



Labour Cost Adjustment in Estonia During and After the Crisis

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Liina Malk*

The Wage Dynamics Network (WDN) is a research network run by the European Central Bank and the national central banks (NCBs) of European countries, with the aim of studying price and wage-setting by companies, and the features and sources of labour cost dynamics. Eesti Pank has carried out wage and price setting surveys before on three occasions in 2005, 2007 and 2009. The second and third waves of the survey were carried out within the framework of the WDN and similar surveys were conducted simultaneously in a large number of European countries. In 2014, 25 European NCBs conducted a new round of WDN surveys, the purpose of which was to collect information on adjustment in labour practices and wage and price setting mechanisms in 2010–2013, and also in 2008–2009 for some countries.

The aim of this report is to give an overview of labour cost adjustment practices in Estonia following the WDN survey conducted in 2014. The paper is entirely descriptive, and it covers a broad range of topics. Section 1 gives some background information about the performance of the Estonian labour market during the crisis and discusses several institutional features and changes of the Estonian labour market. Section 2 briefly describes the survey design. The rest of the paper focuses on firms' behaviour towards wage and price setting and labour cost adjustment. Section 3 describes the negative shocks experienced by firms and investigates how firms adjusted to these shocks. Section 4 discusses issues of labour market flexibility by describing the opinions of firms about labour market institutions and obstacles to hiring. Section 5 deals with price adjustments through the frequency and timing of price changes. Finally, section 6 briefly summarises the main findings of the survey.

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The views expressed are those of the author and do not necessarily represent the official views of Eesti Pank and the Eurosystem.

Contents

1. Introduction.....	3
1.1. Labour market performance during the crisis.....	3
1.2. The main institutional characteristics of the Estonian labour market...	4
2. The design of the WDN survey	8
3. Economic shocks and adjustment.....	10
3.1. The economic environment: sources and magnitude of the shocks...	10
3.2. Responses to the shocks: main adjustment channels	16
4. Labour market flexibility	19
5. Price changes	22
6. Conclusion	24
References.....	26
Appendices.....	27

1. Introduction

1.1. Labour market performance during the crisis

Estonia saw fast economic growth from the beginning of the 2000s until 2007, averaging 7–10% per year. Large inflows of capital from Scandinavian banks led to overheating in 2006–2007 and the subsequent recession in 2008–2009, when Estonia was hit hard by the global financial crisis. Estonia had one of the largest falls in GDP of any EU member state in 2009, but as Figure 1 shows, from 2010 the economy in Estonia started to recover.

The rapid recovery of the Estonian economy was facilitated by the relatively flexible labour market, which allowed most of the adjustment to take place through reductions in wages and labour. As can be seen from Figure 1, the decline in annual real gross wages was 5% in 2009 and 2% in 2010. The unemployment level more than quadrupled in 2009–2010 and this rise in unemployment was among the largest in the EU member states.

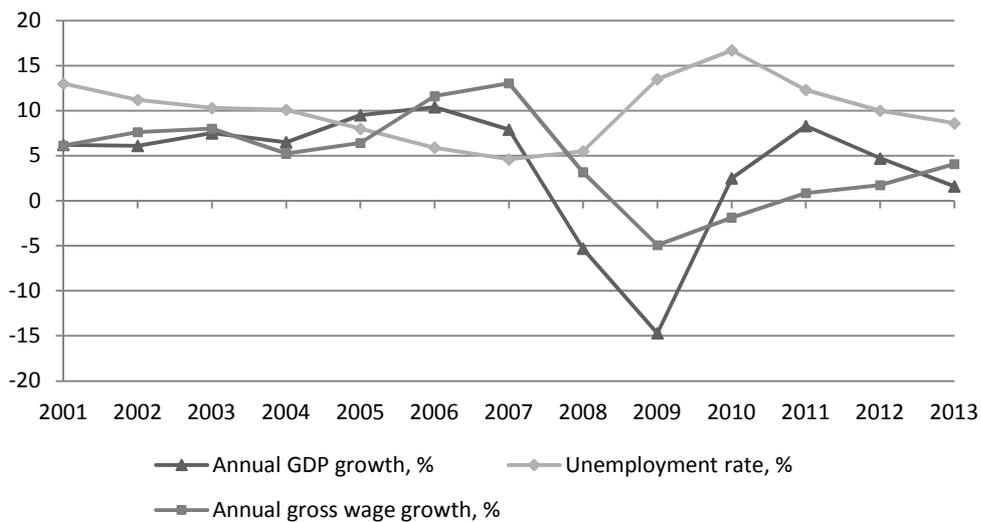


Figure 1: Annual GDP growth, unemployment rate and gross wage growth in Estonia, 2001–2013

Source: Eurostat.

As economic conditions improved, the first signs of recovery in the labour market could already be seen in the second quarter of 2010. Initially the pick-up in economic activity was driven mostly by strong export growth and then followed by the increase in domestic demand. This resulted in 2.5% GDP growth in 2010 and 8.3% growth in 2011, when the real wage also returned

to an upward track, since when it has continued rising fast. The decline in the unemployment rate was relatively fast as well, as it fell from 16.7% in 2010 to 8.6% in 2013. By 2014 the Estonian economy was back at its pre-crisis levels.

1.2. The main institutional characteristics of the Estonian labour market

In this section, several institutional features and changes of the Estonian labour market are discussed to give background information about the business environment. Institutional aspects of the labour market that have received considerable attention within the WDN are the strictness of the national employment protection legislation (EPL), the incidence of collective bargaining, working arrangements, and the role of labour taxes and minimum wages. As they affect labour cost flexibility, these labour market features matter for the ability of the economy to adjust to negative shocks. Therefore, the characteristics of these institutions are described in the following.

The Estonian labour market is characterised by a high degree of wage flexibility and almost fully decentralised wage setting, with wages being determined mostly within firms. One reason for this might be the weak role of the labour unions. According to the Estonian Labour Force Survey, only 5.6% of employees were members of trade unions in 2013. The number of employees belonging to a trade union has declined over the years, and some growth was noticeable only during the economic recession. The number of employees who are members of trade unions fell by 25% from 2010 to 2013. Trade union membership is more common in the sectors of energy, human health and social work activities, transportation and storage, and education (Põldis (2014)).

Wage bargaining institutions are an important determinant of wage dynamics and they also have an impact on the extent and the speed with which wages adjust in response to various economic shocks. Therefore, the WDN survey has collected firm-specific information on the incidence and type of collective wage bargaining as well as on its coverage. Specifically, firms were asked if they had a collective wage agreement and, if so, whether it was concluded at the firm level or externally, e.g. at the national, sectoral or occupational level. In addition, the proportion of workers covered was asked, whichever the type of collective wage agreement. These results are summarised in Table 1.

Table 1: Share of firms with a collective bargaining agreement and share of employees covered by any type of collective agreements

	Either level	At the firm level	Higher level	Share of employees covered by collective bargaining agreements
Total	11.2	10.0	2.0	8.0
5–19 employees	2.1	1.0	1.0	1.6
20–49 employees	6.2	4.0	3.2	3.5
50–199 employees	8.1	6.5	3.3	4.4
200–... employees	32.9	32.9	0.0	26.5
Manufacturing	4.3	3.4	0.9	0.8
Construction	4.3	2.3	2.7	2.7
Trade	8.9	8.9	0.0	4.7
Business services	21.1	19.1	4.1	18.2

Note: Figures are weighted using employment-adjusted weights¹.

Source: Estonian WDN Survey 2014, author's calculations.

It appears that 11% of the firms in Estonia have a collective bargaining agreement, which is predominantly at the firm level. The results indicate that collective agreements are more common in larger companies with 200+ employees and in business services. In construction it is more common to have a collective agreement concluded externally, while in manufacturing, trade and business services it is more common for the agreement to be at the firm level. The comparison with the results of the previous WDN survey shows that the share of firms with a collective wage agreement has slightly decreased over the years, as 12.1% of the firms had a collective wage agreement in 2007. This is in accordance with the data from the register of collective agreements, which also shows a slight decline in the signing of collective agreements over recent years (Põldis (2014)). The share of employees covered by collective wage bargaining was also slightly higher then at 8.7%, compared to 8% according to the recent survey (Dabušinskas and Rõõm (2011)). All in all, the downward tendency in trade union membership and collective bargaining suggest a diminishing role for collective employment relationships in Estonia.

Despite the quite high level of flexibility perceived in the Estonian labour market, the use of flexible work arrangements is still less common in Estonia than it is in other EU member states. For instance, only around 9% of workers in Estonia work part-time and less than 4% are working on temporary contracts. While the share of temporary work and part-time work increased somewhat during the recession, no changes can be observed over the last few years (Statistics Estonia).

¹ Section 2 describes the weights used.

High labour market flexibility played an important role in the recent economic recession as the adjustment mainly took place through labour market measures, with reductions in nominal wages and working hours, and redundancies among employees. Among other factors, it was also supported by a comprehensive reform to EPL, which resulted in the new Employment Contracts Act being passed and entering into force on 01.07.2009. The reform aimed to ease employment protection by reducing the costs of terminating employment relationships. For this purpose the new act introduced the following amendments to firing regulations:

- The notice period for dismissal and severance payments was reduced (see Table 2).
- The premature cancellation of fixed-term contracts was made more costly. In the event of the premature cancellation of a fixed-term employment contract due to economic difficulties the employer must compensate the employee for the loss of income until the end of the contract term, except in the case of bankruptcies. Under the old act the regulation of the cancellation of fixed-term contracts was the same as for permanent contracts.

Table 2: Notice periods and severance pay following redundancies (terminations for economic reasons) in Estonia

Length of tenure with the present employer	Before 01.07.2009		After 01.07.2009		
	Notice period	Severance pay	Notice period	Severance pay	
				Employer	Unemployment Insurance Fund
Up to 1 year	2 months	2 months' average pay	15 calendar days	1 month's average pay	-
1–5 years	2 months	2 months' average pay	30 calendar days	1 month's average pay	-
6–10 years	3 months	3 months' average pay	60 calendar days	1 month's average pay	1 month's average pay
11–20 years	4 months	4 months' average pay	90 calendar days	1 month's average pay	2 months' average pay
More than 20 years	4 months	4 months' average pay	90 calendar days	1 month's average pay	2 months' average pay*

Note: * Until 31 December 2014 the additional compensation paid by the Estonian Unemployment Insurance Fund to an employee with over 20 years of service (by 01.07.2009) was 3 months' average salary.

Source: Republic of Estonia Employment Contracts Act; The Employment Contracts Act of Estonia.

Where it concerned hiring costs, the new Employment Contracts Act made the contraction of fixed-term employment agreements easier by leaving open the set of reasons allowing a fixed-term contract to be signed and imposing the temporary nature of the job as the only condition.

Regarding wage flexibility, the new act allowed wages to be reduced if a firm is facing some unforeseen economic difficulties. If an employer fails to provide an employee with the agreed amount of work because of unforeseen economic circumstances beyond its control, the employer may, for up to three months over a period of twelve months, reduce the wages to a reasonable extent, but not below the minimum wage set by the Government of the Republic of Estonia, if paying the agreed wages would be unreasonably burdensome for the employers. However, an employee has the right to refuse to do work in proportion to the reduction in wages.

The Estonian labour taxation system is quite simple. Estonia has had a flat income tax rate since 1994, with the tax rate decreasing from 22% in 2007 to 21% in 2008 and to 20% in 2015. However, due to the basic exemption (the non-taxable amount) the income tax in Estonia could be considered to be progressive rather than proportional. The amount of this exemption has increased from 1534 euros per year in 2007 to 1728 euros in 2008 and to 1848 euros in 2015. As well as income tax, employers must also pay social tax on top of the gross wage. The social tax rate is 33%, which comprises 20% social security contributions and 13% health insurance contributions.

One component of Estonian labour taxation is the unemployment insurance contributions that must be paid by both the employer and the employee. In order to manage the rise in unemployment insurance expenses caused by the economic recession and the high level of unemployment and also by the new Employment Contracts Act, the unemployment insurance contributions were increased in 2009 from 0.3 % to 1.4% for employers and from 0.6% to 2.8% for employees. The premiums remained at this level until the end of 2012 and from 2013 they were lowered to 1% for employers and 2% for employees and from 2015 to 0.8% for employers and 1.6% for employees (Estonian Tax and Customs Board (2014)).

Another important institution affecting the wage setting and labour costs is the minimum wage. The national minimum wage in Estonia is settled in annual bipartite meetings between the Estonian Trade Union Confederation and the Estonian Employers' Confederation and is given legal force by the government. In 2012, the minimum wage increased by 4%, from 278 euros a month, where it had been since 2008, to 290 euros, and in 2013 it rose again by 10% from 290 euros to 320 euros, then in 2014 by 11% to 355 euros, and in 2015 by a further 10% to 390 euros. In Estonia the minimum wage is equal to approximately one third of the average gross monthly wage. However,

since according to the WDN survey only 4.6% of the employees receive the minimum wage, then the effect of this increase on wage flexibility could be considered rather unimportant.

2. The design of the WDN survey

Eesti Pank commissioned the WDN survey fieldwork from an external company EMOR, which conducted the survey over the internet in April–May 2014. A core questionnaire was formulated collectively by the participants of the WDN survey group and was adopted by all participating countries. The questionnaire is organised in five sections. The first part of the questionnaire collects general information about the firms. The second part contains information about the changes in economic environment. The third part includes information about labour force adjustments in response to shocks. The fourth part focuses on wage setting behaviour and wage adjustments. The final part gathers information about price setting behaviour and price changes. For the most part, the Estonian survey questionnaire was designed using the questions from the core questionnaire. In several cases, the pre-agreed questions were modified slightly to get either more detailed or extra information, but their general form was left unchanged, so as not to compromise data compatibility. In addition, several questions have been added that can be found in the surveys of only some of the participating countries. These include, for example, questions about the minimum wage and firms' reactions to the increase in it.

The target population of firms was defined from the Estonian Commercial Register, with the focus restricted to companies that employ at least five people and operate in one of the following economic sectors: manufacturing (NACE code C), electricity, gas (D), water supply (E), construction (F), wholesale and retail trade (G), transportation and storage (H), accommodation and food service activities (I), information and communication (J), real estate activities (L), professional, scientific and technical activities (M), and administrative and support service activities (N)².

In order to ensure better coverage, sampling was stratified along two dimensions: sector and size. The stratification was based on six sector groups: manufacturing, electricity, gas and water supply (C, D, E); construction (F); wholesale and retail trade (G); transportation and storage (H); accommodation and food service activities (I); and other business service activities (J,

² Though financial intermediation (NACE code K) was included in the surveys of other participating countries, it was excluded in Estonia because the information needed for weighting is not present in the Estonian Business Registry for most of these firms.

L, M, N). In addition, it used four firm size categories: 5–19 employees; 20–49; 50–99; and 100 and more. In total, the sample scheme involved 24 strata.

In observing the changes in price-setting and wage-setting in the same companies, the first priority was to include those firms that had participated in the previous wave of the WDN survey. Since this had been conducted back in 2009, obviously a large share of those firms had closed or been re-organised and so only 136 responses were obtained in this way. The rest of the sample was formed using the random selection principle from the Estonian Commercial Register. As a result, the final sample of the survey covered 500 firms, and the response rate for the survey was 13.8 percent³. However, the final effective sample from the 2014 WDN survey for Estonia that could be fully used for the WDN purposes consists of 469⁴ firm observations.

The composition of the final effective sample by sector and firm size is described in Table 3, distinguishing between four types of economic activity and four size groups, both defined in accordance with the definitions agreed within the WDN survey group. Specifically, the sectors are manufacturing, construction, trade and business services⁵, and the four size groups are defined in terms of employment as 5–19, 20–49, 50–199, and 200 and more employees. It is important to note that these sectors and size categories do not exactly coincide with the sectoral and size categories used in the sample stratification schemes.

³ The response rate is the proportion of organisations that responded to the survey from among the estimated eligible organisations, which in turn is calculated as known eligible organisations plus the share of the eligible organisations among cases with known eligibility status times the number of organisations with unknown eligibility.

⁴ Those that were in the sample due to the participation in the previous wave but were no longer in the sectors that the survey covers according to the Estonian Commercial Register were excluded from the sample (14 observations). In addition, due to small sample size the firms in the sectors D (electricity, gas) and E (water supply) were also excluded from the sample, as they had eight and nine observations respectively.

⁵ As agreed by the participants of the WDN survey group, business services include transportation and storage (H), accommodation and food service activities (I), information and communication (J), real estate activities (L), professional, scientific and technical activities (M), and administrative and support service activities (N).

Table 3: Sample composition by sector and size

	5–19 employees	20–49 employees	50–199 employees	200–... employees	Total
Number of firms:					
Manufacturing	25	46	50	13	134
Construction	40	29	15	2	86
Trade	39	32	14	7	92
Business services	74	55	25	3	157
Total	178	162	104	25	469
Percentages:					
Manufacturing	5.3	9.8	10.7	2.8	28.6
Construction	8.5	6.2	3.2	0.4	18.3
Trade	8.3	6.8	3.0	1.5	19.6
Business services	15.8	11.7	5.3	0.6	33.5
Total	38.0	34.5	22.2	5.3	100.0

Source: Estonian WDN Survey 2014, author's calculations.

Since the sample over-represents smaller firms with 5–19 and 20–49 employees and under-represents large firms with 100+ employees, then the analysis of unweighted statistics may be misleading. To address this issue, the employment-adjusted weights were constructed using the procedure followed by WDN survey group. The employment-adjusted weight is equal to the population employment in each stratum divided by the number of firms in each stratum in the realised sample. So, the weight attached to each firm in the sample refers to how many employees that observation represents in the population, and the sum of weights across all sample firms is equal to the total employment in the target population. It is important to note that the weights are strata-specific, meaning that they are defined on the basis of the sampling strata, not the sector and size categories considered in Table 3. The results presented in the next sections are weighted using these employment-adjusted weights.

3. Economic shocks and adjustment

3.1. The economic environment: sources and magnitude of the shocks

First of all, the changes in the economic environment and the shocks that Estonian firms experienced should be described for the following discussion of the adjustment mechanisms. For this purpose, the firms were asked to assess the main changes that they experienced in economic conditions during 2008–2009 and 2010–2013. Table 4 summarises the information on the expe-

riences of negative shocks in the level of demand, the access to financing, customers' ability to pay and the availability of supplies.

Most of the firms, around 58%, said that they experienced a decrease in the level of demand in 2008–2009 and around 18% did so in 2010–2013 (see Table 4). In 2008–2009, the sectors affected more by the decrease in demand were manufacturing, construction and trade (see Appendix 1). When the differences are observed by the size of the firm, then it appears that while in 2008–2009 there were no significant differences, in 2010–2013 the share of firms experiencing the decrease in the level of demand was higher in smaller companies with 5–19 employees.

Table 4: Share of firms experiencing a decrease in the level of demand, access to financing, the ability of customers to pay and the availability of supplies

	2008–2009	2010–2013
Level of demand	57.9	17.7
Customers' ability to pay	43.6	15.8
Access to financing	23.8	5.3
Availability of supplies	18.7	8.7

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

Another area where a large share of around 44% of companies experienced a decrease in 2008–2009 was in the ability of customers to pay. In 2010–2013 this decrease was experienced by 16% of the firms. In the earlier period this shock was perceived more in construction and trade, and by exporting firms, but in the later period, it was found more in smaller firms with 5–19 employees (see Appendix 1).

Though the financial crisis led to a sharp decline in credit flows, only around 24% of the firms said that they experienced a decrease in their access to financing in 2008–2009 and around 5% did so in 2010–2013. In the earlier period the sector most affected was construction (see Appendix 1). Again, in 2008–2009 this negative shock was experienced more in larger firms, but in 2010–2013 it was felt more in smaller firms.

For the availability of supplies, the share of firms experiencing a decrease was small, at 19% in 2008–2009 and 9% in 2010–2013. In the earlier period this share was higher in construction and manufacturing, in the latter period only in construction (see Appendix 1). While the decrease in the availability of supplies was perceived more in larger companies in 2008–2009, in 2010–2013 this share was higher in smaller companies.

Those firms that experienced a strong decrease in the level of demand, access to financing, the ability of customers to pay and the availability of supplies were also asked to indicate whether those effects were transitory, partly persistent or long-lasting. It appears that while in 2008–2009 the strong decrease in the level of demand was perceived more as temporary, it was rather considered to be long-lasting in 2010–2013 (see Table 5). The strong decline in access to financing was mostly perceived as long-lasting in both periods, while the strong decreases in the ability of customers to pay and in the availability of supplies were, in contrast, mainly considered to be only partly persistent.

Table 5: Expected duration of the negative shocks (share among the firms experiencing a strong decrease in the given factors)

		Level of demand	Access to financing	Ability of customers to pay	Availability of supplies
2008–2009	Transitory	44.5	35.7	37.1	30.3
	Only partly persistent	26.8	23.3	46.9	56.2
	Long-lasting	28.7	41.1	16.0	13.5
2010–2013	Transitory	12.7	25.1	7.6	47.9
	Only partly persistent	21.0	22.6	61.2	52.1
	Long-lasting	66.3	52.2	31.2	0.0

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

All in all, the analysis of the main changes in economic conditions shows that the most important shocks that Estonian firms experienced were decreases in the level of demand and in the ability of customers to pay. The estimations of pairwise correlations between different shocks also show that the combination of the decrease in the level of demand and the decrease in the ability of customers to pay appears to be the most prevalent. Although the financial crisis led to a sharp decline in credit flows, the findings show that the decrease in access to financing was relatively modest. The results also indicate that the sectors that were affected most by the crisis were construction, manufacturing and trade. In addition, while the negative shocks in 2008–2009 were perceived rather more in larger companies, in 2010–2013 these shocks were more prevalent in smaller companies. However, most of the firms which experienced negative shocks in any given factors reported that the most significant shocks took place in 2009.

The firms were also asked about access to external financing and the relevance of different types of credit constraint. It appears that only around 10% of the firms stated that credit was not available to finance working

capital and new investments during both periods 2008–2009 and 2010–2013 (see Table 6). This share was even lower for refinancing debt at around 6–8%. However, the share of firms stating that credit conditions were too onerous was somewhat higher. When the perception of credit constraints is observed by sector, then it appears that the share of firms indicating that at least one of the credit constraints was relevant was higher in both periods in manufacturing and in construction, and smaller in firms with 200 and more employees (see Appendix 2).

Table 6: Share of firms which stated that any type of credit constraint was relevant or very relevant

	2008–2009	2010–2013
Credit was not available to finance working capital	10.6	9.3
Credit was not available to finance new investments	10.8	10.7
Credit was not available to refinance debt	8.1	5.9
Conditions for financing working capital were too onerous	12.1	11.7
Conditions for financing new investments were too onerous	11.5	11.4
Conditions for refinancing debt were too onerous	7.6	6.9

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author’s calculations.

Since one important determinant of firms’ pricing behaviour and a potential source of price stickiness is the degree of competition in the main market, then firms’ reactions to shocks depend on the intensity of competition among other factors. Therefore the survey also included questions measuring the degree of competition in the main product market and changes in competitive pressure. The responses suggest that competitive pressure increased in both domestic and foreign markets in both periods (see Table 7). However, the share of firms experiencing an increase in competitive pressure was higher during 2010–2013 in both markets. In 2008–2009, the increased pressure in both domestic and foreign competition was experienced most by construction firms, which also felt the most increase in foreign competition in 2010–2013. However, in 2010–2013 the increased pressure in domestic competition was felt more by firms in the trade sector. These findings suggest that the price reactions to shocks could have been faster in construction and trade. In contrast, manufacturing was the sector in which the smallest share of companies experienced an increase in competitive pressure and thus presumably also less pressure for price changes.

Table 7: Share of firms experiencing an increase in competitive pressure

	Domestic competition		Foreign competition	
	2008–2009	2010–2013	2008–2009	2010–2013
Total	48.0	62.3	42.7	59.9
Manufacturing	37.9	47.0	39.4	55.0
Construction	62.2	68.4	52.3	71.8
Trade	54.5	79.0	34.7	59.5
Business services	48.0	65.8	50.7	65.1

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

The relationship between productivity and labour costs could be considered as one factor reflecting adjustment flexibility. Therefore the firms were asked how the average productivity per employee evolved in 2010–2013 in comparison to labour costs per employee. Around 26% of the firms said that their average productivity growth was below growth in labour costs in 2010–2013 (see Table 8). This share was higher in larger companies and in construction and business services. The reason that the largest share of firms gave for lower productivity growth was changes in the cost of living (see Table 9). Labour shortages, regular adjustment of wages across the organisation, insufficient growth in sales, and changes in competing organisations were also seen as relevant reasons for productivity growth being lower than the growth in labour costs.

Table 8: Share of firms where average productivity growth was below growth in labour costs

	Share of firms
Total	26.4
5–19 employees	21.5
20–49 employees	24.3
50–199 employees	27.0
200–... employees	33.2
Manufacturing	25.4
Construction	30.1
Trade	19.2
Business services	30.6
Exporting	25.2
Non-exporting	28.8

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

Table 9: Share of firms indicating that a particular reason was relevant or very relevant for lower productivity growth

	Share of firms
Changes in the cost of living	71.6
Labour shortages	66.3
Regular adjustment of wages across the organisation	62.1
Insufficient growth in sales	61.5
Changes in competing organisations	58.7
The wage levels in neighbouring countries	44.6
Other reasons	12.3

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

Regarding cost adjustment, 45% of the firms experienced a decrease in total costs in 2008–2009 and around 47% saw one in labour costs (see Table 10). In 2010–2013 the share of firms experiencing a decrease in any type of costs was quite small, and only in the case of financing costs was the share of firms experiencing a decrease higher than in 2008–2009. Regarding labour costs, around 40% of the firms said that in 2008–2009 they experienced a decrease in base wages, while around 35% did so in flexible wage components and in the number of permanent employees, and one quarter observed one in the working hours per employee. In the later period, these shares were many times lower, and only the share of firms stating that they experienced a decline in the number of permanent employees was still quite high at around 10%.

Table 10: Share of firms experiencing decreases in different types of cost

	2008–2009	2010–2013
Total costs	45.2	11.1
Labour costs	47.3	6.7
... base wages	39.5	4.5
... flexible wage components	35.5	5.8
... permanent employees	34.8	10.6
... temporary employees	17.3	7.0
... agency workers	5.0	1.5
... working hours	25.0	3.5
... other labour costs	7.2	0.3
Financing costs	14.8	16.0
Cost of supplies	19.8	4.8

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

3.2. Responses to the shocks: main adjustment channels

Around 54% of the firms had a need to reduce labour inputs significantly or to alter their composition in 2008–2009 and around 15% needed to in 2010–2013 (see Table 11). In the earlier period this share was much higher in larger companies with 200 and more employees. The distribution by sectors shows that the share of firms in the construction sector that needed to reduce labour inputs or to alter their composition was larger in both periods. However, according to probit estimations these differences are not significant (see Appendix 3). Table 11 also suggests that this share was much higher among firms which experienced various types of shocks and in firms which indicated that at least one of the credit constraints was relevant for them.

Table 11: Share of firms which needed to reduce labour inputs significantly or to alter their composition in 2008–2009 and 2010–2013

	2008–2009	2010–2013
Total	54.0	15.4
5–19 employees	41.4	23.5
20–49 employees	46.3	15.6
50–199 employees	50.3	11.1
200–... employees	81.6	13.2
Manufacturing	58.6	14.8
Construction	66.0	33.3
Trade	56.4	9.4
Business services	44.7	14.3
Exporting	51.4	13.5
Non-exporting	59.0	19.1
Decrease in demand	71.3	41.5
Decrease in access to financing	79.9	28.2
Decrease in ability of customers to pay	67.8	36.4
Decrease in availability of supplies	79.2	30.6
Credit constrained ⁶	67.8	31.9

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

The probit estimations show that the decline in the level of demand was the most important factor positively affecting the probability of a firm needing to reduce labour inputs or to alter their composition in both periods, though the effect was much smaller in the later period (see Appendix 3). Another factor that according to the estimations affected the probability of a company needing to reduce labour inputs or to alter their composition was the presence of credit constraints. For instance, those firms which indicated

⁶ A firm is considered credit constrained if at least one of the credit constraints (see Table 6) is relevant for it.

that any type of credit constraint was relevant for them had around 14pp higher probability of needing to reduce labour inputs or to alter their composition in both periods.

The most commonly used measure for reducing labour inputs or for altering their composition was freezing or reducing new hires (see Table 12), with around 60% of the firms saying that they had to use this measure in 2008–2009 and 37% having to in 2010–2013. Other widely used measures were the reduction of working hours and individual layoffs.

Table 12: Share of firms using any measure for labour cost reduction (moderately or strongly)

	2008–2009	2010–2013
Freeze or reduction of new hires	60.2	37.0
Reduction of working hours	47.7	25.2
Individual layoffs	41.6	37.1
Collective layoffs	22.4	10.6
Non-renewal of temporary contracts	16.6	10.6
Reduction of agency workers	15.4	7.5
Early retirement schemes	2.3	1.6

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

Regarding wage adjustments, the firms were asked about the wage freezes and cuts that occurred in 2008–2013. On average, 16% of the firms had to freeze and 33% of the firms had to cut wages during 2008–2013. Most of these freezes and cuts were applied in 2009 (see Table 13). Then the share of employees experiencing wage freezes was 11% and the share of employees experiencing wage cuts was around 24%. However, the average size of the wage cut was largest in 2008 at 17%.

Table 13: Share of firms freezing or cutting wages and proportion of employees experiencing wage cuts or freezes in any given year, and average size of wage cuts

	2008	2009	2010	2011	2012	2013
Proportion of firms freezing wages	6.6	13.1	9.4	7.4	3.7	2.9
Proportion of employees experiencing wage freezes	5.3	11.2	8.3	6.2	3.0	2.2
Proportion of firms cutting wages	5.8	26.5	10.6	1.9	1.1	0.4
Proportion of employees experiencing wage cuts	4.9	23.8	5.2	1.7	0.8	0.3
Average size of wage cuts	17.1	13.2	9.2	10.9	9.9	8.7

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

To study what kind of firms were more likely to freeze or cut wages, probit analysis was run. These results are presented in Table 14.

Table 14: Probabilities of freezing and cutting wages in 2008–2009 and 2010–2013, estimations of probit models (marginal effects)

	Wages were frozen		Wages were cut	
	During 2008–2009	During 2010–2013	During 2008–2009	During 2010–2013
20–49 employees (base 5–19 employees)	0.006 (0.053)	–0.041 (0.041)	0.098* (0.054)	0.023 (0.037)
50–199 employees (base 5–19 employees)	0.041 (0.057)	–0.033 (0.044)	0.117* (0.067)	–0.015 (0.052)
200–... employees (base 5–19 employees)	0.099 (0.083)	0.131* (0.069)	0.371*** (0.087)	0.221*** (0.080)
Manufacturing (base business services)	–0.123* (0.064)	0.004 (0.047)	–0.103 (0.073)	–0.172** (0.068)
Construction (base business services)	–0.053 (0.072)	–0.079 (0.053)	0.092 (0.068)	–0.054 (0.053)
Trade (base business services)	–0.142** (0.070)	–0.066 (0.055)	–0.052 (0.082)	–0.055 (0.062)
Exporter	–0.025 (0.052)	–0.061 (0.044)	–0.079 (0.063)	–0.094** (0.041)
Decline in the level of demand	0.243*** (0.054)	–0.058 (0.044)	0.160*** (0.056)	0.120** (0.050)
Decline in the access to external financing	0.011 (0.061)	0.170*** (0.052)	0.206*** (0.072)	–0.114 (0.071)
Decline in the customers' ability to pay	0.034 (0.052)	0.037 (0.042)	0.077 (0.059)	0.054 (0.045)
Decline in the availability of supplies	0.136** (0.058)	–0.059 (0.051)	0.037 (0.079)	0.000 (0.062)
Credit constrained ⁷	0.183*** (0.058)	0.130*** (0.039)	0.104 (0.066)	0.073* (0.040)
Nr of obs	318	417	369	412
Population employment size	201691	262622	246673	265290

Notes: Survey estimation. Marginal effects reported. Standard errors in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.
Source: Estonian WDN Survey 2014, author's calculations.

The estimations show that the probabilities of freezing or cutting wages in 2008–2009 were higher for those firms that experienced a decline in the level of demand, but the effect of this decline was higher on the probability of

⁷ A firm is considered credit constrained if at least one of the credit constraints (see Table 6) is relevant for it.

freezing wages. Credit constrained firms also had a higher probability of freezing wages, but in both periods. Furthermore, it appears that the probability of cutting wages was higher in larger companies. While the probability of freezing wages in 2010–2013 was positively affected by the decline in access to external financing, the probability of cutting wages was still higher for those firms experiencing a decline in the level of demand. All in all, the estimations show that the most important factor affecting wage adjustments was the decline in the level of demand, but the existence of credit constraints and the decline in access to external financing also mattered.

The WDN survey evidence on the frequency of base wage changes is summarised in Table 15, which shows the distribution of firms in terms of three wide ranges of wage change frequencies. It appears that the predominant frequency of wage changes is less than once a year. As shown in Table 15, this frequency applies to around half of all firms. Approximately 40% of firms change wages yearly and around 3% do so more frequently than once a year. In the previous WDN round, around 64% of the firms said that their wage change frequency was annual and 20% changed the base wages more frequently and 10% less frequently (Dabušinskas and Rõõm (2011)). This suggests that the frequency of wage changes decreased in Estonia during and after the crisis.

Table 15: Frequency of base wage changes

	Before 2008	During 2008–2009	During 2010–2013
More frequently than once a year	5.2	3.3	3.1
Once a year	48.6	33.5	39.4
Less frequently than once a year	42.1	42.9	50.6
Never	4.1	20.3	6.9

Note: Figures are weighted using employment-adjusted weights.
Source: Estonian WDN Survey 2014, author's calculations.

4. Labour market flexibility

In order to get employers' opinions about the institutional changes in the labour market the respondents were asked to indicate whether a particular action like laying off or hiring employees has become more or less difficult. The results in table 16 indicate that hiring employees and lowering the wages at which hires are made are actions that have become more difficult and laying off employees for both economic and disciplinary reasons has become less difficult.

Table 16: Proportion of firms stating that a particular action has become more difficult/less difficult

	2008–2009		2010–2013	
	More difficult	Less difficult	More difficult	Less difficult
Laying off employees for economic reasons collectively	5.1	18.1	7.3	16.9
Laying off employees for economic reasons individually	7.5	23.4	7.8	23.2
Dismissing employees for disciplinary reasons	16.6	14.3	17.6	13.1
Hiring employees	22.6	16.7	35.4	5.6
Adjusting working hours	10.4	11.8	12.4	5.7
Moving employees to other locations	6.0	9.8	9.4	3.8
Moving employees to other job positions	7.7	13.3	11.2	5.6
Lowering wages at which new employees are hired	20.9	16.9	35.3	4.1

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

Those who said that a particular action had become more or less difficult were also asked to indicate whether they attribute these changes to reforms of labour laws, to law enforcement, to changes in trade union behaviour or to changes in individual behaviour (see Appendix 4). It appears that actions that have become more difficult, namely hiring employees and lowering the wages at which hires are made, are attributed more to changes in individual behaviour, and laying off employees that becoming less difficult is attributed more to reforms in labour laws and law enforcement. The latter point could be related to the comprehensive employment protection reform that was enacted in Estonia in mid-2009.

In order to see whether the firms have also benefited from layoffs becoming less difficult, their opinions about these institutional changes were compared to their responses on different measures used for labour cost reduction. The results in Appendix 5 show that in 2010–2013 the share of firms using collective and individual layoffs was much higher among those who find that laying off employees both collectively and individually has become less difficult. This finding suggests that employers have actually benefited from the employment protection reform that made laying off employees less difficult.

The firms were also asked to give their opinions about the relevance of various obstacles to hiring workers. According to these results insufficient availability of labour with the required skills, high payroll taxes and high wages could be seen as the most relevant obstacles to hiring new employees (see Table 17). If the employers' opinions about the obstacles to hiring

workers are compared with their opinions on whether hiring employees has become more difficult or not, then it appears that among those who find that hiring employees has become more difficult there are many more employers who consider insufficient availability of labour with the required skills, high payroll taxes, high wages and hiring costs to be obstacles to hiring workers, and fewer employers who consider uncertainty about economic conditions and risks that labour laws will be changed to be obstacles to hiring workers (see Appendix 6). This confirms that Estonian firms face difficulties while hiring new workers, in terms of both finding suitable employees and setting their wage levels, which indicates some degree of tightness in the Estonian labour market.

The finding that only a modest share of employers consider firing and hiring costs to be relevant suggests that for most employers the labour market institutions are quite flexible and are not seen as an obstacle. According to the OECD index of employment protection legislation, employment protection has been somewhat less stringent in Estonia than it generally is in the euro area and it was eased considerably with the employment protection reform in 2009⁸. Furthermore, the result that only around 38% of firms consider risks that labour laws may change as a relevant obstacle to hiring workers shows that most of the employers feel confident about the institutional framework of the Estonian labour market and consider it quite stable.

Table 17: Share of firms indicating that any of the obstacles to hiring workers is relevant or very relevant

	Share of firms
Insufficient availability of labour with the required skills	90.5
High wages	81.8
High payroll taxes	81.4
Uncertainty about economic conditions	62.6
Costs of other inputs complementary to labour	46.0
Access to finance	45.8
Risks that labour laws will be changed	38.5
Hiring costs	36.4
Firing costs	36.0

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

The tendency of the wages of the newly employed not to deviate from those of incumbent employees could be considered as one source of wage

⁸ The employment protection index for regular contracts dropped from 2.328 to 2.066 (OECD (2014)). However, for temporary employment this index increased somewhat, but since in Estonia less than 4% of employees are working on temporary contracts, this change could be considered rather unimportant.

rigidities. To measure the possible sources of wage rigidities therefore, the WDN survey also collected managers' opinions as to whether firms pay higher, similar or lower wages to their new employees than to current ones at different time periods. Table 18 shows that while around 36% of the firms hired at wages that were lower than those paid to incumbent workers during the crisis and around 10% of the firms hired at wages that were higher than those paid to incumbent workers, the shares were 28% and 26% respectively during 2010–2013. Furthermore, among those employers who find that lowering the wages at which new employees are hired has become less difficult, the share of firms that hired at wages that were lower than those paid to incumbent workers was higher in both periods, and in 2008–2009 it was even more than twice as high (see Appendix 7). This suggests that those who find that it has become easier to lower the wages of newly-hired employees have actually benefited from that change.

Table 18: Share of firms indicating that the labour cost of a newly hired worker was lower or higher than that of incumbent workers

	Before 2008	During 2008–2009	During 2010–2013
Lower	30.5	35.7	27.8
Higher	19.4	9.6	25.7

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

Since a relatively large share of firms can still hire at wages lower than those paid to incumbent workers, then it could be concluded that the wages of the newly employed are still rather flexible in Estonia. However, the finding that the share of employers hiring at wages that are lower than those paid to incumbent workers has declined and the share of employers hiring at higher wages has increased, and even more than doubled, suggests that there has been a slight increase in the level of tightness in the labour market in 2010–2013.

5. Price changes

This section presents information on the frequency of price changes. The firms were asked how and how often they typically changed the price of their main product in 2013. The findings show that around 28% of the firms change prices with a regular time pattern and 75% do it whenever costs or demand change (see Table 19). In both cases, the predominant frequency of price changes is once a year. However, among those changing prices whenever costs or demand change, the share of firms indicating more frequent changes is higher than for firms changing prices with a regular time pattern.

Table 19: Share of firms changing prices with different frequencies

	On a regular time pattern (27.7%)	Whenever costs or demand changed (75.0%)
Daily	0.6	7.0
Weekly	6.7	4.0
Monthly	3.8	7.7
Quarterly	5.4	9.9
Half-yearly	3.9	8.5
Once a year	50.3	29.1
Between one and two years	25.8	11.5
Less frequently than once every two years	1.5	3.7
Never	0.0	1.6
Don't know	2.0	17.1

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

The firms were also asked whether they changed the frequency of price changes in 2010–2013 from the period before 2008. Around 67% of the firms said that the frequency of price changes had remained the same in 2010–2013. However, around 24% of the firms said that the frequency was higher than in the period before 2008 (see Table 20). Those firms changing the frequency of price changes were also asked about the reasons for the lower or higher frequency. The results suggest that in general the changes in price change frequencies are associated with competition: around 84–85% of the firms with a higher price change frequency link it to stronger competition and more frequent price changes by their main competitors. But more volatile demand also mattered for around 77% of the firms. The reasons for the lower frequency seem to come from the same factors, only in the opposite direction.

Table 20: Share of firms for which the frequency of price changes changed in 2010–2013 and the share of firms indicating that any given factor was relevant or very relevant for the increase or decrease in the price change frequency

Higher frequency: 23.9%	
More volatile demand	77.4
More frequent changes in labour costs	44.6
More frequent changes in other input costs	64.1
Stronger competition in the main product market	84.8
More frequent price changes by main competitors	83.9
Lower frequency: 8.8%	
Less volatile demand	74.0
Less frequent changes in labour costs	54.4
Less frequent changes in other input costs	55.1
Weaker competition in the main product market	68.2
Less frequent price changes by main competitors	63.2

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

6. Conclusion

The findings of the WDN survey conducted in 2014 show that the most important shocks that Estonian firms experienced during the crisis are the decline in the level of demand and the decline in the ability of customers to pay, which were experienced by 58% and 44% of the firms respectively. Although the financial crisis led to a sharp decline in credit flows, the findings show that the number of firms experiencing a decrease in access to financing was relatively modest.

The survey confirms that the rapid recovery of the Estonian economy was facilitated by the relatively flexible labour market. During the deepest crisis in 2008–2009 around 54% of the firms had to reduce labour inputs or to alter their composition and 40% of the firms had to cut base wages. The cross-country evidence from the previous WDN survey shows that firms in most European countries did not cut base wages even in the aftermath of the deep economic downturn that occurred in 2009. Estonia was an exception as it was the only country participating in the 2009 WDN survey where a large share of firms reduced base wages in response to the decline in demand⁹ (Dabušinskas and Rõõm (2011)). This demonstrates substantial downward wage flexibility during the recent crisis, and meant that Estonia managed to carry out an internal devaluation, which in turn facilitated the subsequent and relatively rapid recovery of the Estonian economy.

The findings suggest that the institutional framework of the Estonian labour market is perceived as being rather flexible. Most of the employers do not see either firing or hiring costs as obstacles to hiring workers. The employment protection legislation reform of 2009, which reduced the costs of terminating employment relationships, clearly contributed to the labour market flexibility in Estonia. The findings show that a considerable share of employers have perceived a relaxation in the labour laws regulating layoffs and dismissals. Furthermore, the findings suggest that the employers have actually benefited from this relaxation, since the share of firms using collective and individual layoffs was much higher among those who find that laying off employees both collectively and individually has become less difficult.

It also appears that most of the firms do not consider the risk that labour laws may change to be relevant, which suggests that most of the employers feel confident about the institutional framework of the Estonian labour market and consider it quite stable. However, the main difficulties that Estonian

⁹ The 2009 WDN survey covered 11 countries: Austria, Belgium, Cyprus, the Czech Republic, Estonia, France, Italy, the Netherlands, Luxembourg, Poland, and Spain.

firms face regarding labour force adjustment are related to hiring workers, both in terms of finding suitable employees with the required skills and in setting their wage levels. This indicates some degree of tightness is present in the Estonian labour market. In addition, high payroll taxes are also considered an obstacle to hiring workers. Other challenges that Estonian firms face are uncertainty about economic conditions, volatile demand, and increasing competitive pressure. However, financial constraints seem to be relevant for only a modest share of firms.

The results of the survey indicate that the crisis has led to changes in firms' strategies in terms of wage changes. A comparison of the distributions of wage change frequencies in the current and the previous surveys suggests that the frequency of wage changes has decreased in Estonia during and after the crisis. According to the 2007–2008 WDN survey the most common frequency of wage changes was annual and only 10% of firms changed wages less frequently. The results of the 2014 survey show that in 2008–2013 more than half of the firms changed wages with a lower than yearly frequency.

Regarding price changes, it appears that most of the firms did not change the frequency of price changes in 2010–2013. However, around one quarter of the firms said that the frequency was higher than before the crisis. In general, the higher frequency is associated with stronger competition and more frequent price changes by their main competitors. But more volatile demand has also mattered for a large share of the firms in changing their prices more frequently.

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Appendix 1: Probabilities of experiencing negative economic shocks during 2008–2009 and 2010–2013, estimations of probit models (marginal effects)

	Probability of experiencing decrease in...							
	... the level of demand		... access to financing		... customers' ability to pay		... availability of supplies	
	2008–2009	2010–2013	2008–2009	2010–2013	2008–2009	2010–2013	2008–2009	2010–2013
Manufacturing (base business services)	0.325*** (0.091)	0.072 (0.057)	0.001 (0.094)	0.041 (0.029)	0.178* (0.092)	-0.067 (0.058)	0.172*** (0.063)	0.060 (0.037)
Construction (base business services)	0.290*** (0.091)	0.095 (0.076)	0.084 (0.119)	0.019 (0.031)	0.346*** (0.093)	0.086 (0.071)	0.275*** (0.069)	0.125** (0.059)
Trade (base business services)	0.297*** (0.093)	-0.044 (0.067)	-0.007 (0.116)	-0.030 (0.038)	0.283*** (0.083)	0.029 (0.060)	0.090 (0.071)	0.046 (0.043)
20–49 employees (base 5–19 employees)	0.037 (0.057)	-0.020 (0.040)	0.013 (0.053)	-0.037 (0.026)	0.044 (0.057)	-0.063* (0.038)	0.018 (0.049)	-0.010 (0.031)
50–199 employees (base 5–19 employees)	0.007 (0.080)	-0.115** (0.054)	0.088 (0.071)	-0.061** (0.028)	0.026 (0.079)	-0.118** (0.051)	0.032 (0.056)	-0.029 (0.034)
200–... employees (base 5–19 employees)	-0.022 (0.121)	-0.081 (0.079)	0.192 (0.142)		-0.119 (0.099)	-0.086 (0.074)	0.148* (0.076)	-0.020 (0.062)
Exporter	-0.029 (0.081)	0.013 (0.048)	-0.033 (0.089)	-0.003 (0.025)	0.148** (0.071)	0.060 (0.045)	0.075 (0.056)	0.029 (0.035)
Nr of obs	446	469	446	444	446	469	446	469
Population employment size	294250	304341	294250	242925	294250	304341	294250	304341

Notes: Survey estimation. Marginal effects reported. Standard errors in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: Estonian WDN Survey 2014, author's calculations.

Appendix 2: Probabilities of considering at least one of the financial constraints relevant during 2008–2009 and 2010–2013, estimations of probit models (marginal effects)

	2008–2009	2010–2013
Manufacturing (base business services)	0.145** (0.057)	0.137** (0.054)
Construction (base business services)	0.119** (0.048)	0.117*** (0.045)
Trade (base business services)	0.094* (0.056)	0.031 (0.051)
20–49 employees (base 5–19 employees)	0.046 (0.040)	–0.024 (0.038)
50–199 employees (base 5–19 employees)	–0.017 (0.050)	–0.069 (0.045)
200–... employees (base 5–19 employees)	–0.312*** (0.098)	–0.333*** (0.095)
Exporter	–0.027 (0.044)	0.027 (0.039)
Nr of obs	446	469
Population employment size	294250	304341

Notes: Survey estimation. Marginal effects reported. Standard errors in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: Estonian WDN Survey 2014, author’s calculations.

Appendix 3: Probabilities of needing to reduce labour inputs or to alter their composition in 2008–2009 and 2010–2013, estimations of probit models (marginal effects)

	Need to reduce labour input or to alter its composition during 2008–2009	Need to reduce labour input or to alter its composition during 2010–2013
20–49 employees (base 5–19 employees)	0.035 (0.048)	–0.048 (0.036)
50–99 employees (base 5–19 employees)	0.101* (0.060)	–0.053 (0.044)
100–... employees (base 5–19 employees)	0.380*** (0.086)	–0.037 (0.060)
Manufacturing (base business services)	–0.033 (0.069)	0.018 (0.048)
Construction (base business services)	0.073 (0.064)	0.073* (0.043)
Trade (base business services)	–0.033 (0.070)	–0.054 (0.048)
Exporter	–0.062 (0.058)	–0.048 (0.037)
Decline in the level of demand	0.313*** (0.050)	0.165*** (0.039)
Decline in the access to external financing	0.149** (0.069)	–0.057 (0.051)
Decline in the customers' ability to pay	0.033 (0.051)	0.086* (0.045)
Decline in the availability of supplies	0.079 (0.067)	–0.007 (0.049)
Credit constrained	0.142** (0.057)	0.136*** (0.039)
Nr of obs	446	469
Population employment size	294250	304341

Notes: Survey estimation. Marginal effects reported. Standard errors in parentheses. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: Estonian WDN Survey 2014, author's calculations.

Appendix 4: Share of firms indicating that a given factor has mattered for a particular action becoming more or less difficult

		More difficult			
		Reforms of labour laws	Jurisprudence/ law enforcement	Changes in trade union behaviour	Changes in individual behaviour
2008–2009	Laying off employees for economic reasons collectively	41.9	32.6	2.8	22.7
	Laying off employees for economic reasons individually	33.4	26.9	0.0	39.7
	Dismissing employees for disciplinary reasons	38.8	35.5	0.0	24.6
	Hiring employees	11.5	12.9	0.0	75.5
	Adjusting working hours	13.0	13.0	6.5	67.6
	Moving employees to other locations	26.6	26.6	0.0	46.8
	Moving employees to other job positions	36.1	10.4	1.1	52.3
	Lowering wages at which new employees are hired	18.2	6.2	3.7	71.9
2010–2013	Laying off employees for economic reasons collectively	43.7	21.7	0.0	34.5
	Laying off employees for economic reasons individually	34.6	13.6	1.7	50.1
	Dismissing employees for disciplinary reasons	33.4	10.9	0.6	55.1
	Hiring employees	9.2	4.4	0.0	86.4
	Adjusting working hours	10.1	14.2	1.1	74.5
	Moving employees to other locations	9.7	11.4	6.7	72.2
	Moving employees to other job positions	11.8	10.8	4.9	72.5
	Lowering wages at which new employees are hired	6.1	5.4	0.6	87.9
		Less difficult			
		Reforms of labour laws	Jurisprudence/ law enforcement	Changes in trade unions behaviour	Changes in individual behaviour
2008–2009	Laying off employees for economic reasons collectively	40.1	18.6	0.5	40.8
	Laying off employees for economic reasons individually	41.9	17.9	0.0	40.2
	Dismissing employees for	43.6	28.1	0.6	27.7

	disciplinary reasons				
	Hiring employees	12.6	8.7	0.0	78.7
	Adjusting working hours	23.2	19.4	1.6	55.8
	Moving employees to other locations	27.3	20.9	1.4	50.4
	Moving employees to other job positions	21.9	12.7	0.0	65.3
	Lowering wages at which new employees are hired	12.6	6.6	0.0	80.8
2010–2013	Laying off employees for economic reasons collectively	43.9	50.7	0.5	4.9
	Laying off employees for economic reasons individually	52.6	37.4	0.4	9.6
	Dismissing employees for disciplinary reasons	42.1	19.7	4.8	33.4
	Hiring employees	34.0	14.9	0.0	51.0
	Adjusting working hours	31.0	30.2	0.0	38.8
	Moving employees to other locations	33.5	23.5	0.0	43.0
	Moving employees to other job positions	29.6	19.7	0.0	50.7
	Lowering wages at which new employees are hired	31.4	31.8	0.0	36.8

Note: Figures are weighted using employment-adjusted weights.
Source: Estonian WDN Survey 2014, author's calculations.

Appendix 5: Share of firms using collective layoffs and individual layoffs for labour cost reduction

		2008–2009	2010–2013
	Collective layoffs		
Share of firms among those who say that laying off employees for economic reasons collectively has...	... become less difficult	24.0	26.7
	... become more difficult or been unchanged	21.9	7.1
	Individual layoffs		
Share of firms among those who say that laying off employees for economic reasons individually has...	... become less difficult	36.5	58.6
	... become more difficult or been unchanged	44.3	30.7

Note: Figures are weighted using employment-adjusted weights.

Source: Estonian WDN Survey 2014, author's calculations.

Appendix 6: Share of firms indicating that any of the obstacles to hiring workers is relevant or very relevant

	Share of firms among those who say that hiring employees has...	
	... become more difficult	... become less difficult or been unchanged
Uncertainty about economic conditions	55.9	66.2
Insufficient availability of labour with the required skills	95.9	87.6
Access to finance	45.4	46.0
Firing costs	38.8	34.4
Hiring costs	44.8	31.8
High payroll taxes	89.8	76.9
High wages	87.7	78.6
Risks that labour laws will be changed	30.8	42.8
Costs of other inputs complementary to labour	46.6	45.6

Note: Figures are weighted using employment-adjusted weights.
Source: Estonian WDN Survey 2014, author's calculations.

Appendix 7: Share of firms indicating that the labour cost of a newly hired worker was lower or higher than that of incumbent workers

		Share of firms among those who say that lowering wages at which new employees are hired has...	
		... become less difficult	... become more difficult or been unchanged
2008–2009	Lower	71.2	28.5
	Higher	2.7	11.0
2010–2013	Lower	37.8	27.4
	Higher	26.8	25.6

Note: Figures are weighted using employment-adjusted weights.
Source: Estonian WDN Survey 2014, author's calculations.

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