Labour market adjustments in Estonia during the 2008/2011 crisis

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Abstract

This article provides an assessment of labour market adjustments occurring in Estonia during the 2008/2011 crisis. The strategy of internal devaluation succeeded in shrinking the real (hourly) unit labour costs by 25 % per year in 2010 and 2011, thus helping Estonian enterprises gain international competitiveness. The whole gamut of tools available in terms of flexibility was used, at least in the worst time of the financial crisis: massive lay-offs, reduced working time and wage cuts. In 2011, Estonia stood as one of the most dynamic EU countries to recover with exports growth. On the social side, however, the track record is not positive: the purchasing power of workers has been reduced and unemployment still remains strong and persistent despite economic recovery.

Keywords: labour market, crisis, Estonia, internal devaluation, wage cuts

JEL classifications: F33, F41, J30, J01

1. Introduction: a buoyant economy building disequilibria in the pre-crisis period

When it entered the European Union (EU) in 2004, Estonia was a very dynamic economy, with an average GDP growth of 8.2 % per year over 2000-2003. Good and even better economic performances were recorded in the years following its EU accession until the financial crisis: the GDP growth was 8.6 % per year over 2004-2007, with some signs of slowdown in the turning of 2008, though. The unemployment rate decreased continuously throughout the period to reach 4.7 % in 2007, its lowest level since the transition towards market economy in Estonia.

However, the growth model of Estonia was no longer sustainable, being too largely based on domestic drivers[1]. In particular, private consumption,

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financed by the widespread credit to households and very dynamic wages, was the most important contributing factor to GDP over 2004-2007, accounting for 67 % of the GDP growth over the period (compared to 56 % over 2000-2003). By contrast, external drivers were working poorly and Estonia accumulated a huge current account deficit reaching 17 % of GDP in 2007. Yet, consumption goods accounted for the bulk of trade balance disequilibria, while intermediate and investment goods were mainly in balance and primary goods in a slight surplus (Antonin and Levasseur, 2010).

In terms of economic activity sectors, such a growth model means that the manufacturing sector made a low contribution to the GDP growth, in particular in the pre-crisis period (Price and Wörgötter, 2011). For instance, in 2007, the manufacturing sector contributed for only 9 % to the GDP growth (compared to 27 % over 2000-2003) while those of construction, wholesale & retail trade, financial intermediation and real estate contributed altogether for 63 % (49 % over 2000-2003).

To a certain extent, the year 2004 was a turning point in Estonia: the domestically-based growth model was endorsed, fuelled by credit to households and financed by foreign debt. It was accompanied by a boom in real estate and construction sector. Last, labour shortages or fear of them – due to the possibility for Estonian workers to work in other EU countries – exerted strong pressures on wages growth. In particular, wages growth was largely exceeding labour productivity growth, which undermined the competitiveness of Estonian companies (Levasseur, 2009; Purfield and Rosenberg, 2010; Rosenberg, 2008). Over-optimistic expectations about the future – a lot of them related to the EU membership – were another explanatory factor for both large wage increases and household credit boom. At this time, Estonia, altogether with Latvia and Lithuania, were called the Baltic tigers.

However, in the course of the 2007 winter, the first slowdown signs were already present and Estonia faced mounting external pressures (Rosenberg, 2008). Then, when Lehman Brothers went bankrupt in September 2008, Estonia experienced large capital outflows, thus further precipitating its economy into recession[2]. At this time, Estonia had to decide on either devaluating or not the external value of its currency and finally opted to maintain its currency board with further steps undertaken for a speedy euro adoption[3]. Instead, a strategy of internal devaluation consisting in curbing wages to gain a competitive edge by

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[1] The two other Baltic States (namely Latvia and Lithuania) share a lot of similarities to Estonia in terms of growth model (see Brixiova, Vartia and Wörgötter, 2009; Darvas et al., 2011; European Commission, 2010; Levasseur, 2009).

[2] To a very large extent, Latvia and Lithuania followed a similar path than Estonia. In December 2008, Latvia asked for a bailout from the European Union and the IMF while maintaining its fixed exchange rate arrangement.

[3] See Box 1 on the arguments against currency devaluation in Estonia.

pushing down local prices was implemented under the impetus of government. Another component of the strategy was a tightening in public expenditures to help push down prices, to reinforce credibility and to meet the 3 % limit in fiscal deficit of the Maastricht criteria in order to adopt the euro. Yet, in the course of 2009, further flexibility on the labour market and greater social security provisions to workers were legislated to tackle the recession (see Box 2).

The economy of Estonia has been strongly hit by the global crisis: the GDP fell by 3.7 % in 2008, then by 14.3 % in 2009. Recovery occurred in 2010 with a GDP growth of 2.3 % while pursuing in 2011 with an impressive figure of 7.6 %.

The goal of this article is to analyse the adjustment of the Estonian labour market in the context of the global crisis. In particular, did it succeed in restoring competitiveness of the economy? And how harmful for workers was the strategy of internal devaluation? The remaining of the article is as follows. Section 2 gives a decomposition of the dynamics in unit labour costs, thus adopting the viewpoint of an employer. We consider the unit labour cost for the total economy and the manufacturing sector, with a focus on the latter as this sector is more concerned with international competition. Section 3 adopts the viewpoint of workers by analysing the impact of adjustments on their purchasing power and employment opportunity. Section 4 presents briefly institutional features and societal characteristics of Estonia. Then, section 5 provides an overview on the gains of international competitiveness. Section 6 concludes.

Box 1: Arguments against a currency devaluation in Estonia*

• *The devaluation would cause a surge in inflation through imports prices*
The prices of final consumption goods which are imported would go up as well as those of intermediate and raw materials which are imported to be processed in Estonian products. That would cause a surge in consumer price index (CPI), thus delaying the euro adoption which requires a low CPI inflation to be selected. Another consequence would be probably an unbroken "price/wage" spiral, as workers would demand higher nominal wages to compensate for higher inflation.
• *The devaluation would be harmful for borrowers who have loans denominated in euros as their repayment would grow from the same amount than the devaluation*
In Estonia, around 90 % of private loans are denominated in euros. Yet, some households are very heavily indebted (Herzberg, 2010). Without any discount, they would go bankrupt in case of currency devaluation amounting to 15-20 % (as evaluated by commentators), causing in turn losses in the banking sector.
• *The positive effects of devaluation on exports would be small, anyway.*
In particular, in the context of a weak global demand [as in 2008/2009], no strong increase in exports could be expected from a devaluation.
• *Other negative aspects would include a loss of credibility, thus resulting in a higher international borrowing cost*
* To a very large extent, similar arguments against devaluation hold for the two other Baltic States.

2. A decomposition of the dynamics of unit labour costs during the crisis

This section aims at giving insights on how labour unit costs have developed in Estonia since the beginning of the global crisis[4]. We adopt an *hourly* perspective rather than a *per worker* perspective to stress on how employers have used the worked hours *per* worker to adjust the impact of the global crisis[5]. In Appendix 1, we provide a technical note on the decomposition of unit labour costs.

2.1. The fall in wages and its impact on labour cost

At the very beginning of the global crisis, it became clear that the previous wages policy implemented in Estonia – as well as in the other two Baltic states – should be halted, as the wage growth was largely outstripping the productivity growth (Levasseur, 2009; Purfield and Rosenberg, 2010). The government of Estonia decided on some cuts of wages in the public sector, hoping for a "demonstrating" effect on the private sector[6]. Looking at the data[7], it appears that the growth rates of nominal labour cost have decreased substantially: peaking at more than 20 % at the end of 2007, it turned to be negative in the course of 2009 (Graph 1). The fall in nominal labour cost was smaller and of shorter duration in the manufacturing sector than in other sectors of the economy, though. Since 2009, the largest cumulated falls in nominal labour costs have been recorded in the construction sector, then in public services (Table 1). In the last quarter of 2011, the average hourly labour costs (for the total economy) stood at 7.5 euros *per* hour, as in the public and market services but slightly higher than in the manufacturing sector (7.3 euros) and lower than in the construction sector (7.9 euros).

However, once prices development in Estonia considered, there is no doubt that the real labour cost in the manufacturing sector has substantially decreased over 2010 (Table 2). In particular, the hourly labour cost decreased by 6.8 % in 2010 when the export price index is used as a deflator (4.4 % when the producer price index is used instead). As a result, 2010 was very successful in

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[4] European Commission (2011) also provides an analysis of labour market developments at the country level during the global crisis. In this paper focusing on Estonia, we give more details on the dynamics at work. Moreover, we cover the 2011 year that is, one more year than in European Commission (2011) which allows a better understanding of the benefits and costs associated to an internal devaluation.

[5] Hijzen and Venn (2010) provide evidence that the reduction in working time has been used in 16 OECD countries out of 19 during the global crisis. See as well Cahuc and Carcillo (2011) on short-time work schemes adopted to tackle the recession.

[6] See LRD (2011) for a description of wage cuts in the public sector of Estonia and in other EU countries which followed this strategy.

[7] A table in Appendix 2 provides a link towards all series of data used by the author.

alleviating labour costs of Estonian enterprises. A similar conclusion holds for 2011. In particular, the hourly labour cost deflated by the export price index is pursuing its decreasing trend (-5.1 % in 2011).

Graph 1. Nominal *hourly* labour cost in Estonia (growth rate, in %)
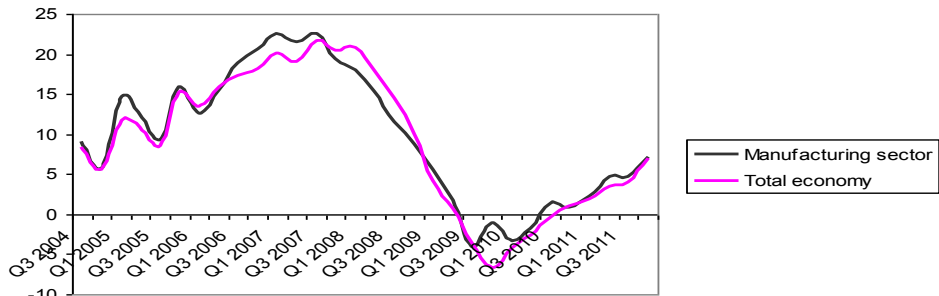
Source: Central Bank of Estonia, own computations

Table 1. Nominal *hourly* labour cost in Estonia, by large sector

	Level 2007 in euros	Growth (year-on-year), in %				Level 2011Q4 in euros	Cumulated gains (+) or losses (-) since 2009 in % points
		2008	2009	2010	2011		
Total	6.4	15.8	-1.3	-1.6	4.1	7.5	1.2
Manufacturing	6.1	13.4	0.5	-0.8	4.7	7.3	4.4
Construction	7.2	12.4	-7.7	-1.3	0.9	7.9	-8.2
Market services*	6.3	15.1	0.0	-4.6	7.3	7.5	2.7
Public services*	6.8	18.9	-3.6	2.2	-2.3	7.5	-3.7

* The public services consist of public administration, defence and compulsory social security, education and health sectors. The market services consist of remaining services sectors.

Source: Central Bank of Estonia, computations of the author

Table 2. Real *hourly* labour cost in manufacturing sector of Estonia – different index prices –

	2008	2009	2010	2011
Producer price index (PPI) deflator	7.4	2.8	-4.4	-0.1
Export price index (EPI) deflator	9.2	4.2	-6.8	-5.1

Source: Central Bank of Estonia, computations of the author.

2.2. The fall in employment and hours worked

In Estonia, employment began to drop sharply at the very beginning of the global crisis. In particular, in the manufacturing sector, some 15.4 % of the workforce was laid-off in 2009, and another 5.4 % in 2010 (Table 3). For the

total economy, employment decelerated by respectively 9.9 % and 4.7% over 2009 and 2010.

Changes in worked hours – due to part-time working plans or unpaid holidays – had a protecting effect on Estonian employment, especially in 2009. According to our estimates, around 25,000 jobs were saved as early as the first quarter of 2009 due to reductions in working time (Graph 2)[8]. That would account for 3.5 % of the Estonian labour force. The average hours worked *per* worker have declined by 1.1 % in 2008, and then by 2.3 % in 2009 (Table 3). The reduction in working time was even larger in the manufacturing sector, especially in 2009 with a decline of 3.2% in the average worked hours *per* worker. With the recovery in 2010, the average number of worked hours has been adjusted upward, increasing by 2.1 % in the total economy and 5.1 % in the manufacturing sector. Further gains in worked hours were reported for 2011.

Table 3. Decomposing growth of *hourly* labour productivity in Estonia

| Total economy[a]	Productivity (1) =	Value added (2) −	Employment (3) −	Hours (4)
2008	-2.7	-3.6	0.2	-1.1
2009	-1.9	-14.2	-9.9	-2.3
2010	4.8	2.2	-4.7	2.1
2011Q3*	-0.8	8.8	7.7	1.9
Manufacturing[b]	Productivity (1) =	Value added (2) −	Employment (3) −	Hours (4)
2008	-10.1	-8.1	3.2	-1.3
2009	-7.0	-25.5	-15.4	-3.2
2010	21.6	21.3	-5.4	5.1
2011Q3*	14.9	32.1	15.6	1.6

* With respect 2010Q3
[a] GDP at market price, chain-linked volume.
[b] Value added, chain-linked volume.
Source: Central Bank of Estonia; computations of the author.

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[8] In a publication of 2010, the Bank of Estonia has reported a saving of 50 000 jobs for 2009. Since then, revisions in worked hours and employment data have reduced the estimates of jobs saved.

Graph 2. Estimates of jobs saved in Estonia due to part-time working plans
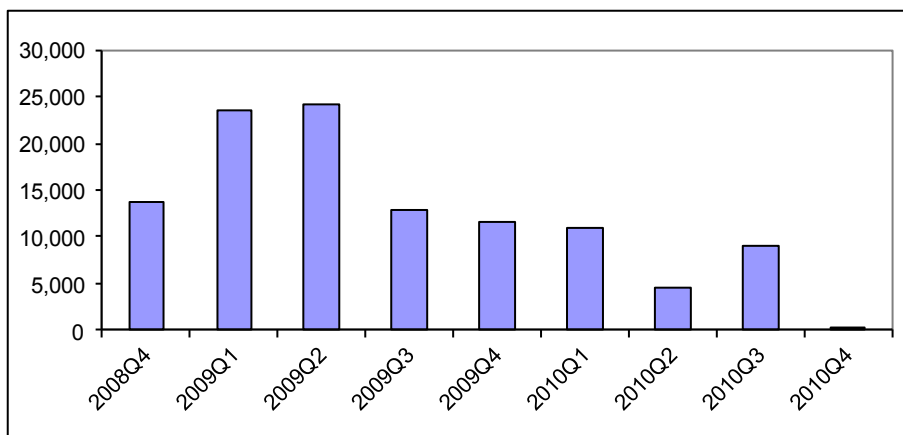
Source: Central Bank of Estonia; computations of the author.

2.3. The impact on *hourly* productivity and (real) unit labour cost

As summarized in Table 3, the hourly productivity in the Estonian manufacturing sector was considerably deteriorated in 2008 and 2009 while they substantially recovered in 2010. Over 2009, the massive layoffs (-15.4 %) and reduction in worked hours (-3.2 %) were not sufficient to compensate the dramatic fall in the volume of value added in the manufacturing sector (-25.5 %): the productivity *per* hour declined by 7 %. Over 2010, as the economic situation improved, the demand of labour was immediately met by increases in working hours (+5.1 %) while employment initially continued to decline (-5.4 %). With a 21.3 % growth in value added, the productivity *per* hour in the Estonian manufacturing sector surged by 21.6 %. For the total economy, the growth rate of productivity *per* hour in 2010 is less impressive (+4.8 %), but still in line with its pre-crisis levels. In 2011, the growth of productivity in the manufacturing sector remained on a high trend, with a +14.9 % over the first quarters.

Combined with developments in hourly labour cost (reported in tables 1 and 2), it is clear that the (real) unit labour cost increased sharply throughout 2008 and 2009 while decreasing strongly over 2010 and 2011 (Table 4). This substantial improvement of competitiveness in 2010 and 2011 surely has helped considerably Estonia in resuming with export-led growth (see below).

Table 4. Growth of real *hourly* unit labour cost in manufacturing sector of Estonia

– different index prices –

	Producer price index (PPI) deflator	Export price index (EPI) deflator
2008	17.6	19.3
2009	9.9	11.2
2010	-26.0	-28.4
2011Q3*	-22.4	-27.2

 * With respect 2010Q3.

Source: Central Bank of Estonia; computations of the author

3. The labour market adjustment in Estonia during the crisis and its impact on workers

3.1. Its impact on the purchasing power of workers

While the fall in labour costs allowed Estonian firms to restore their international competitiveness, it came at a cost of a lower purchasing power for Estonian workers. In particular, a reduced working time, combined with a fall in wages, have induced a drop in the *monthly* net wages of employees in 2009. With virtually no consumer prices inflation, the drop was around 4.5 % in 2009 in both nominal and real terms (Table 5).

Table 5. Growth of *monthly* net wages in Estonia (in %)

	Nominal (net)	CPI inflation	Real (net)
2008	15.1	10.4	4.7
2009	-4.6	-0.1	-4.5
2010	-0.2	3.0	-3.2
2011Q1**	4.8	5.3	-0.5

* Net from labour taxes and unemployment insurance premium.
**Average over Q1-Q3.

Source: Central bank of Estonia; computations of the author.

Another contributing factor to the drop was the rise of unemployment insurance premium, from 0.6 % to 2 % in June 2009, and then to 2.8 % in August 2009. Throughout 2010, the real monthly net wages continued to decline (-3.2 %), mainly as a result of a surge in consumer prices inflation which was largely driven by food and commodity prices. During the first three quarters of 2011 (last data available), higher hourly wages and working time were not sufficient to compensate vigorous consumer prices inflation: the real monthly net

wages decreased by 0.5 %. To sum up, the cumulated loss of purchasing power by an Estonian employee has been 8.2% since 2009 or, scaled differently, equivalent to 17.3 % of his gains in purchasing power obtained over 2004-2008.

3.2. Its impact on unemployment

The economic crisis had huge consequences on unemployment. According to the Labour force Survey, the unemployment rate began to increase in fall 2008, tripling between 2008 and 2009 to reach 13.8 % in 2009 and then 16.9 % in 2010 (Table 6).

Table 6. Some statistics on unemployed and unemployment benefits

	2008	2009	2010	2011
Unemployment rate (in %) according to				
• Statistics Estonia (based on Labour Force Survey)	5.5	13.8	16.9	12.4
• Estonian Unemployment Insurance Fund (based on registrations)	3.0	10.2	12.3	8.4
Share of unemployed receiving unemployment benefits (insurance and allowances)				
• as a share of new registred unemployed (in %)*	73%	77%	65%	52%
• as a share of total registred unemployed (in %)*	56%	60%	46%	27%
• as a share of total unemployed (in %)**	31%	44%	33%	18%
Average unemployment insurance benefit payment (*per* beneficiary and month)				
• in euros	228	284	263	257
• as a share of minimum wage (in %)***	82%	102%	95%	92%
Unemployment rate (in %) by groups				
Sex • Male	5.8	16.9	19.5	13.1
• Female	5.3	10.6	14.3	11.8
Age • 15-24 old	12.0	27.5	32.9	22.3
• 25-54 old	4.8	12.9	15.2	11.6
• 55-64 old	4.1	9.4	16.2	11.6
Citizenship • Estonian	4.2	11.0	13.4	9.7
• Non-estonian	8.2	19.0	23.4	18.2
Education • Low educated (below upper secondary education)	12.0	28.6	30.9	26.2
• Middle educated (secondary education)	5.8	15.8	19.3	12.8
• High educated (tertiary education)	2.9	6.2	9.3	8.0
Unemployment rate (in %) by duration				
• Less than 6 months	52.9	51.8	32.8	30.5
• 12 months or more	30.7	27.4	45.4	56.8

* Based on unemployed people registered to the Estonian Unemployment Insurance Fund.
** Based on unemployed people according to the Labour Force Survey.
***The minimum wage is set to 278 euros per month since 2008.
Sources: Central bank of Estonia; Estonian Unemployment Insurance Fund; own computations.

Figures reported by the Estonian Unemployment Insurance Fund are lower as some unemployed persons are not registered to the Fund[9]. But the two

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[9] Registration depends on the position over the business cycle as well as the benefits accompanying the registration (unemployment insurance, unemployment benefits, health

alternative unemployment rates are in line, with a rise from 2008 to 2010 and then a decrease over the first semester of 2011. At the end of December 2011 (last figures available for both rates), the unemployment rate stood at 11.4 % according to the Labour force Survey and 7.3 % according to the Estonian Unemployment Insurance Fund.

Among groups, those of males, young, non-Estonians and low-educated have suffered the most as a consequence of labour market adjustments in 2009 and 2010, falling in unemployment relatively more than females, middle-aged, Estonians and highly-educated (Table 6). The highest unemployment rate remains for the group of young, with more than 22 % of them being unemployed in 2011 (33 % in 2010). People with a low-education constitute another group where unemployment rate stood at a high level (around 26 % in 2011). Yet, with the global crisis, long-term unemployment has surged: some 57 % of unemployed were without job for more than 12 months in 2011 (compared to 31 % in 2008) while those in unemployment for less than 6 months accounted for 31 % (compared 53 % in 2008).

Despite the recovery in 2010 and 2011, the unemployment rate remains high in Estonia for several reasons. First, gains in productivity have enabled the production *ceteris paribus* of more goods and services *per* employee, thus reducing the need of hiring new workers to face higher demand for goods and services. Yet, the negative side of the flexible working time arrangement is that a recovery in production does not necessarily induce a recovery in employment of the same magnitude, as a higher need for hours worked is fulfilled by incumbent workers (see Table 3).

Second, the pre-crisis structure of the economy is no longer sustainable. Workers from previously booming sectors (construction, real estate), who lost their job during the crisis, could not get a job in the same sectors: they have to be trained to get a job in sectors where recovery occurs. In particular, employment in the construction sector accounted for 87,400 persons at its peak (reached in the third quarter of 2007) or, put differently, for more than 13 % of the total Estonian employment. At the end of 2011, some 63,800 persons were engaged in the construction sector, thus regaining "only" 23,200 persons since the trough. At the same time, as 62,000 persons corresponds roughly to the number of the hired people at the beginning of the boom in the construction sector, there is little hope to get massive employment opportunity in the construction sector in the future.

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insurance and training courses). As the legislation regarding benefits changed in the mid-2009 and became more generous, the share of registered unemployed in total unemployed jumped from 55 % in 2008 to 74 % in 2009.

3.3. Its impact on benefits of the unemployed

Looking at benefits, due to changes in legislation (see Box 2), the share of the unemployed receiving unemployment benefits has increased in 2009 to amount 77 % of the newly registered, 60 % of the total registered and 44 % of the total unemployed (Table 6). However, with the protracted period of bad economic times, the share of the unemployed receiving benefits has decreased steadily, with only 52% of the newly registered receiving unemployment benefits in 2011 as more unemployed entered the labour market without meeting the requirements for receiving benefits (mainly young people). As a share of total registered, slightly more than one quarter (27 %) have received benefits while the figure falls at 18 % for the share of the total unemployed, which is clearly a small percentage.

The average unemployment insurance benefit payment *per* beneficiary has increased in 2009 to reach 284 euros, accounting for slightly more than 100 % of the Estonian minimum wage. As the minimum wage stands at a particular low level in Estonia (accounting for 35 % of the average national wage in 2009 (as compared to 60 % in most EU countries), that means that the unemployment benefit system is not particularly generous despite steps taken towards higher provisions with the new Employment Act (see Box 2). The gradual reduction in unemployment benefits, combined with a longer time in unemployment, has induced a decrease in the average unemployment benefit payment over the time: for the first semester, it amounts at 257 euros or 92 % of the Estonian minimum wage.

3.4. Its impact on migration

In Estonia, net emigration has substantially recovered in 2010 to reach around 2,500 persons (or $1.9^{0/00}$ of population) against 700 persons *per* year over 2008-2009 (Table 7)[10]. Two main flows explain the recovery in net emigration. First, there is a rebound in outflows, especially towards Finland which constitutes the main country of destination of emigrants. Estonian citizens accounted for the bulk of this outflow (+17.4 % over 2009/2010). Second, inflows of population have recorded a very sharp decline, especially those of non-Estonian citizenship (-46.2 % over 2009/2010). By contrast, the so-called return immigration has only slightly declined over 2008-2010.

A high persistency of unemployment in Estonia, despite the economic recovery in 2010, has prompted some Estonian workers to go abroad (and, in the first instance, to Finland where wages are higher). Similarly, workers from abroad have found lower incentives to enter Estonia where employment

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[10] Note that figures reported here are Estonian official data which underestimate the actual level of emigration (as can be seen from receiving countries' statistics).

opportunities were reduced, especially in the construction sector which attracted a large share of immigrants in Estonia during the pre-crisis period[11]. Rather paradoxically, if outflows of Estonians workers were to continue in the future, a shortage of some skills (or at least a mismatching), as experienced in the pre-crisis period, thus exerting again wage pressures would be created. If a portion of wage increases observed since the beginning of 2011 (Table 1) may be explained by a recovery of emigration is however out the scope of this paper as no data are available for the first quarters of 2011.

Table 7. Outflows and inflows of population in Estonia

Emigration (A)	Total	Share of Estonian citizenship	Share of non-Estonian citizenship	1st country of destination: Finland
2008	4406	88%	12%	62%
2009	4658	85%	15%	59%
2010	5294	88%	12%	66%

Immigration (B)	Total	Share of Estonian citizenship	Share of non-Estonian citizenship	1st country of origin: Finland
2008	3671	47%	53%	31%
2009	3884	43%	57%	31%
2010	2810	57%	43%	36%

Net emigration (A)-(B)	Total	in 0/00 of population
2008	735	0.6
2009	774	0.6
2010	2484	1.9

Source: Central Bank of Estonia, computations of the author

4. Discussion on institutional and societal characteristics of Estonia

So, how to explain that the labour force in Estonia accepts such a painful adjustment in terms of wages cuts and lower employment protection? In particular, why was there a lot more downward flexibility in the wages of Estonia than anywhere else in Europe during the crisis (Table 8)? This is quite surprising for a lot of observers. While the magnitude of the crisis in Estonia (compared to other EU countries) may be a relevant explanatory factor, other explanations are rooted in the institutional framework as well as in societal characteristics of the country[12].

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[11] For a deep analysis of the pre-crisis migration experience in the Baltic labour markets, the reader will consult Hazans and Philips (2011).

[12] European Commission (2011) and LDR (2011) present a discussion on this point as well.

First, the coverage rates of collective bargaining in Estonia are very low by any standard, with only 12 % of firms with a collective bargaining agreement (Table 8). That corresponds to less than 9 % of Estonian employees covered by collective bargaining agreements. Such figures contrast sharply with those reported for other EU countries. In a very deteriorated economic environment – when fears to be unemployed were growing and employment opportunity abroad was reduced –, that means that Estonian workers had only a modest bargaining power to avoid wage cuts. Moreover, as trade unions play a role of minor importance in Estonia, they could not oppose to some practices such as a reduced working time and forced leaves without any monetary compensation.

Table 8. Wages cut/freeze and collective bargaining in international comparison

	Share of enterprises cutting wages*		Share of enterprises freezing wages*		Collective bargaining agreement**	
					% of firms with	% of employees covered by
	Did cut	Plan to cut	Did freeze	Plan to freeze		
Austria	1.7	1.5	1.8	8.4	97.8	94.6
Belgium	1.0	1.8	23.7	4.4	99.4	89.3
Czech republic	9.0	3.2	54.6	11.7	54.0	50.2
Cyprus	1.8	2.0	20.6	5.9	..	..
Estonia	**44.1**	**38.6**	**61.5**	**64.6**	**12.1**	**8.7**
Spain	2.6	0.5	26.7	3.7	100.0	96.8
France	1.9	4.7	86.0	83.8	99.9	67.1
Luxembourg	2.0	4.3	31.7	62.8	..	..
Italy	0.3	0.3	46.8	44.5	99.6	97.0
Netherlands	2.6	3.8	15.2	8.7	75.5	67.6
Poland	4.2	1.6	18.0	8.1	22.9	19.3

* Share of enterprises (in %) that have reduced/frozen wages from autumn 2008 to summer 2009 or planned to do. Based on a survey of enterprise managers carried out by central banks of 10 EU member States within the Wage Dynamic Network.

** Either at a "firm-level" or a "higher level".

Source : Tari Room (2010); Babecký et al. (2010) for the data of collective bargaining agreement.

Second, after several years of wage euphoria in the pre-crisis period, workers may have expressed little reluctance to accept wage cuts. Let us keep in mind that over 2002-2008, the monthly net wage has been multiplied by 2.2 in Estonia, which tends to minimize the wage cuts observed in the onset of the global crisis (Table 5). Workers themselves may have found that something was going wrong or was "too good to last". Only little social unrest was recorded in Estonia when the government announced wage cuts in the public sector, thus signalling some acceptance by the population.

Third, and related to the previous point, wage cuts may have been viewed as the ultimate sacrifice towards a full integration into the European sphere[13]. The euro adoption was a key goal in Estonia and devaluating the currency would have delayed this prospect for a very long time. Estonia would have thus turned

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[13] See Dombrovski and Åslund (2011) with a similar argument for Latvia.

its back on nearly twenty years of fixity with respect to the Deutsch Mark and then the euro through its currency board.

Box 2: The new Employment Contracts Act of 2009*

On the 1st July 2009, the new Employment Contracts Act entered into force, changing significantly the labour law in Estonia. Its aim was to make the labour market more flexible while enhancing the social security provisions for workers.

• *Measures for a greater flexibility*[14]

With respect to *working time*, under the new Employment Contracts Act, the employers are no longer obliged to get the permission from the Labour Inspectorate to reduced working time. As under the previous law, employers have the right to implement reduced working time for a maximum of three months during a one-year period. No monetary compensation for time not worked is offered to workers. That differs from the German system – for instance – which offers a 60 % compensation to workers.

With respect to *lay-offs*, the dismissal procedure is made easier by reducing the term of advance notice to terminate an employment contract. For instance, the term of advance notice becomes 15 calendar days if employment relationship is shorter than 1 year and 30 calendar days for employment relationship of 1 to 5 years. To compensate for that, the employer is obligated to provide free time to the employee for job-seeking after giving the advance notice.

With respect to the *financial burden of lay-off compensations*, their payment is now distributed between the employer and the Estonian Unemployment Insurance Fund. In all cases, the employer will pay a lay-off compensation amounting to one month's average wage of the employee. For employment relationship of 5 to 10 years, one additional month of lay-off compensation will be paid by the Unemployment Insurance Fund to the employee (two additional months in case of a relationship over 10 years). The rationality behind such distribution in the financial burden of lay-off compensations is to allow employers to invest in their companies, to continue offering jobs and create new jobs when the situation improves (Tur and Viilmann, 2009).

With respect to *employment contracts*, the conclusion of fixed-term contract is allowed in all cases.

• *Measures for improving the social security provisions*

With respect to *taxes*, the unemployment insurance premiums were increased to cope with the decreasing financial resources of the Estonian Unemployment Insurance Fund in a context of higher lay-offs. The unemployment insurance rates paid by the employees raised from 0.6 % over 2006-May 2009 to 2 % in June 2009 and then to 2.8 % in August 2009. For employers, the corresponding increases were from 0.3 % over 2006-May 2009 to 1 % in June 2009 and then to 1.4 % in August 2009.

With respect to *benefits*, the unemployment insurance system becomes more generous. In particular, the unemployment insurance benefit was increased from 50 % to 70 % of the previous average remuneration during the first 100 days of unemployment, and from

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[14] Lehmann and Muravyev (2011) present evidence that lower employment protection legislation (EPL) enhances labour market outcomes (in the sense of lower unemployment rates and higher employment rates).

40 % to 50 % after that period. In addition, the circle of persons eligible for unemployment insurance benefit was enhanced to include, for instance, those who terminated their employment relationship voluntarily.
• *Other measures for fighting unemployment*
With respect to *job matching and training programs*, the financing is enhanced by using EU funds with the goal to absorb new labour force (students) and workers formerly employed in overheating sectors (construction, real estate) and, more generally, to avoid long-term unemployment.
*The reader can consult Tur and Viilmann (2009) or EIROnline at http://www.eurofound.europa.eu/eiro/

5. Impact on the competitiveness of Estonian enterprises

While it may be still premature to provide a definitive assessment on how successful the strategy of wage cuts in Estonia was, we can give some preliminary positive indicators related to gains in international competitiveness.

First, either based on the producer price index (PPI) or the unit labour cost (ULC), the real effective exchange rate of Estonia in the manufacturing sector is well oriented. Thus, by the end of September 2011, the ULC-based real effective exchange rate had fallen from its peak (reached in the first quarter of 2009) by 26.5% and that in a context of moderate currency depreciations of its main trade partners. This allowed to fully cancel the appreciation in the ULC-based real effective exchange rate that occurred since the end of 2006 in Estonia (Graph 3).

Graph 3. Real effective exchange rate of Estonia (based on unit labour cost) basis 100 = 2006Q1
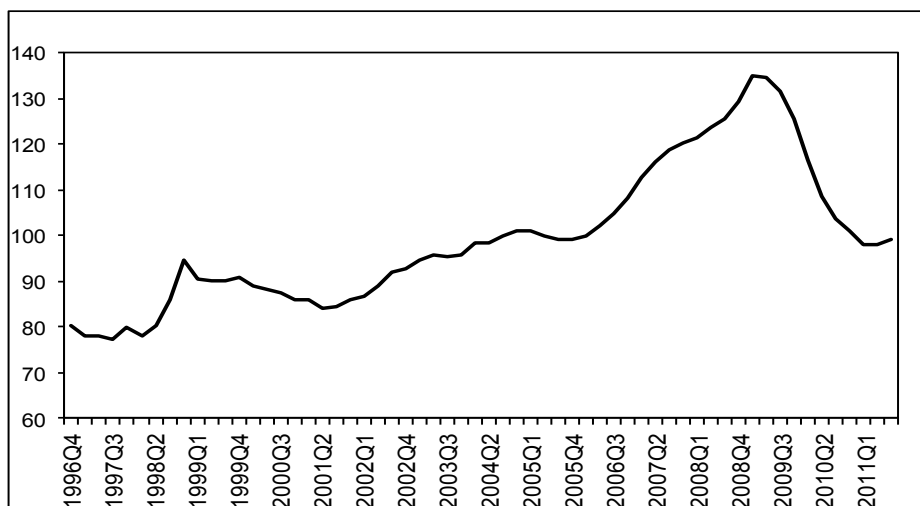
Source: OECD, Main economic indicators.

Second, the growth of exports over 2010 was much more dynamic in Estonia than in any other EU countries, including those with a large depreciation of their nominal exchange rates. Estonian exports surged by some 35 % in 2010. Importantly, all types of manufacturing goods have recorded a strong increase in their exports, with investment goods recording the largest increase (+75 %).

According to Eesti Pank (2011, p.17-18), nearly a third of the strong export growth in recent months may be attributable to the growing competitiveness of the Estonian companies, with two-thirds attributable to the destination market and the specific need of exports partners and exports goods (in particular, demand for investment goods in Nordic countries: Sweden and Finland). Put differently, Estonia would have succeeded in gaining market shares over the last year.

6. Conclusions

Embarking on a strategy of internal devaluation instead of an external one was rather challenging at the time when the global economy was subject to a major turmoil. Estonia, as well as the two other Baltic states, made this courageous and – retrospectively – judicious choice. Does it mean that devaluating internally is the new panacea while external devaluation would be an outdated strategy to restore competitiveness? The answer requires caution as there is no one-size solution for all countries. First, in the period following the bankruptcy of Lehman Brothers, the global economic environment was so depressed that any devaluation would have had virtually no effects on the Estonian exports[15]. In such a context, only higher imports prices and higher reimbursements for those indebted in euros would have been materialized, with harmful effects on the purchasing power of households (see box 1). While it may be argued that internal devaluation has also reduced the purchasing power of households, wage cuts may be viewed as a better solution if applied to all workers. By contrast, an external devaluation would have hurt predominantly households indebted in euros. Second, it has to be pointed out that the population is arguably more prompted to accept wage cuts after several years of large wage increases – as in the Baltic states during the pre-crisis period – than after several years of sluggish wages. In this respect, the lessons to be drawn from the experience of Estonia for other EMU members regarding wage cuts must not be misused (Levasseur, 2012). In particular, everyone would be better off in all countries of the euro area if wage cuts were not encouraged.

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[15] For instance, the Polish currency depreciated by some 29 % from October 2008 to March 2009 without any stimulating effects on exports.

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Appendix 1. Decomposing the labour share in value added

Let us assume that the labour share in value added at time t is given by:

$$\text{share}_t = \frac{W_t H_t}{P_t Y_t} \qquad \text{(a)}$$

$$= \frac{W_t}{P_t} \frac{1}{Y_t / H_t} \qquad \text{(b)}$$

$$= \frac{W_t}{P_t} \frac{1}{\text{Pr od}_t} \qquad \text{(c)}$$

WH denotes the "wage bill" where W, the nominal wage *per* hour, is multiplied by H, the total number of hours worked. PY stands for the nominal value added, with P denoting for its price and Y for its volume. Wages are *gross* amounts, *i.e.* before the deduction of income tax and social security contributions.

The labour share in value added can be written as (b) where $\dfrac{W}{P}$ denotes the real wage *per* hour and Y / H (or "Prod") denotes the labour productivity *per* hour. In turn, H can be decomposed as:

$$H_t = h_t N_t$$

where N accounts for the number of workers and h for the number of hours worked *per* worker.

In log-approximation, the dynamics of the labour share in value added between t and $t-1$ is then given by:

$$\Delta \text{share}_t = \Delta \left(\frac{W_t}{P_t} \right) - \Delta \left(\text{Pr od}_t \right) \qquad (1)$$

where $\Delta \left(\dfrac{W_t}{P_t} \right)$ denotes the growth rate of real wage *per* hour between t and $t-1$

and $\Delta \left(\text{Pr od}_t \right)$ stands for the growth rate of labour productivity *per* hour

between t and $t-1$.

In turn, the growth rate of labour productivity can be decomposed as:

$$\Delta\left(\mathrm{Pr\,od}_{t}\right)= \Delta \mathrm{Y}_{t} - \Delta \mathrm{h}_{t} - \Delta \mathrm{N}_{t} \qquad\qquad (2)$$

Thus, the movements in labour productivity will depend on the growth rate of value added in volume (denoted $\Delta \mathrm{Y}_{t}$), the development in working time ($\Delta \mathrm{h}_{t}$) and the volume of workers used for the production ($\Delta \mathrm{N}_{t}$).

Appendix 2. Links towards series used in the paper

Graph 1 & Table 1	Nominal hourly labour cost	WS010: AVERAGE MONTHLY GROSS WAGES (SALARIES) AND AVERAGE HOURLY GROSS WAGES (SALARIES) BY ECONOMIC ACTIVITY (EMTAK 2008) (QUARTERS)
Table 2 & Table 4	Producer price index	XO039: PRODUCER PRICE INDEX OF INDUSTRIAL OUTPUT, 2010 = 100 (MONTHS) XO029: PRODUCER PRICE INDEX OF INDUSTRIAL OUTPUT, CHANGE OVER PREVIOUS YEAR
	Export price index	1. XO05: EXPORT PRICE INDEX, CHANGE OVER PREVIOUS YEAR 2. XO06: EXPORT PRICE INDEX, DECEMBER 1993 = 100 (MONTHS)
Table 3 & Graph 2	Value added	NAA042: VALUE ADDED BY ECONOMIC ACTIVITY (EMTAK 2008) (QUARTERS)
	Employment	NAL011: EMPLOYMENT BY DOMESTIC CONCEPT BY ECONOMIC ACTIVITY (EMTAK 2008) (QUARTERS)
	Hours	WS015: ACTUALLY WORKED HOURS BY ECONOMIC ACTIVITY (EMTAK 2008) (QUARTERS)
Table 5	Nominal monthly (net) wages	WS011: AVERAGE MONTHLY GROSS AND NET WAGES (SALARIES) BY ECONOMIC ACTIVITY (EMTAK 2008) (QUARTERS)
	CPI inflation	1. XO01: CONSUMER PRICE INDEX, CHANGE OVER PREVIOUS YEAR (1992-2009) 2. XO02: CONSUMER PRICE INDEX, 1997 = 100 (MONTHS)
Table 6	Unemployment rate by groups	ML111: LABOUR STATUS OF POPULATION AGED 15-74 BY ETHNIC NATIONALITY AND EDUCATIONAL LEVEL ML109: LABOUR STATUS OF POPULATION AGED 15-74 BY SEX AND EDUCATIONAL LEVEL ML115: LABOUR STATUS OF POPULATION AGED 15-74 BY SEX, AGE GROUP AND EDUCATIONAL LEVEL ML430: UNEMPLOYED PERSONS BY AGE GROUP AND DURATION OF UNEMPLOYMENT
Table 6	Outflows and inflows of population	POR04: EXTERNAL MIGRATION BY SEX, AGE GROUP AND COUNTRY

PO0282: POPULATION (INCL. MIGRATION) BY SEX,
AGE GROUP AND ADMINISTRATIVE UNIT OR TYPE
OF SETTLEMENT, 1 JANUARY