at 1% significance level. Relative to the base category (firms not covered by any level of collective bargaining) firms facing sectoral unionization tend to have flexible

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[10]Note however, that the number of deleted observations is insubstantial and amounts to less than 2.5 % of the total sample.

[11]With the exception of Gertler (2010) who has a different approach and does not look at base wages.

Table 9: Nominal and real wage rigidity

	Baseline			Baseline plus CB		
	FLEX	NWR	RWR	FLEX	NWR	RWR
LS BC	0.189**	-0.076	-0.113**	0.184***	-0.065	-0.119***
	(0.086)	(0.078)	(0.049)	(0.071)	(0.062)	(0.039)
HS BC	0.095	-0.039	-0.055	0.094	-0.018	-0.076
	(0.097)	(0.088)	(0.066)	(0.080)	(0.065)	(0.058)
Labour costs (%)	0.000	-0.003*	0.003*	0.000	-0.003**	0.003**
	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Permanent (%)	0.003	-0.003**	0.000	0.002	-0.002**	-0.000
	(0.002)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
Heavy	-0.190	-0.019	0.209	-0.171	-0.019	0.190
	(0.119)	(0.065)	(0.131)	(0.116)	(0.056)	(0.120)
Cars&Machinery	-0.130	-0.122**	0.253**	-0.142	-0.113***	0.255**
	(0.128)	(0.051)	(0.126)	(0.123)	(0.042)	(0.118)
Energy	-0.135	-0.117**	0.252	-0.051	-0.085	0.136
	(0.175)	(0.054)	(0.179)	(0.149)	(0.061)	(0.141)
Construction	0.054	-0.094**	0.039	0.036	-0.084**	0.048
	(0.093)	(0.041)	(0.091)	(0.085)	(0.035)	(0.081)
Trade	0.029	-0.046	0.017	0.035	-0.035	-0.001
	(0.128)	(0.082)	(0.104)	(0.111)	(0.069)	(0.084)
Fin. intermed.	0.238***	-0.102	-0.136***	0.204***	-0.082	-0.122***
	(0.078)	(0.068)	(0.042)	(0.068)	(0.059)	(0.032)
Mrkt services	0.045	-0.146***	0.102	0.041	-0.123***	0.082
	(0.114)	(0.056)	(0.112)	(0.099)	(0.046)	(0.095)
Non-mrkt services	0.050	-0.095*	0.044	0.047	-0.085*	0.039
	(0.128)	(0.053)	(0.123)	(0.113)	(0.045)	(0.107)
Small	-0.001	-0.041	0.042	0.001	-0.037	0.036
	(0.085)	(0.050)	(0.080)	(0.077)	(0.043)	(0.072)
Medium	-0.013	0.001	0.013	-0.002	0.002	-0.000
	(0.083)	(0.064)	(0.069)	(0.075)	(0.055)	(0.061)
Large	-0.127	0.065	0.062	-0.094	0.059	0.035
	(0.090)	(0.075)	(0.065)	(0.085)	(0.062)	(0.065)
CB: higher				0.307***	-0.158***	-0.149***
				(0.033)	(0.028)	(0.022)
CB: firm				-0.051	0.041	0.010
				(0.072)	(0.054)	(0.053)
CB: both				-0.086	-0.076	0.162*
				(0.104)	(0.056)	(0.096)
	Pseudo-R^2 = 0.0947			Pseudo-R^2 = 0.1166		
Observations	742	742	742	742	742	742

Standard deviations in parentheses. Asterisks indicate levels of significance: *** $p< 0.01$, ** $p< 0.05$, * $p< 0.1$. The number of observations is smaller than in the original sample due to the inconsistencies with NWR and RWR. I report marginal effects at mean values. Base categories for dummy variables are as follows. Workforce composition: white-collar workers. Industry: light. Firm size: extra small. Collective bargaining: none.

wages more often and face lower probability of both types of wage rigidities, while controlling for other determinants. The opposite is true for firms with firm-level collective bargaining, although the results are not statistically significant. The results seem somewhat puzzling with respect to what is suggested by theoretical models and also found by Babecký et al. (2009),), where collective bargaining coverage is positively related to the real wage rigidity. The observed difference in results compared to Babecký et al. (2009) can be explained by a different proxy used for collective bargaining. We can see that the regression results suggest that there is a significant positive relationship between real wage rigidity and firms that are subject to both types of the unionization.

From now on, I will report only marginal effect of any additional regressors introduced in addition to the baseline 2 model. The regression results are robust to the alternative specifications and thus reporting them would not provide any additional insights. In Table 10 I have augmented the baseline 2 model to control for the level of revenues relative to the year prior to the reference year. In this case, the reference category is decrease in revenues, i.e. revenues much lower or lower than previously. The second augmentation has been introduced to control for firm dynamics. To be more specific, I control for worker flows, with the reference being higher outflow than inflow of workers. The last regression controls for the use of bonuses. Concerning the wage rigidities, this dependent variable is expected to play an important role as the use of bonuses may help in adjusting labour costs in times when wages are rigid.

Table 10: Nominal and real wage rigidity

	Revenue			Worker flows			Bonuses		
	FLEX	NWR	RWR	FLEX	NWR	RWR	FLEX	NWR	RWR
Revenue: same	-0.024 (0.077)	-0.027 (0.048)	0.051 (0.057)						
Revenue: higher	0.108 (0.073)	-0.115** (0.051)	0.007 (0.054)						
Employees: same				-0.014 (0.090)	-0.071* (0.041)	0.085 (0.082)			
Employees: inflow				-0.034 (0.066)	-0.049 (0.048)	0.083* (0.049)			
Bonuses							0.224* (0.118)	0.094** (0.038)	-0.318*** (0.117)
	Pseudo-R^2 = 0.1322			Pseudo-R^2 = 0.1275			Pseudo-R^2 = 0.1347		
Observations	742	742	742	742	742	742	730	730	730

Standard deviations in parentheses. Asterisks indicate levels of significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. The number of observations is smaller than in the original sample due to the inconsistencies with NWR and RWR. In the first block, baseline 2 model is augmented by firm revenues. In the second block, baseline 2 is augmented by worker turnover. In the third block, baseline 2 is augmented by bonuses. Base categories are lower revenues, worker outflow and no use of bonuses, respectively.

All additional regressors increase the fit of the model. In Table 10 we can see that the firms with higher revenues than in the previous period tend to face lower probabilities of nominal wage rigidity as compared to the firms with decreasing revenues. Worker flows also seem to play a role. Relative to the firms with outflow of workers, firms with the same number of employees or with employee inflow tend to face increased probabilities of real wage rigidity. Furthermore, they tend to face decreased probabilities of nominal wage rigidity and decreased probabilities of flexible wages. Finally, as anticipated, the inclusion of the use of bonuses does not only improve the fit of the model but marginal effects are significant for all three categories. To be more specific, firms that use bonuses tend to face higher probabilities of flexible wages as well as nominal wage rigidity and decreased probabilities of real wage rigidity. This suggests that firms that use bonuses are more likely to have flexible base wages (compared to a similar firm that does not use bonuses) and are less likely to suffer from real wage rigidity.

Finally, I study whether competition is relevant in determining wage rigidities. I have done this by using two questions from the survey in which firms have been asked a) to directly asses the level of competition that they face (perceived competition) and b) to indicate how likely the firm is to cut own price after a price reduction by main competitor (implied competition). In both cases, the reference category is no competition. The results presented in Table 11 ssuggest mixed outcomes, depending on the competition measure adopted.

Table 11: Nominal and real wage rigidity

	Perceived competition			Implied competition		
	FLEX	NWR	RWR	FLEX	NWR	RWR
Perceived: weak	-0.077	-0.075	0.152			
	(0.203)	(0.128)	(0.174)			
Perceived: strong	0.093	-0.092	-0.001			
	(0.196)	(0.183)	(0.102)			
Perceived: severe	0.070	-0.056	-0.014			
	(0.188)	(0.171)	(0.103)			
Implied: weak				-0.185	0.121	0.064
				(0.173)	(0.151)	(0.127)
Implied: strong				0.014	-0.007	-0.006
				(0.141)	(0.104)	(0.100)
Implied: severe				-0.082	0.079	0.004
				(0.165)	(0.141)	(0.105)
	Pseudo-R^2 = 0.1259			Pseudo-R^2 = 0.1443		
Observations	742	742	742	698	698	698

Standard deviations in parentheses. Asterisks indicate levels of significance: *** $p< 0.01$, ** $p< 0.05$, * $p< 0.1$. The number of observations is smaller than in the original sample due to the inconsistencies with NWR and RWR. In the first block, baseline 2 model is augmented by perceived level of competition. In the second block, baseline 2 is augmented by implied competition. In both blocks, base category is no perceived/implied competition.

To sum up, regression results imply that Slovak firms employing majority of either high or low skilled blue collar workers face lower probabilities of rigidities than those employing white collar workers. Increase in the share of labour costs in total costs leads to a decrease in the probability of nominal wage rigidity but increase in the probability of real wage rigidity. Collective bargaining also plays a significant role. Firms that are subject to higher levels of unionization tend to face both nominal and real wage rigidity less often than those that are not subject to any level of collective bargaining. The opposite is true for firm level unionization. Firms with increased revenues face lower probabilities of nominal wage rigidity compared to firms with decreased revenues. The use of bonuses decreases the probability of real wage rigidity and increases the probability of both nominal wage rigidity and flexible base wages. Inclusion of competition brings mixed results.

5. CONCLUSION

Understanding wage rigidities is important also in the context of monetary policy setting. As suggested by the findings of Inflation Persistence Network, rigid wages may play an important role in higher inflation persistence in Europe as opposed to the United States. In this study I look at base wage rigidity faced by Slovak firms. This analysis is complemented in Červená (2012) by looking at firms that manage to adjust labour costs if they find it necessary and by assessing the use of alternative margins for labour cost reduction.

Building on a unique survey of Slovak firms on how they adjust wages and prices, I studied the extent to which Slovak base wages are rigid and what are the determinants for both nominal and real wage rigidity. I adopted the definitions of both wage rigidities from Babecký et al. (2009) and associated them with base wage freezes and base wage indexation, respectively. Compared to other countries that took part in the survey, Slovakia is among those with highest nominal wage rigidity and with rather high real wage rigidity as well. To understand the reasons underlying this situation, apart from looking at the anecdotal evidence, I run multinomial logit regressions to capture the relationship between real wage rigidity, nominal wage rigidity, flexible wages and a number of firm-specific and institutional characteristics. Regression results suggest that the type of prevailing workforce matters. Firms with prevailing low skilled blue collar workers face lower probabilities of wage rigidities than firms with white collar workers. Coverage by collective bargaining is also a significant determinant. Firms that are covered by firm level unions face increased probabilities of both types of wage rigidities. On the other hand, firms facing sectoral level unions have more flexible wages than those without any collective bargaining. Finally, the use of bonuses matters. Firms that use bonus schemes face significantly lower probabilities of real wage rigidity than those that do not.

To conclude, base wages in Slovakia seem more rigid than in other European countries that took part in the survey. Although, even higher nominal wage rigidity was observed in Czech Republic. The level of wage rigidity and its relationship with the type of workforce (white collar workers) are not aligned with previous studies that investigated wage rigidities in Slovakia, i.e. Gertler and Senaj (2008) and Gertler (2010). However, these studies worked with a different concept of wage rigidity using different wage data (base wages vs. employee compensations). To address the discrepancies, the analysis is complemented in Červená (2012) to account for wage cuts and alternative margins for labour cost reduction.
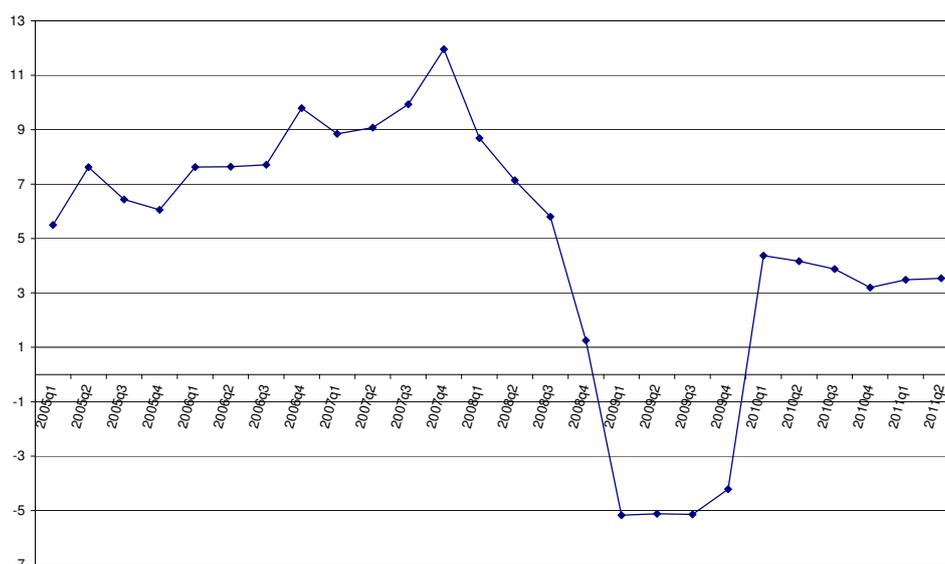
APPENDIX

REAL GDP GROWTH IN SLOVAKIA

Figure 1: GDP growth in Slovakia, year-on-year

QUESTIONS AND VARIABLE DEFINITIONS

Base wage is defined as direct remuneration excluding bonuses (regular wage and salary, commissions, piecework payments).
Freeze in base wage occurred if base wage remains unchanged in nominal terms from a pay negotiation to the next.

Questions used for the creation of the dependent variable

Real wage rigidity: Does your firm have a policy that adapts changes in base wages to inflation?
No
Yes

Real wage rigidity: If *yes*, please select the options that best reflect the policy followed:
Wage changes are automatically linked to:
- past inflation
- expected inflation
Although there is no formal rule, wage changes take into account:

- past inflation
- expected inflation

Nominal wage rigidity: Over the last five years, has the base wage of some employees in your firm ever been frozen?
No
Yes (indicate for what percentage of your employees)

Table 12: Variable definitions

Variable	Definition
Perceived competition	Self defined competition capturing firm's perception regarding the intensity of product market competition. Ranges from none to severe.
Implied competition	Inferred from the question on whether firms follow the price changes of their competitions. Ranges from none to severe.
Exporting firm	Dummy taking the value of firms report having revenues from exporting activity.
Share of labour cost	Proportion of total costs that are due to labour costs.
Nominal wage rigidity	Downward nominal wage rigidity - 1 if firms have frozen wages in the last five years.
Strict indexation	Indicates whether firm's wages are automatically linked to past or expected inflation.
Formal /informal indexation	indicates whether firm's wages are automatically or informally linked to past or expected inflation.
Only outside agreement	Firms apply only an agreement concluded outside the firm.
Only firm agreement	Firms apply only an agreement concluded within the firm.
Firm and outside agreement	Firms apply both firm and outside agreement.
Worker turnover	Indicates whether the number of employees is stable, increasing or decreasing.
Bonus	Indicates whether firms use bonuses on the top of base wages.

Table 13: Descriptive statistics

Variable	Mean	Std. Dev.	N
Size	3.557	0.714	802
Share of permanent workers	85.262	19.692	802
Nominal wage rigidity	0.209	0.407	802
Real wage rigidity	0.211	0.409	802
Share of labour costs in total costs	29.764	18.069	761
Use of bonuses	0.947	0.224	763
Exporting firms	0.661	0.474	792
Perceived competition	3.214	0.753	802
Implied competition	2.931	0.734	758

EMPLOYMENT ADJUSTED SAMPLING WEIGHT

Employment adjusted sampling weight aims at ensuring that the sample represents employees in the population in addition to adjusting for the unequal probability of firms ending up in the realized or final sample. Formally, the employment adjusted sampling weight is a product of three individual weights:

$$w_l = w_1 w_2 w_3.$$

w_1 adjusts for the unequal probability of firms being included in the intended sample and is defined as follows:

$$w_1 = \left(\frac{N_h}{n_h^*} \right),$$

where N_h is a population of firms within each stratum and n_h^* is the intended gross sample of firms within each stratum.

w_2 adjusts for non response

$$w_1 = \left(\frac{n_h^*}{n_h} \right),$$

where n_h is the realized sample of firms within each stratum, i.e. the actual number of firms that receive and reply to the questionnaire.

The product of w_1 and w_2

$$w_1 w_2 = \left(\frac{N_h}{n_h} \right)$$

corrects for the unequal probability of firms being included in the realized sample.

w_3 adjusts for differences in the average firm size (in the population) across different strata

$$w_1 = \left(\frac{L_h}{N_h} \right),$$

where L_h is the population employment in each stratum.

By combining the expressions for w_1, w_2 and w_3, we obtain the following expression for the employment adjusted weight

$$w_l = \left(\frac{L_h}{n_h} \right).$$

Therefore, the employment adjusted weight is equal to the population employment in each stratum divided by the number of firms, in each stratum, in the realized sample.

Table 14: Theories of wage rigidity

Theory	Source of wage rigidity
Contract theory	Long-term contracts between firms and workers set wages in advance and are negotiated on staggered basis
Implicit contract theory	Workers are risk averse, preferring a real wage that is stable over the business cycle to one that raises in expansions and falls in recessions. ... This risk aversion gives firms and workers an incentive to reach an implicit understanding that the wage will be kept stable over the business cycle.
Efficiency wage theory	Worker's productivity depends positively on wage
a. Shirking model	The cost of loosing one's job depends positively on the wage, so a higher wage will induce fewer workers to shirk and risk dismissal
b. Gift exchange model	Workers view a higher wage as a gift from the firm, inducing them to work harder as a gift to the firm
c. Adverse selection model	AA higher wage raises the average quality of a firm's applicant pool. In addition, adverse selection may also apply to resignations, since a firm's most productive workers are the most likely to resign if it cuts wages
d. Turnover model	Workers resignation rates depend negatively on the firm's wage. Thus, a firm paying higher wages will have lower costs of hiring and training new workers. In addition, its workers on average will have acquired more firm-specific human capital, making them more productive than similar individuals with no experience at the firm
Fair wage-effort hypothesis	If workers' wages are below their perceived fair wage, then their effort depends on the ratio of their wage to their perceived fair wage
Insider-outsider theory	Firms do not dismiss their current workers (i.e. insiders) and hire the unemployed (i.e. outsiders) at a lower wage because of the cost of hiring and training new workers and because of the ability of insiders to harass or not cooperate with new entrants hired to replace dismissed insiders. The costs of replacing insider with outsiders gives insiders a great deal of power in setting their own wage

Source: Campbell and Kamlani (1997)

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