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Wage Competitiveness in Luxembourg.

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A Study engaged by the Government of the Grand Dutchy of Luxembourg

In respect of the Project

Wage Imbalances in the European Labour Market.

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Contents

Abstract

We propose a new method for estimating the competitiveness of wages in levels and not as usually done by unit labour indices. We define a new measure for equilibrium wages and find that overall the average labour cost level in Luxembourg was nearly € 30.000 per year below this equilibrium.

We then analyse sectoral wages. It appears that the competitive advantage in Luxembourg is concentrated in ITC, financial and public administration sectors. The manufacturing sector seems to be handicapped when compared to the average return of the Luxembourg macro-economy, but when it is compared to the European manufacturing sector, it is very close to equilibrium.

We conclude by asking some questions about the future evolution of the Luxemburg model.

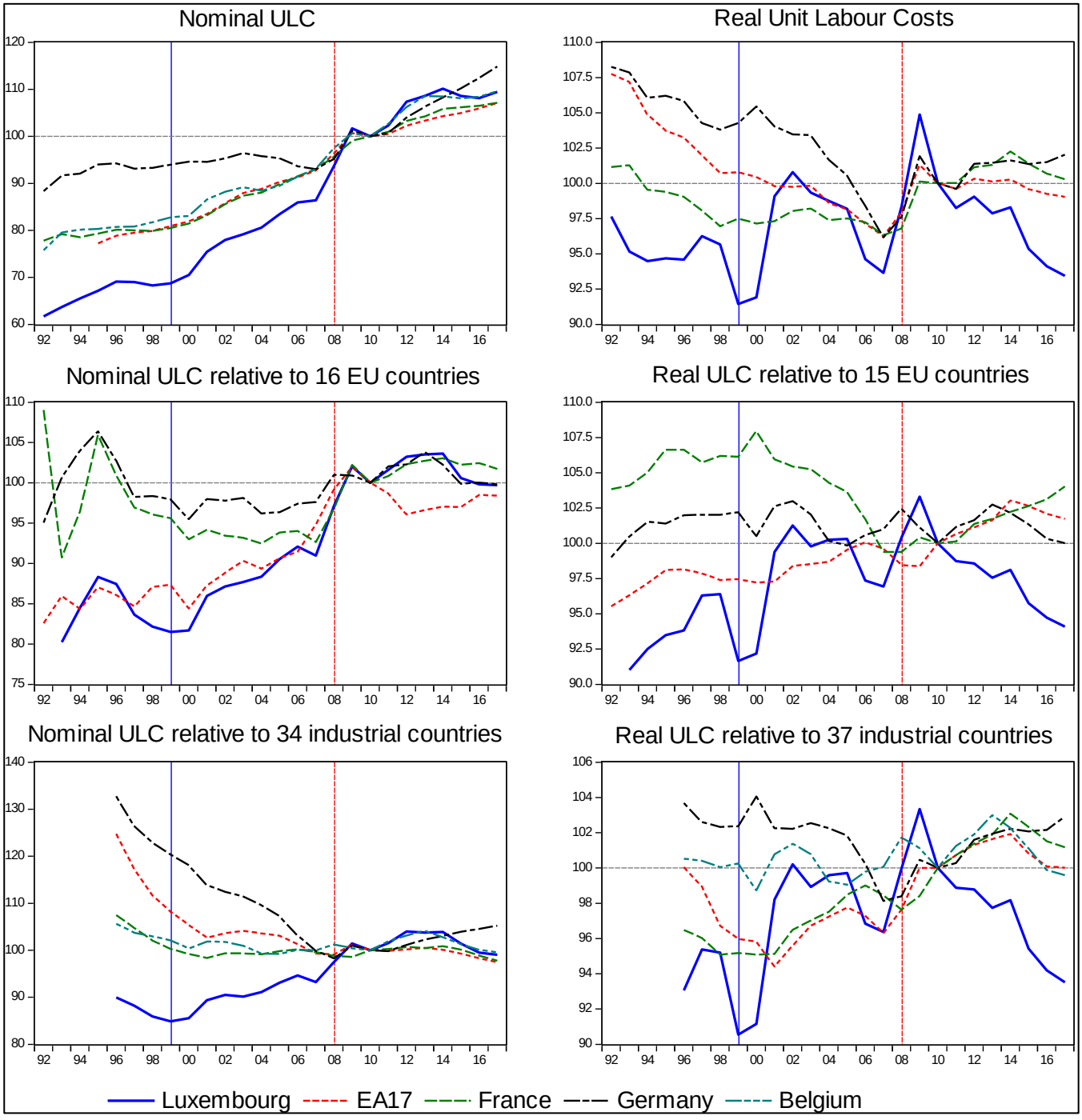
Introduction

The debate about the competitiveness of member states in the Euro Area has become more intense, and more controversial, since the Global Financial Crisis and the subsequent Euro crisis. Improving competitiveness is often seen as synonymous with wage cuts and austerity. However, lower wage costs do not always improve competitiveness. First of all, competitiveness can improve even when wages are rising, provided productivity improves as well. Second, when austerity reduces effective demand, productivity will slow down and this may cause a deterioration of competitiveness. Hence, assessing an economy's labour cost competitiveness requires a more comprehensive analysis that integrates wage bargaining with productivity and growth theory.

Measuring wage competitiveness is difficult. Eurostat produces a number of indicators based on nominal and real unit labour costs and compares them to other countries or country groups, but their informational content is uncertain and even sometimes contradictory. Figure 1 shows the unit labour cost (ULC) indices for Luxembourg and its immediate neighbours France, Germany and Belgium as published by the European Commission's AMECO data base. All time series are based on the year 2010. It looks as if *nominal* unit labour costs have increased much more rapidly in Luxembourg than in neighbouring countries since the start of European Monetary Union in 1999. Hence, one would conclude that the Grand Duchy has *lost competitiveness* against the 16 most important EU member states and against 34 industrialized countries. By contrast, Germany and the Euro Area in general seem to have improved their relative positions. After the financial crisis in 2008, wage increases have slowed down. In nominal terms the competitiveness loss for Luxembourg relative to the Euro Area is similar to most neighbouring countries, although German wages are now increasing much faster. However, when we look at real unit labour costs, which are the same as the wage share, the picture is inverted. If we discard the peeks and shocks of the financial crisis, there is a broad *improvement in the labour cost competitiveness* of Luxembourg because the wage share has fallen and the profit share has increased. So which index gives a better picture of these competitive developments?

In this paper we look at a new method for assessing the competitiveness of labour costs in the Euro Area and apply it to the case of Luxembourg. We define a new measure for equilibrium wage levels and find that overall the average labour cost level in Luxembourg was nearly € 30.000 per year below this equilibrium. This is dramatic. We then analyse sectoral wages. It appears that the competitive advantage in Luxembourg is concentrated in ITC, financial and public administration sectors. The manufacturing sector seems to be handicapped when compared to the average return of the Luxembourg macro-economy, but when it is compared to the European manufacturing sector, it is very close to equilibrium. We conclude by making some suggestions how to deal with this situation.

Figure 1. Nominal and real Unit Labour Indexes (2010=100). Absolute and relative measures.



Source: own elaboration on Eurostat

A new measure for wage cost competitiveness

The trouble with measuring labour cost competitiveness by ULC indices as in Figure 1 is the arbitrariness of the base year of the index. Because we do not know whether a particular economy was in equilibrium in the base year, this can lead to misleading judgements if the index indicates rapid increases, when the country started out from an undervalued or overvalued position. We therefore need a benchmark for wage *levels* and not for the wage *dynamics*.

Starting with the simple assumption that in a market economy competition allocates capital to where it generates the highest return so that in equilibrium the rates of return on capital ought to be at the same level, we define the equilibrium wage as the total labour compensation level, at which the average return on the capital stock is equal to the average return in the Euro Area as a whole. We will calculate this relative return with respect to the economy of Luxembourg as a whole, or for given sectors such as manufacturing or financial services. It is important to emphasise right from the beginning that this equilibrium wage is a benchmark derived from capital market theory, and does not reflect a labour market clearing equilibrium wage. However, there is no automaticity that the equilibrium prevails in the short run, as the *Varieties of Capitalism* literature (Hall, Peter A. und David Soskice, 2001) has demonstrated.

The gross return on capital is the ratio of non-wage value added relative to the historic value of the aggregate capital stock of a country or sector. It also includes the part of value added that is used to substitute the consumed capital. In order to obtain a measure of net return on capital, which is what matters from the point of view of an investor, consumption of fixed capital (*cfc*) is subtracted from non-wage value added.

$$(1) \qquad RoC = \frac{Py - cfc - wL}{P_k K}$$

Where *PY* is nominal GDP, *w* is average wage compensation, *L* is the employment level, P_k is the capital stock deflator and *K* is the capital stock in constant prices. We also define nominal labour productivity as nominal output per person employed

$$(1b) \qquad \lambda = \frac{Py}{L}$$

By multiplying and dividing equation (1) by nominal GDP, the return on capital can be expressed as the product of the net capital share and the average capital efficiency (ACE):

$$(2) \qquad RoC = \frac{Py - cfc - wL}{Py} \frac{Py}{P_k K} = \sigma_k ACE$$

Where σ_k is the net capital share and ACE is the ratio of nominal GDP to nominal capital stock.

Our equilibrium condition is that a country's or sector's net return on capital is equal to the average level in the Euro area:

$$(3) \qquad \sigma_{kx} ACE_x = \sigma_{k€} ACE_€$$

The equilibrium wage share of a country or sector is then:

$$(4) \qquad \sigma^*_{wx} = \frac{w^*_x L_x}{py_x} = 1 - \frac{cfc_x}{py_x} - \sigma_{k€} \frac{ACE_€}{ACE_x}$$

The wage share is identical with real unit labour costs,[1] so that equation (4) also represents a country's equilibrium real unit labour costs. Thus, if a country's capital productivity is higher than the average European capital productivity, so that $\frac{ACE_€}{ACE_x} < 1$, its equilibrium wage share (and therefore in equilibrium a country's real unit labour costs) will be above the Euro Area's. This is the same as saying that a larger share of value added can be used to remunerate labour because capital is more productive. On the other hand, if in some countries the labour share has fallen over time, this may simply reflect lower capital productivity. Assuming equilibrium as a starting position, voluntarist increase in wages, as suggested by wage-led growth theorists,[2] would only generate deviations from equilibrium and harm competitiveness.

We can now solve equation (4) to obtain the equilibrium nominal wage level w*:

$$(5) \qquad w^* = \lambda {\sigma_w}^* = \lambda(1 - \frac{cfc_x}{py_x} - \sigma_{k€} \frac{ACE_€}{ACE_x}) = \lambda(1 - \frac{cfc_x}{py_x} - (1 - \frac{cfc_€}{py_€} - \sigma_{w€}) \frac{ACE_€}{ACE_x})$$

where $\lambda = \frac{Py}{L}$

It is clear that the equilibrium wage so defined is a function of the average wage share in the Euro Area, national or sector specific labour productivity and the relative development of nominal capital productivity, i.e. relative prices of goods and capital and the national (or sectoral) capital-output ratio relative to the Euro Area's. An additional factor is the consumption of fixed capital, but this depends on the level of economic activity and on the nature of the capital stock, hence we can consider it as derived from the other variables in the equation. Nevertheless, because the destruction (write-off) of capital during a crisis may cause significant reductions in equilibrium wages, as is evident from Figure 2 (cf. 2000 and 2008-9), equilibrium wages can be rather volatile.

To measure competitiveness, we will match the actual labour compensation against the equilibrium wage. We calculate an index of relative competitiveness as a ratio and show absolute competitiveness as the gap between actual and equilibrium wages. If actual wages are higher than the equilibrium wage, the return on capital in a particular country or industry will be lower than the Euro-average. We interpret this as a competitive disadvantage, for lower profitability is likely to deter investment until the return on capital is improved, while highly competitive sectors and countries would attract capital and boost economic growth until over-accumulation reduces the return. Hence, wage cost competitiveness depends on actual wages as they emerge from wage

[1] Unit labour costs are defined as the wage costs per unit of output: $ULC = \frac{wL}{y} = \frac{w}{\lambda}$. Hence real unit labour costs are $RULC = \frac{ULC}{P} = \frac{wL}{Py} = \sigma_w$

[2] See: (Stockhammer, 2015)

negotiations *and* on structural factors that shift the equilibrium wage. It also depends on the average wage share of the Euro Area, i.e. on how aggregate wages develop relative to inflation and productivity in the Euro Area as a whole. If a particular region or industry deviates from the average performance, it will gain or lose competitiveness. This means that if wage increases are slowing down in the Euro Area as a whole, all countries will have to follow suit if they wish to remain competitive. This was the case during the first decade of Monetary Union, as Figure 1 shows, because German wage restraint kept the average wage costs in the Euro Area down, although this has changed during the Euro Crisis.

Our concept of equilibrium wage defines the limits for wage increases that are consistent for stimulating demand and pursuing a wage-led growth strategy. The famous *Rehn-Meidner rule* recommended that nominal wages ought to increase at the rate of labour productivity plus inflation, so that the wage share remains constant. In the Euro Area that has been amended to say that wage increases should take into account labour productivity and the inflation target of the ECB.[3] However, this rule ignores the impact of capital productivity on equilibrium wages. Balanced growth across countries and sectors would require that nominal wages are equal to equilibrium wages.

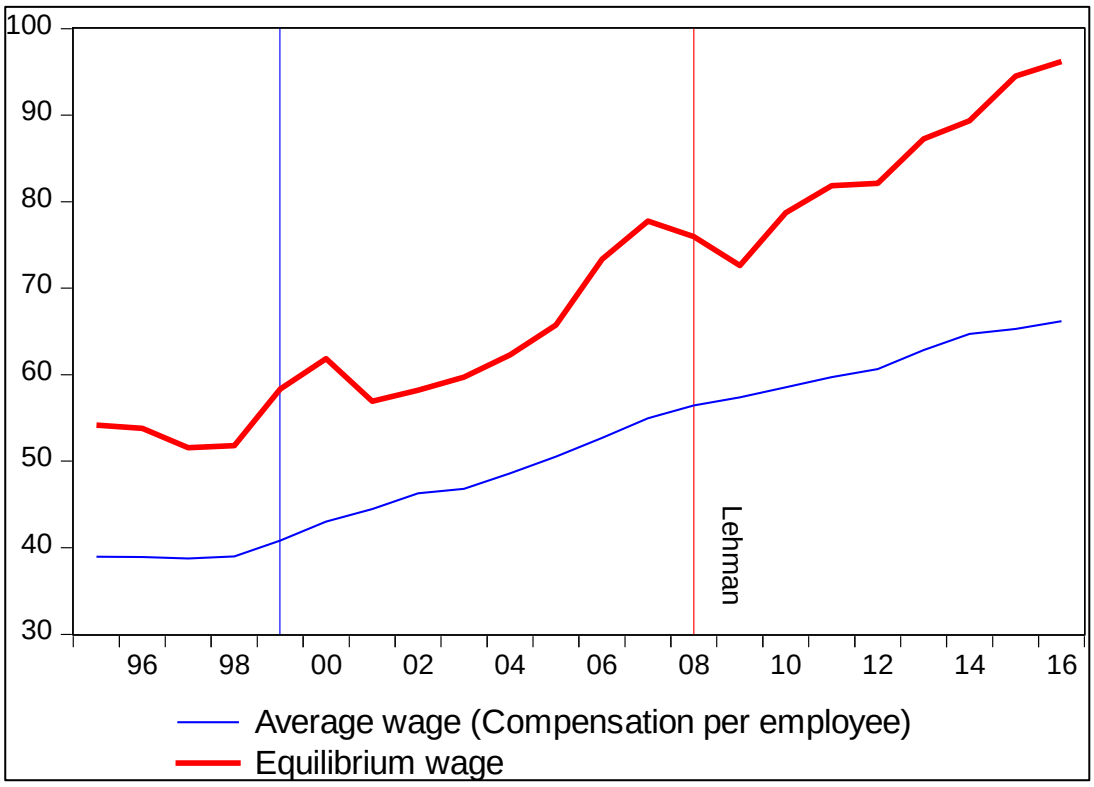
As equation (5) shows, the effect of capital productivity on equilibrium wages is far from trivial. Even if all countries had exactly the same rate of nominal wage increases in line with the *Rehn-Meidner rule*, their competitiveness could still be distorted by diverging capital productivity developments. Such divergence may be a consequence of broad country-specific factors, such as infrastructure, R&D, skill building, etc., but it may also reflect different weights of economic sectors with diverse capital-output ratios. For example, it is well-known that productivity is more likely to improve in manufacturing than in most service industries, so that an industrial hub like Germany is prone to reap larger competitive advantages than service intensive economies. For this reason, it is important not only to analyse aggregate but also sectoral equilibrium wages.

[3]See (Koll, 2005) (Commission, 2005)

Aggregate values and comparison with other EU countries

Figure 2 shows the evolution of wages costs in Luxembourg. Actual wages are structurally below the equilibrium level and the comparative advantage has increased after the Global Financial Crisi and during the Euro crisis. Actual wages are more stable than the equilibrium wage, which reflects changes in capital productivity, as we will explain below.

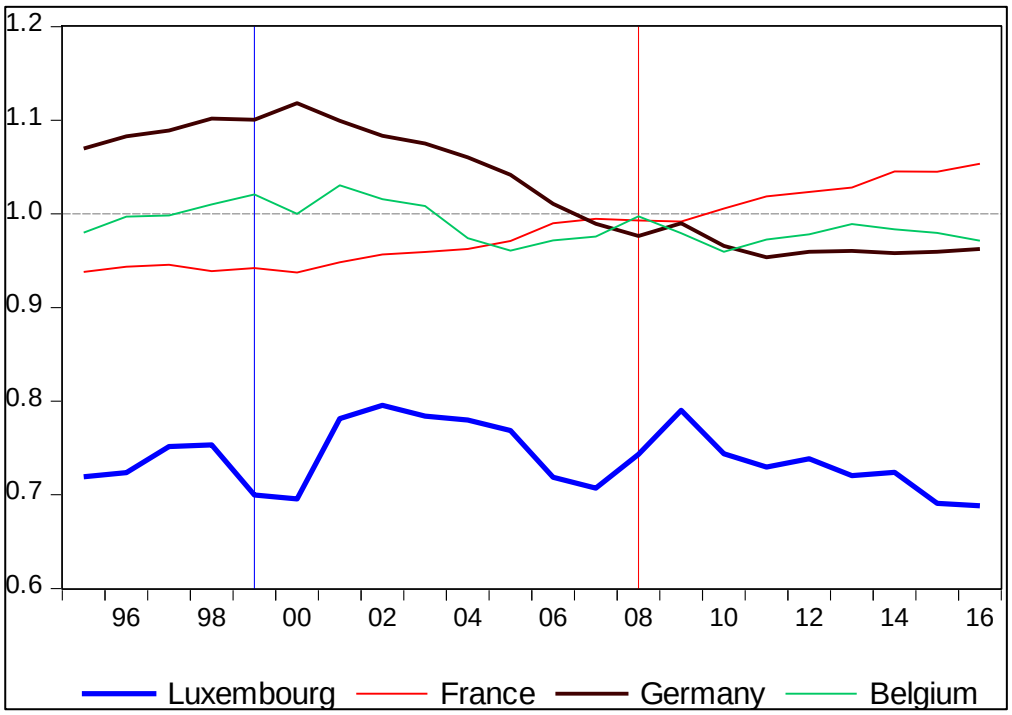
Figure 2. Luxembourg: actual and equilibrium wage



Source: own elaboration on STATEC, Eurostat.

Figure 3 shows the competitiveness index, defined as the ratio of actual to equilibrium wage levels, for the aggregate economies of Luxembourg, France, Germany and Belgium. With small oscillations, wages in Luxembourg have kept a stable gap of 30 percent below equilibrium for the last 20 years. This is different for the neighbouring economies. In Germany, wage costs were 12% above equilibrium in 2000, but have since fallen below equilibrium stabilizing around minus 4%. By contrast, France has lost its initial competitive advantage of 6% below equilibrium and is now 6% above. Thus the shifts in competitiveness are a deterioration of 12% in France and an improvement of 16% in Germany since monetary union started. In Belgium, wage levels have stabilized slightly below but close to equilibrium.

Figure 3. Labour cost competitiveness index



Source: own elaboration on STATEC, Eurostat.

We summarize this information for the European Union in Table 1 and distinguish between Euro Area and EU member states and also show data for some non-EU countries. In terms of relative competitiveness, i.e. in terms of the ratio of actual to equilibrium wages, Luxembourg in 2015 is the third most competitive economy in the Euro Area after Lithuania and Slovakia, although Luxembourg's equilibrium wage is by far the highest wage in the EU with nearly € 95,000 per annum. However, actual wages are € 29,610 below equilibrium, and German equilibrium wages are only half of Luxembourg's; in France they are even less. We also note that with the exception of the UK and Switzerland, all countries outside the Euro Area have wage levels below equilibrium, which implies that their return on capital is higher than in the Euro Area. This reflects the dissatisfactory developments in some Euro member states, especially in the south.

Table 1 Equilibrium wages and competitiveness: EU-wide comparison (€ 000)

		Relative competitiveness			Equilibrium wages			Absolute competittiveness		
Area	Country	1999	2007	2015	1999	2007	2015	1999	2007	2015
EA	LTU	0.86	0.71	0.67	4.39	14.16	19.71	-0.62	-4.17	-6.55
EA	SVK	0.81	0.65	0.69	5.22	16.39	22.41	-1.01	-5.73	-7.04
EA	**LUX**	**0.71**	**0.72**	**0.69**	**57.71**	**75.95**	**94.89**	**-16.87**	**-20.97**	**-29.61**
EA	IRL	0.75	0.82	0.71	37.25	54.38	65.42	-9.30	-9.83	-19.30
EA	LVA	0.95	0.74	0.72	3.89	14.25	18.79	-0.18	-3.74	-5.26
EA	MLT	0.82	0.75	0.72	16.09	24.12	30.81	-2.95	-5.96	-8.47
EA	CYP	0.79	0.79	0.80	21.07	29.78	30.03	-4.46	-6.35	-6.05
EA	PRT	1.01	1.03	0.89	14.38	18.83	22.89	0.10	0.62	-2.60
EA	EST	0.82	0.80	0.90	5.67	15.81	19.57	-0.99	-3.20	-1.91
EA	DEU	1.09	1.00	0.97	28.13	33.41	40.80	2.64	0.03	-1.04
EA	NLD	1.03	0.98	0.97	29.95	40.18	46.65	0.86	-0.85	-1.19
EA	SVN	0.97	0.94	0.99	14.70	22.50	25.07	-0.44	-1.27	-0.21
EA	ITA	0.89	0.96	1.00	30.27	34.62	35.90	-3.39	-1.51	-0.15
EA	FIN	0.96	0.96	1.02	31.56	40.63	46.02	-1.25	-1.79	0.70
EA	ESP	1.00	1.09	1.03	21.95	26.08	30.93	0.04	2.35	0.92
EA	FRA	0.95	1.01	1.05	33.00	39.39	44.12	-1.60	0.36	2.14
EA	BEL	1.06	1.04	1.05	34.86	44.20	51.59	2.15	1.84	2.58
EA	AUT	1.11	1.05	1.07	28.13	35.46	40.83	2.97	1.65	2.87
EA	GRC	1.07	1.04	1.11	15.02	23.94	19.31	1.09	0.95	2.04
EU	HUN	0.63	0.60	0.55	8.84	20.31	21.24	-3.26	-8.11	-9.57
EU	POL	0.72	0.58	0.56	8.72	17.11	22.72	-2.48	-7.26	-9.91
EU	CZE	0.59	0.59	0.60	9.41	21.39	24.91	-3.85	-8.80	-10.05
EU	ROM	0.84	0.67	0.60	2.32	10.71	14.07	-0.37	-3.58	-5.66
EU	SWE	0.58	0.59	0.62	49.15	63.81	73.90	-20.85	-26.34	-28.02
EU	DNK	0.69	0.70	0.71	49.35	64.42	75.96	-15.10	-19.16	-22.23
EU	BGR	0.70	0.57	0.74	2.86	6.72	9.77	-0.86	-2.91	-2.50
EU	GBR	1.05	1.05	0.91	29.85	41.71	51.66	1.44	2.01	-4.59
Extra EU	NOR	0.65	0.55	0.61	52.35	95.38	103.21	-18.22	-43.26	-40.00
Extra EU	JPN	0.82	0.74	0.75	49.90	38.03	44.61	-8.77	-9.78	-11.13
Extra EU	USA	0.88	0.89	0.83	45.77	46.99	74.19	-5.32	-5.14	-12.66
Extra EU	CHE	1.17	1.09	1.07	37.29	45.11	74.23	6.32	4.13	5.45

Source: own elaboration on AMECO

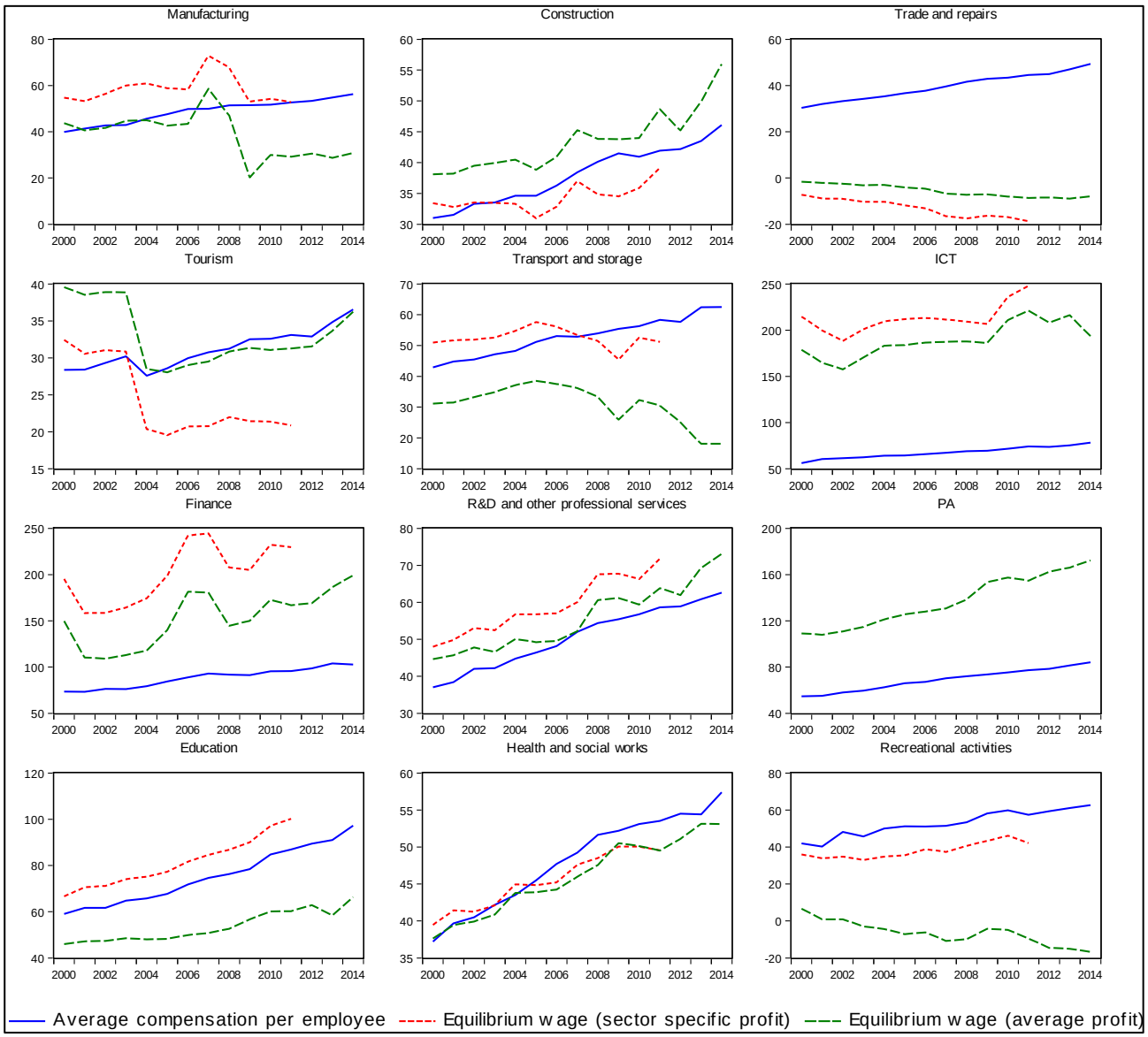
Sectoral breakdown

The fact that wage costs in the richest member state of the European Union are 30% below their equilibrium is remarkable. One way to explain it is to look at the sectoral distribution of competitive advantages. We calculate two measures for sectoral competitiveness. The first represents the ratio of actual wages of a sector to the equilibrium calculated on the basis of the European average capital efficiency (ACE) of the specific sector; the second is based on the benchmark of the average return on capital in the Euro Area as a whole, hence on European ACE for the total economy. The first measure indicates how competitive a country's industry is relative to the same industry in other member states. The second measure shows how far a particular sector deviates from the equilibrium in the Euro Area as a whole, all sectors taken together. For the sector specific measure, data stop in 2011 due to lack of sectoral data for the capital stock whereas the second measure, which uses the average capital stock for the total economy, data are provided for the years 2000-2014.

Figure 4 shows the sector breakdown of the two equilibrium measures and actual wage costs for 12 sectors in Luxembourg. When the red line for the sector specific equilibrium wage stands above the green average wage line, the sector is potentially more profitable than the average return of capital in the country, so that in equilibrium the sector can pay higher wages. The inverse is true if it is below the green line. Such sectoral advantages can be observed in Manufacturing, Transport, ICT, Finance, Professional services, Education and Recreational activities. By contrast, Trade and Tourism are structurally handicapped sectors, where the low capital productivity would require low wages in equilibrium.

However, whether this potential is realised depends on the actual wages (blue straight line). We find that in Manufacturing, wages are in equilibrium with the industry at the European scale, but they are too high for manufacturing yielding a return on capital comparable to the rest of the Luxembourg economy. This is so because the financial sector dominates the Luxembourg economy. Wages are also above equilibrium in Tourism and Transport. The sources of Luxembourg's competitiveness are clearly ICT, Finance, Professional Services and Public administration. In all these sectors actual wages are well below equilibrium, therefore yielding above average rates of return on capital for the economy as a whole. The opposite is true for Trade, Tourism, Transport, Health and social works and Recreational activities. However, because these sectors are relatively small, while finance and related supportive services are important, the overall competitiveness effect is driven by the wage undervaluation in these sectors.

Figure 4. Average wage and sector specific equilibrium wage



Source: own elaboration on STATEC, Eurostat

Table 2 gives further details. The three columns under "relative competitiveness" show the ratio of actual to equilibrium wages; "Absolute competitiveness" shows the gap between actual and equilibrium wages in thousands of euros. We also show the weights of each sector in terms of employment and value added. The equilibrium wage varies enormously between different sectors, reflecting differences in productivity, as well as the sectoral shares in both employment and value added.[4] For example, in Tourism it is €20,000 per year, but in finance nearly € 230, 000. Disadvantages ranging between €3000 and €15000 exist for Health, Transport and storage, and

[4] Tables 2 and 3 show the most relevant sectors. In table A1 and A2 in the Appendix, we show data for some manufacturing industries. Due to the small number of firms and the low share in both employment and value added, data for these sectors are not reliable. Further, for Trade and repairs, equilibrium wages are negative due to the excessive difference between Luxembourg ACE and the EA ACE. Such distortions are likely to be the result of a small number of SMEs, which do not easily compare with large and capital intensive companies in other countries.

Tourism, while the stronger advantages are in Finance (€133,900 below equilibrium) and in ICT (€174,000 below equilibrium).

Table 2 Equilibrium wages and competitiveness (sector specific return on capital)

	Relative competitiveness			Equilibrium wages			Absolute competitiveness			Empl.	GDP
	2000	2007	2011	2000	2007	2011	2000	2007	2011	Share	share
ICT	0.3	0.3	0.3	214	211	248	-159	-144	-174	3.8	10.1
Finance	0.4	0.4	0.4	195	244	229	-122	-151	-134	12.1	35.4
Professional services	0.8	0.9	0.8	48.0	60.0	71.8	-11.0	-8.0	-13.2	13.3	9.8
Education	0.9	0.9	0.9	66.7	84.6	100	-7.6	-9.9	-13.2	4.5	3.9
Manufacturing	0.7	0.7	1.0	54.7	72.9	52.8	-14.8	-23.0	-0.1	10.1	7.3
Construction	0.9	1.0	1.1	33.4	37.0	39.1	-2.4	1.5	2.8	10.9	5.8
Transport and storage	0.8	1.0	1.1	50.9	53.4	51.1	-8.0	-0.5	7.2	6.6	4.7
Health and social works	0.9	1.0	1.1	39.4	47.6	49.6	-2.3	1.6	4.0	8.4	5.1
Recreative activities	1.2	1.4	1.4	36.0	37.3	42.1	5.9	14.1	15.3	0.9	0.7
Tourism	0.9	1.5	1.6	32.4	20.7	20.8	-4.1	10.0	12.3	4.7	2.1
Trade and repairs	-4.2	-2.4	-2.4	-7.3	-16.5	-18.8	37.6	56.1	63.3	12.9	0.9

Source: own elaboration on STATEC, Eurostat. Note: employment and GDP shares are calculated as averages over 2000-2011

Table 3 indicates the competitiveness gaps with respect to an equilibrium wage that would yield the same rate of return on capital as the aggregate of these sectors in the Euro Area. The ranking of sectors according to the absolute competitive gap is fairly unchanged.

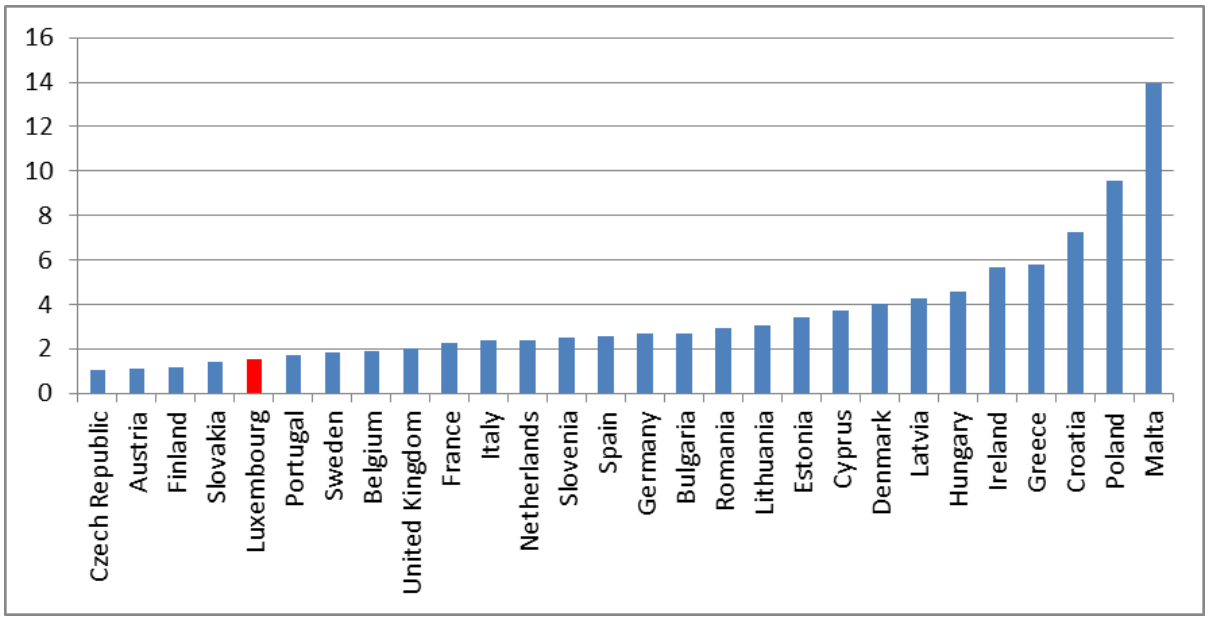
Table 3 Equilibrium wages and competitiveness (average return on capital)

	Relative competitiveness				Equilibrium wages				Absolute competitiveness			
	2000	2007	2011	2014	2000	2007	2011	2014	2000	2007	2011	2014
ICT	0.3	0.4	0.3	0.4	178.6	187.3	221.0	193.5	-122.8	-120.1	-147.0	-115.4
Finance	0.5	0.5	0.6	0.5	149.7	180.5	166.8	199.1	-76.2	-87.5	-71.1	-96.4
Public Administration	0.5	0.5	0.5	0.5	109.1	130.7	154.7	172.3	-54.4	-60.3	-77.4	-88.1
Construction	0.8	0.8	0.9	0.8	38.1	45.3	48.7	56.0	-7.1	-6.8	-6.8	-9.9
Professional services	0.8	1.0	0.9	0.9	44.6	52.2	63.8	73.1	-7.6	-0.2	-5.2	-10.5
Recreative activities	0.8	0.9	1.0	0.9	51.5	60.5	62.4	68.7	-8.5	-5.5	-2.7	-4.0
Tourism	0.7	1.0	1.1	1.0	39.5	29.5	31.3	36.2	-11.2	1.3	1.8	0.3
Health and social works	1.0	1.1	1.1	1.1	37.6	46.0	49.5	53.1	-0.4	3.3	4.0	4.3
Education	1.3	1.5	1.4	1.5	46.0	50.7	60.2	66.4	13.1	24.0	26.7	30.9
Manufacturing	0.9	0.9	1.8	1.8	43.7	58.6	29.2	30.8	-3.8	-8.7	23.5	25.5
Transport and storage	1.4	1.5	1.9	3.5	31.1	36.2	30.4	18.1	11.8	16.6	27.9	44.4
Trade and repairs	-18.9	-5.5	-5.0	-6.2	-1.6	-6.8	-8.6	-7.9	31.9	44.5	52.0	57.3

Source: own elaboration on STATEC, Eurostat

The variation of relative capital efficiency – and not nominal wages – determines the sectoral differences in equilibrium wages. This is clear when we look at the coefficient of variation for actual wage compensation across Europe. See Figure 5. Luxembourg has one of the most homogenous sectoral wage distributions, while the equilibrium wages vary substantially because they reflect differences in capital productivity. It is remarkable that this wage homogeneity is not the consequence of centralised wage bargaining in Luxemburg, but it is probably due to a relatively high degree of social consensus. This generates sectoral rents that affect the overall aggregate competitiveness position of Luxembourg.

Figure 5 Coefficient of variation in wages' growth across 64 industries (average 2000-2014)



Source: own elaboration on STATEC, Eurostat

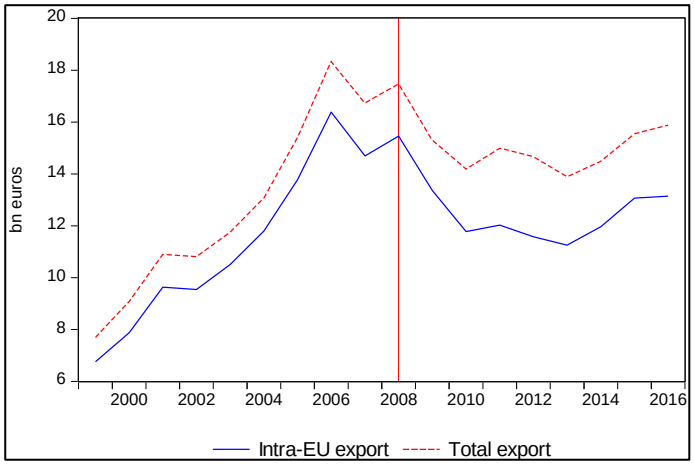
Figure 6 shows the components of Luxembourg's sectoral equilibrium wages. The average capital efficiency has remained stagnant (Construction, Trade, Finance, Tourism, Health) or fallen (Manufacturing, Transport and Storage, Recreational Activities); it has only increased in ITC and Transport before the financial crisis. However, the sectors where ACE has fallen most are less important as a share of the total, so that the aggregate competiveness has remained fairly stable. The deterioration in ACE is due to the fact that the growth of output has been less rapid than the accumulation of capital in all sectors except in Construction, R&D and ICT.

Nevertheless, the manufacturing sector experienced a significant drop in average capital efficiency after the financial crisis and during the Euro crisis. This is primarily caused by the stagnation of demand. Given the small size of Luxembourg, this demand deficiency reflects lower exports to the neighbours in the Euro Area. Figure 7 shows the collapse of exports of goods after the financial crisis and its acceleration during the Euro crisis; it is also evident that the drop of exports was more pronounced for intra-EU trade than for overall exports.

Figure 6. Domestic components of equilibrium wages

Source: own elaboration on STATEC, Eurostat

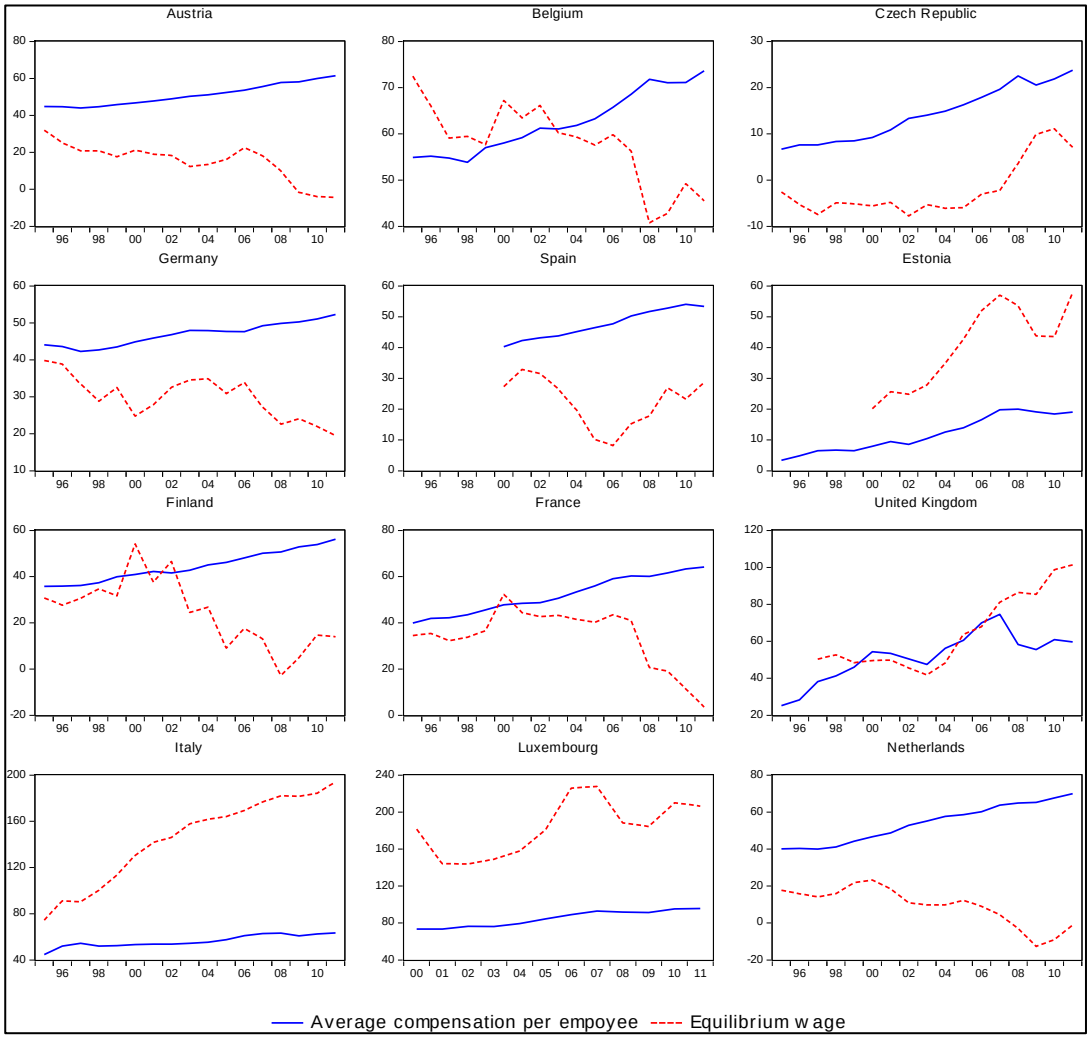
Figure 7. Luxembourg exports



Source: Ameco

Finally, given the importance of the financial sector for the Luxembourg economy, we present in Figure 8 the actual and the sectoral equilibrium wages for the financial sectors in 12 member states. Other than Luxembourg, only Estonia and Italy, and in recent years the UK, have comparative advantages; in all other countries actual wages in the financial sector are higher than equilibrium, therefore yielding below average returns. The competitiveness in Luxembourg is the second highest in Europe, after Italy.

Figure 8. Competitiveness in the financial sector



Source: own elaboration on STATEC, Eurostat

Conclusions

Our novel methodology to measure competitiveness of wage levels by taking the return on capital as the benchmark permits interesting insights. In general, Luxembourg has a significant comparative advantage which means that the average capital stock in this country yields a return that is higher than the average of the Euro Area. However, disaggregating into sectors reveals that this is largely due to the important role of the financial sector and its support services (ICT and professional services) and because the public administration is efficient. Finance, ICT and Professional services represent 29.2 percent of employment and 55.3 percent of GDP. However, other service sectors like Tourism, Recreational Activities and Health and Social Works are not competitive. Given that these are mainly businesses in the non-tradable sector, the wage costs in these sectors give less cause for concern from the point of view of trade, but they are less attractive for investment.

The financial sector dominates the economy with high rates of return. In principle, wages in this sector could be € 100,000 p. a. higher without losing competitiveness. However, this would greatly increase the inequality in wages across the economy. Luxembourg has a remarkable homogeneity in wage costs, even though there is no centralized wage bargaining procedure. This homogeneity generates profitable rents for some sectors, and in particular for the financial sector, which are likely to attract more investment. These advantages sustain general welfare, although they distort the economy. This seems to be a model that works well for Luxembourg, although it is hardly possible to copy it in less prosperous countries.

The high wage undervaluation in the (broad) Financial sector (i.e. a much higher return on capital than the average for the EU) might be due to the fact that many financial corporation have their headquarter in Luxembourg, which generates a high level of value added (and hence labour productivity), but it may also be the result of profit transfers from other countries together with the fact that employment is mainly made of workers at the top of the skill classification (some of which may not even live in Luxemburg). This means that the competitiveness indicator might be upward biased for this sector, with obvious consequences on the assessment for the country as a whole.

Manufacturing and some non-tradable services are overvalued and relatively uncompetitive with respect to Luxemburg as a whole, but not with respect to manufacturing in other Euro Area member states. As a small country, Luxembourg is an open economy and it is therefore negatively affected by austerity and lack of demand in neighbouring countries. Competitiveness in this sector would require increasing productivity which means slowing down capital accumulation when output is demand restrained.

As for services, in Transport and Recreational activities the competitive loss is due to a fall of equilibrium wages, which, as in the case of manufacturing, is mostly due to an excessive speed of capital accumulation with respect to less pronounced GDP growth. It appears that capital accumulation has made these sectors more modern without, however, improving productivity. This would require further analysis, for it is not clear to us what drives the rapid capital accumulation in the Luxembourg economy.

Finally, the data for Trade and repairs seem strange and indicate the limitations of our methodology. From equation (5) we know that when the capital productivity (ACE) in a country's sector is significantly lower than in the Euro Area as a whole, the equilibrium wage can turn negative. For large countries with many large firms this is not a problem as the averages of ACE are relatively comparable and consistent. However, given the small number of firms in some of Luxembourg's industrial sectors with very specific production

methods, the sectoral capital productivity is not fully comparable with the Euro Area averages. For this reason, we have shown small sectors in the Annex and not in the main text.

The competitive performance of Luxemburg is typical for the model of Rhineland Capitalism or Coordinated Market Economy (Hall, Peter A. und David Soskice, 2001): wage spreads are relatively low, which leads to large productivity rents in the successful sectors and a wide spread in rates of return on capital. This is the opposite of the liberal market economy model in Anglo-Saxon countries, where high wage spreads are acceptable, but capital markets eliminate excess returns and innovation rents.

We would therefore like to raise some policy relevant questions, which transcend the analytic part of our report.

- To what degree does the excessive weight of the financial sector pose risks for the future? Luxembourg has been extremely successful in watering the Global Financial Crisis, but there is no guarantee that Luxembourg's financial industry will always remain on the winning side. Italy is an example for a country where serious banking problems have appeared despite very high wage competitiveness in the financial sector. Diversification is usually thought of as a matter of prudence.
- Attempts to diversify the Luxemburg economy are handicapped by the excess returns on capital in the financial and related sectors, because other sectors like manufacturing or construction are less attractive to investors. Should this lead to a more "liberal" model whereby higher wage spreads are socially accepted, or should one use taxes and subsidies to rebalance the returns on capital?
- What could be done to improve the productivity of capital outside the financial and ICT sectors? One of the main features of Luxembourg's competitiveness disadvantages is rapid capital accumulation with diminishing returns. This feature was also observed, although to a different degree, in the Southern European economies before the crisis. The driver of this process was catch-up growth in the south, but this is clearly not applicable to Luxembourg.

These questions require political answers.

Annex - Equilibrium wages for selected manufacturing industries and Trade and repairs.

Table A1 Equilibrium wages and competitiveness (sector specific return on capital): unreliable data

	Relative competitiveness			Equilibrium wages			Absolute competitiveness			Empl.	GDP
	2000	2007	2011	2000	2007	2011	2000	2007	2011	share	share
Transport equipment	0.5	0.3	0.3	68.7	131.3	122.0	-33.0	-94.2	-80.4	0.1	0.1
Chemicals	0.5	0.8	0.6	80.1	62.2	78.4	-42.1	-12.8	-34.9	0.3	0.3
Plastics and minerals	0.6	0.8	1.1	69.1	65.6	49.8	-24.5	-14.0	7.1	2.1	1.7
Metals	0.9	0.7	2.3	44.8	83.4	25.1	-2.7	-25.3	33.1	2.9	2.0
Trade and repairs	-4.2	-2.4	-2.4	-7.3	-16.5	-18.8	37.6	56.1	63.3	12.9	0.9

Source: own elaboration on STATEC, Eurostat

Table A2. Equilibrium wages and competitiveness (average return on capital): unreliable data

	Relative competitiveness				Equilibrium wages				Absolute competitiveness				Empl.	GDP
	2000	2007	2011	2014	2000	2007	2011	2014	2000	2007	2011	2014	share	share
Transport equipment	1.8	0.5	0.7	0.5	20.0	75.8	60.7	85.1	15.7	-38.7	-19.0	-40.6	0.1	0.1
Wood, paper, printing	1.0	1.3	1.6	1.3	36.7	33.9	32.3	41.1	0.3	10.0	18.5	12.2	0.64	0.45
Textiles	0.4	0.6	0.9	1.4	145.4	88.7	74.5	51.1	-83.6	-33.9	-8.3	20.3	1.49	n.a.
Chemicals	0.7	1.9	1.5	1.5	55.0	25.6	29.0	32.1	-17.0	23.8	14.5	15.6	0.3	0.3
Plastics and minerals	0.8	1.1	2.6	2.1	56.9	48.4	21.6	27.8	-12.3	3.2	35.3	31.9	2.1	1.7
Metals	1.1	0.7	5.8	52.3	37.8	82.9	10.1	1.2	4.3	-24.9	48.1	63.6	2.9	2.0
Trade and repairs	-18.9	-5.5	-5.0	-6.2	-1.6	-6.8	-8.6	-7.9	31.9	44.5	52.0	57.3	12.9	0.9

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