Performance level research for Latvian manufacturing branch.

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Abstract

This paper analyses linkage between exporting companies` productivity. After having provided an overview of the recent theoretical and empirical literature we analyze empirical studies about difference from export and nonexport companies in term of productivity. This paper uses the productivity analysis methodology and empirical methods. Using the productivity analysis method and panel data for Latvian manufacturing firms, we estimate the correlation between export based companies and labor productivity level. We expect that companies export activities are crucial for labor productivity growth.

The main hypothesis point is concerned about more productive companies involved into export markets. The reason for this is that selling goods in foreign countries involves additional costs and more competiveness skills. Additional extra costs that includes marketing, transportation costs, distribution, the cost of personnel involves high skills to manage foreign markets, or production costs. These costs provide an entry barrier that less successful and competiveness lack firms cannot overcome.

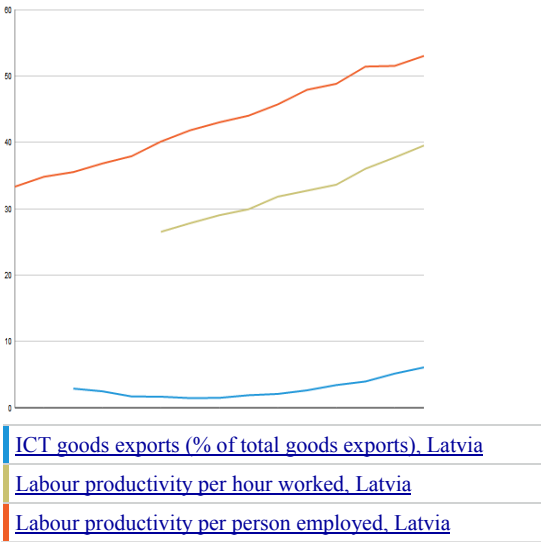
Keywords: **export, production branch, productivity management, GDP, labor productivity**
JEL Classification: **E23, E01, L60.**

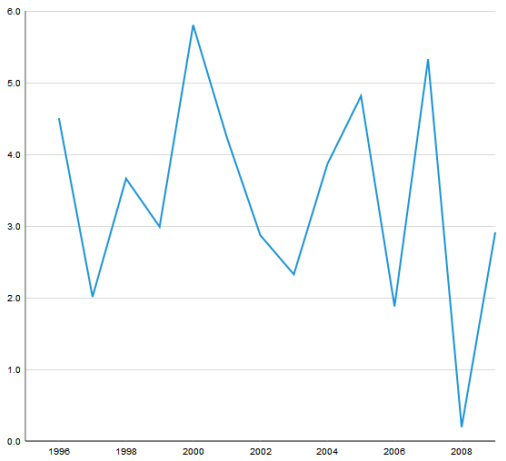
1. Introduction.

Manufacturing in Latvia suffered dramatically from the global financial crisis. Compared to 2008 manufacturing has decreased in 2009, although it has been growing since the 2nd quarter of 2009 due to global demand starting to recover. In the majority of sectors, most of the output is being exported; therefore the growth of individual sectors largely depends on the expansion of export opportunities. The leading growth industries in this sector are wood, metal, food and beverages industries (Figures 3; 4).

Many experts had noticed low productivity trends against real wages (The Bank of Latvia, 2011).

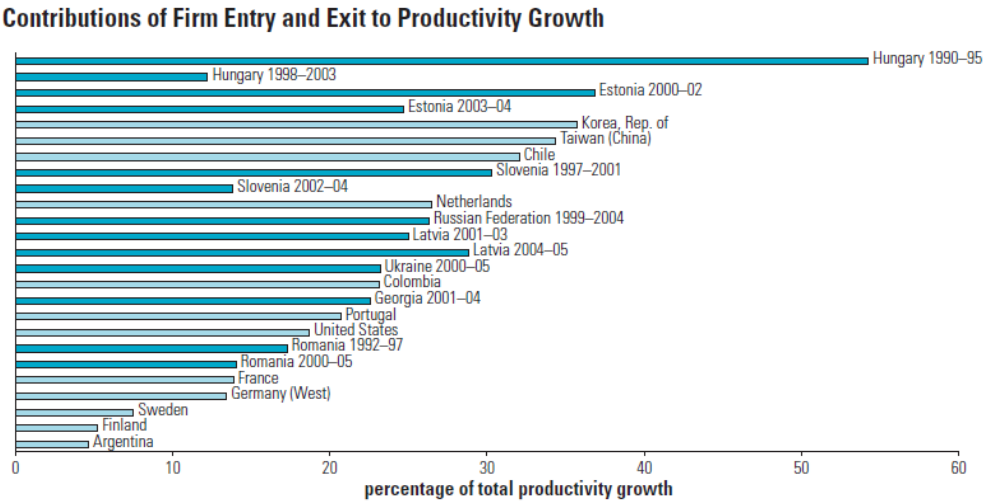
Figure 1. Labour productivity in Latvia





Source: Eurostat

Figure 2. Total productivity in the world



Source: Bartelsman, Haltiwanger, and Scarpetta 2004 for comparator countries. Brown and Earle 2007 for Hungary, Romania, Russian Federation, Ukraine, and Georgia. Bartelsman and Scarpetta 2007 for Estonia, Latvia, and Slovenia.

As a result of cost cutting measures, the real effective exchange rate of the lats, which characterizes price and cost changes vis-à-vis the price and cost dynamics of the main trading partners, continued to drop.

Figure 3. Export growth in Latvia.

Source: The Bank of Latvia survey. The gap between wages and productivity is narrowing rapidly.

The gradual resumption of manufacturing allows for a fuller exploitation of the manufacturing capacities: the assessment of the employment of processing industry capacities in the third quarter improved by five percentage points quarter-on-quarter.

In 2010, the exports of Latvian goods grew 23.3% year-on-year and imports 22.0% (Swedbank 2010). **As a result of growing competitiveness and gradual recovery of the foreign markets, the nominal exports of Latvian goods in the first half of 2010 grew 22.9% year-on-year**, with imports growing at a slower rate (8.3%). A month-to-month growth was observed also for the exports of food products, wood pulp and its products, means of transportation as well as mechanisms and mechanical equipment exports, which together accounted for 49.9% of the goods exports.

Figure 4

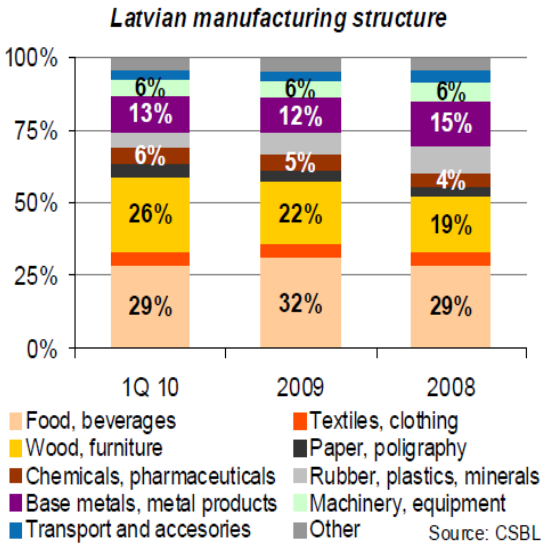
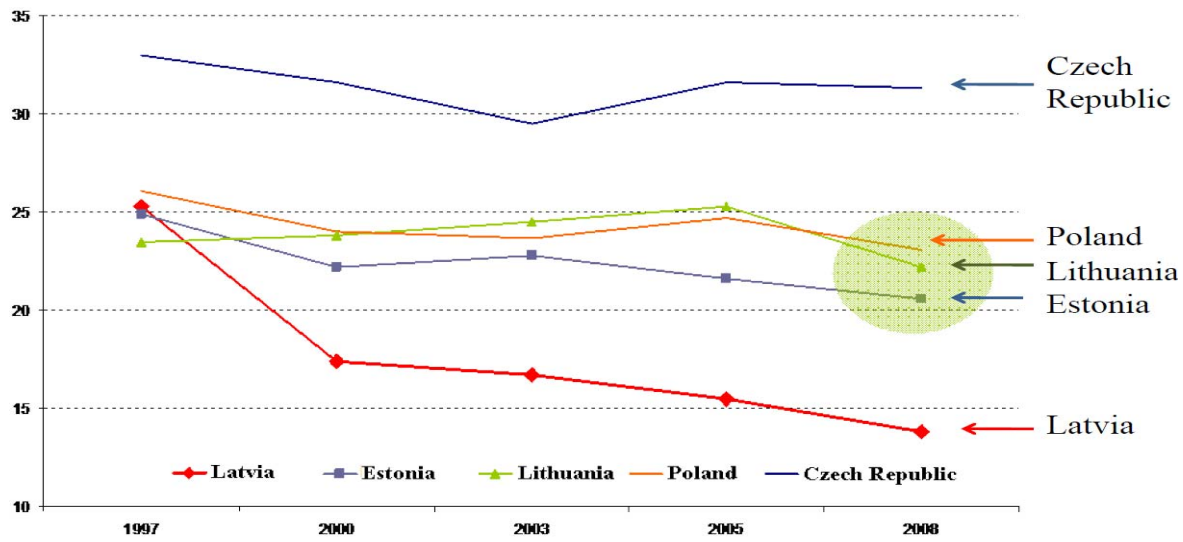


Figure 5

Source: Latvian Export Import Directory

Over the course of the year exports have grown for the majority of the most important groups of goods, except mineral products. Several indicators characterizing competitiveness continue to improve.

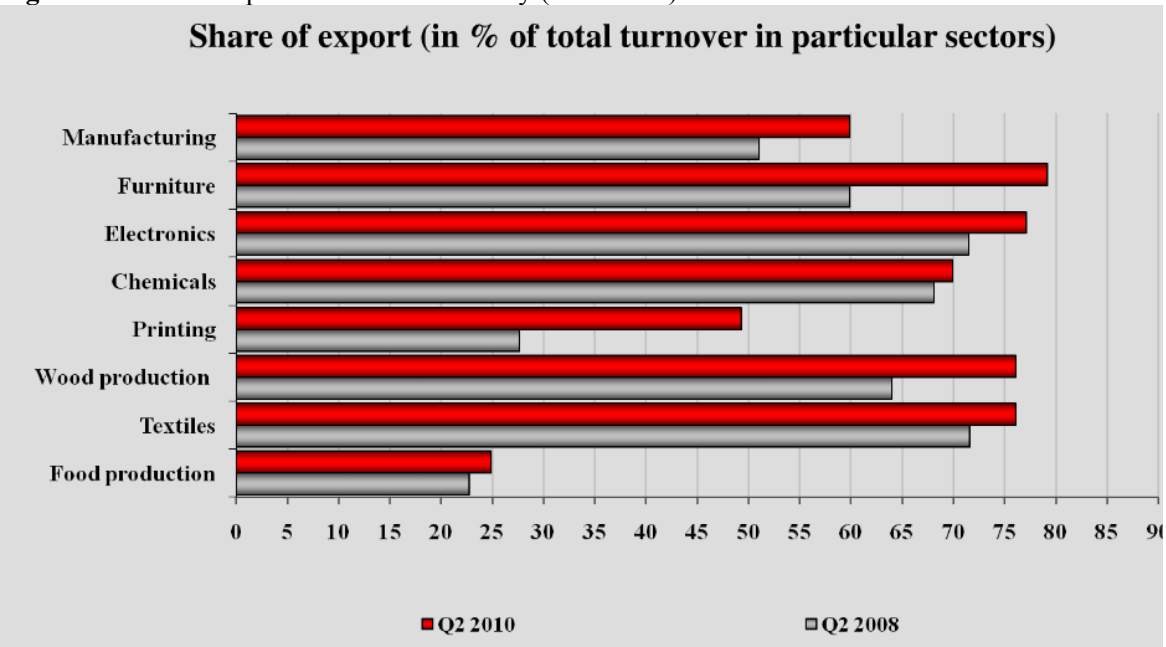
Figure 6. Manufacturing share in Economy (% of GDP)



Source: SEB Bank Eastern European Outlook Economic Research – October 2010

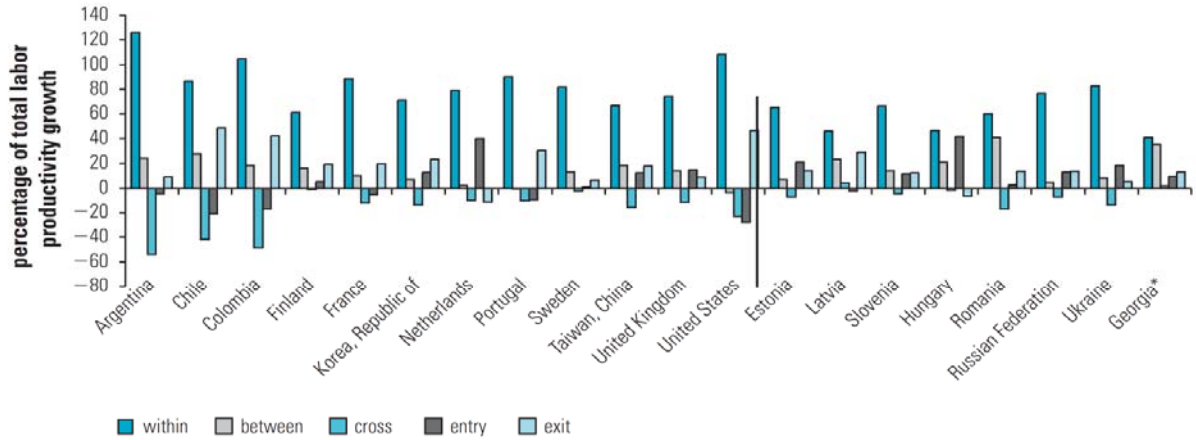
The data available from Latvia's main trading partners allow us to evaluate our market shares in April and May, indicating that the Latvian export shares have grown rapidly in the imports of such important trading partners as Denmark, Germany, Lithuania, the Netherlands, Poland, Finland, and the United Kingdom.
Latvia is characterized as low industrialization trend country (figure 5).

Figure 7. Share of export in Latvian Economy (% of GDP)



As the global economy recovers from the crisis and the influence of various support mechanisms diminishes in manufacturing and export as well as the positive impact of price and cost drops on the competitiveness of Latvian exports dwindles, **the Latvian export volumes will be increasingly affected by the degree to which productivity rises. (Swedbank, 2011)**

Figure 8. Sources of productivity growth in Developed, Transition and Developing Countries



Source: Bartelsman, Haltiwanger, and Scarpetta 2004 for comparator countries. Brown and Earle 2007 for Hungary, Romania, Russian Federation, Ukraine, and Georgia. Bartelsman and Scarpetta 2007 for Estonia, Latvia, and Slovenia.

Note: Data show the sum of the contributions from new firms and exiting firms to total labor productivity in manufacturing. Data cover different periods. Data for Georgia are for 2001–04, rather than a five-year window. Because a shorter period tends to underestimate the contribution of new firms to total productivity growth, the data are not strictly comparable.

2.Background of the study

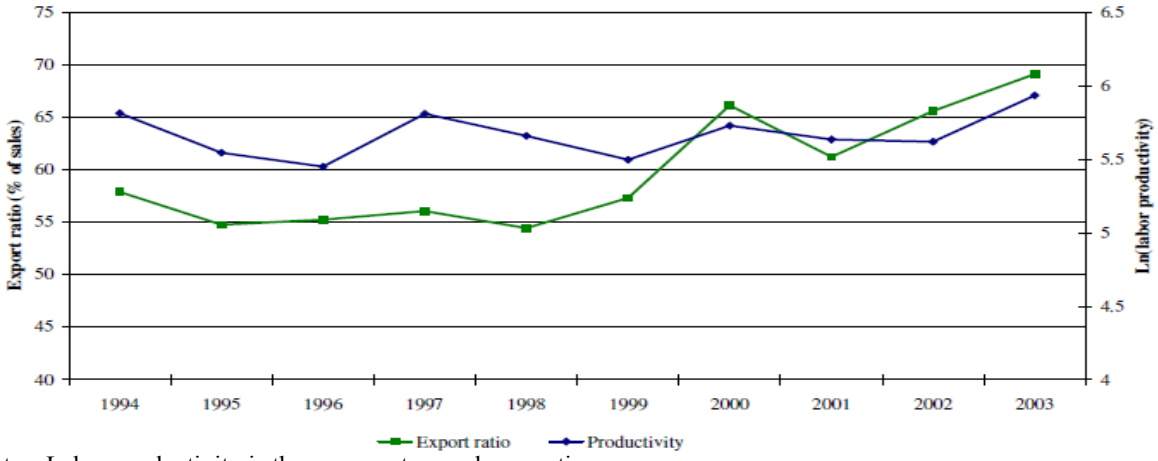
Productivity levels and its continuous growth trends over time are viewed as important factors that characterize competitiveness in international trade. In the theoretical field, there is a common opinion that international trade in general and export in particular enhances country`s economic growth and improves the productivity of involved companies (see Beckerman, 1962; Kaldor, 1970; Balassa, 1988). There are different methods how to calculate company`s productivity.

Economic policies under export-led growth strategy have been widely supported on the argument that exposure to international market through export helps to increase the productivity of exporters. Similarly, advocates of endogenous growth theory believe that export plays a crucial role by improving productivity through innovation (Grossman and Helpman, 1991; Rivera-Batiz and Romer, 1991)

3.Literature review

Discussions of the significance of exports in promoting growth in general, and productivity in particular, have been discussed for many years. Recently there were some empirical studies in this field used data at the country or industry level to test whether exports stimulates productivity growth or vice versa (Baldwin (2000) and Giles and Williams (2000a, 2000b)).

Figure 9. Austrian export ratio and labor productivity (1994 - 2003)

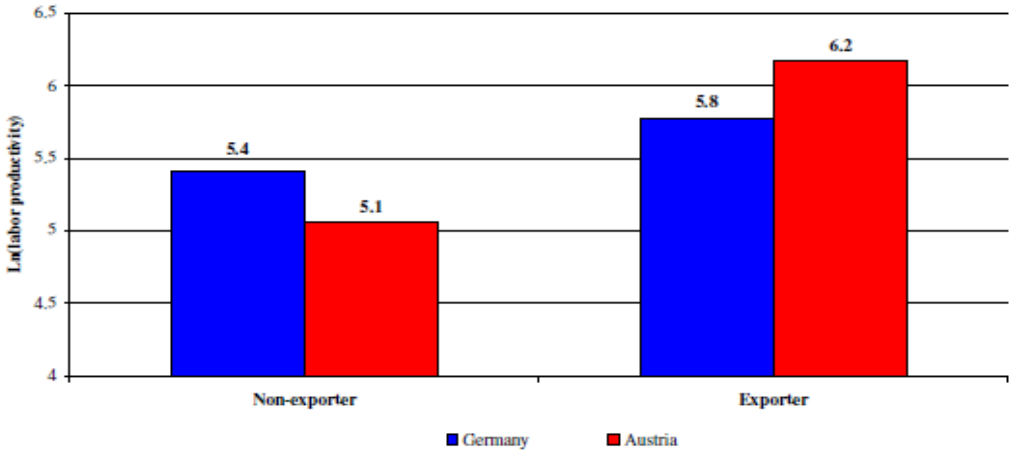


Notes: Labor productivity is the revenue-to-employee ratio.
Sources: Hoppenstedt (Hoppenstedt 2009), Thomson ONE Banker (Thomson Reuters 2009), Amadeus (Bureau van Dijk 2005), and Chair for International Economics, University of Munich. Thorsten Hansen. Exports and Productivity: An
Empirical Analysis of German and Austrian Firm-Level Performance

In 1995 Bernard and Jensen published the first of series of papers that changed this research trends (Bernard and Jensen 1995, 1999, 2004a). They used large comprehensive long-term data from surveys performed regularly by official statistics in the U. S. to look at differences between exporters and non-exporters in various dimensions of company's performance, including productivity. During the ten years following the publication of Bernard and Jensen's Brookings paper researchers all over the world discovered the rich data sets collected by their statistical

offices as a source to investigate the export activity of companies, and its causes and consequences.[1] The extent and cause of productivity differentials between exporters and their counterparts which sell on the domestic market only is one of the core discussions.

Figure 10: Exporting vs. non-exporting and labor productivity



Notes: Ln(labor productivity) is the natural log of the firm's revenue-to-employee ratio. The variable exporter is equal to one when a positive export status is observed; otherwise, a firm is a non-exporter when the export status is equal to zero.
Sources: Hoppenstedt (Hoppenstedt 2009), Thomson ONE Banker (Thomson Reuters 2009), Amadeus (Bureau van Dijk 2005), and Chair for International Economics, University of Munich. Thorsten Hansen. Exports and Productivity: An Empirical Analysis of German and Austrian Firm-Level Performance

The decent works of Bernard and Jensen (1999, 2004a, 2004b) and Bernard et al. (2003) have brought into focus the exceptional performance of exporting companies in terms of labour productivity and companies heterogeneity within sectors. And this initiated new discussions on the issue that whether exporting leads to productivity growth and are exporters more productive than non-exporters. Melitz (2003) made the debate more interesting and added a new dimension by showing that productive companies self-select into export market. And further Helpman, Melitz and Yeaple (2004) show that under the condition of within sectors equal trade and investment opportunity, the least productive companies operate only in domestic market and most productive serve international markets through export as well as foreign direct investment. Some more careful studies, as by Aw and Hwang (1995) for Taiwan; Bernard and Jensen (1995, 1999) for US; Clerides, Lach and Tybout (1998) on Colombia, concluded that companies that export are more productive than non- exporters. More precisely, the essence of this new transformed debate has been the *learning-by-exporting* and *self-selection* hypothesis. While many studies have reported evidences in favour of self-selection hypothesis some other studies have argued that companies become more productive when they participate in export market (see the survey by Wagner, 2007). On the other hand a growing body of literature has suggested that exporting confers little or no bonus in the form of faster productivity growth at the plant level (Clerides at al. 1998, Bernard and Jensen, 1999 & 2004). In most of the cases, the higher productivity of companies actually foredate their entry into export market. Despite a huge

[1] Earlier research using longitudinal micro data from official statistics in Germany to investigate causes and consequences of exporting is summarised in Wagner (1995).

amount of literature on the export-productivity linkage the empirical evidences on whether exporting increases companies' productivity has been heavily varied so far.

4.Global experience

During the fifteen years following the publication of the mind-breaking paper by Bernard and Jensen (1995) researchers around the world used company level data to investigate the relationship between exporting and productivity in microeconometric studies. Among the countries covered are highly industrialized countries (e.g., U.S., UK, Canada, Germany); countries from Latin America, Asian countries; transition countries (Estonia, Slovenia, Slovakia); and least developed countries from Africa. To summarize findings on differences in levels and growth rates between exporters and non- exporters there is a promising result - exporters are found to have higher productivity, and often higher productivity growth.
After reviewing those results it makes clear that exporters are more productive than non-exporters, while exporting does not necessarily improve productivity. Cross-country comparisons, and even cross-study comparisons for just one country, are difficult and stochastic because the many studies differ in details of the approach used. Therefore, there are still many issues regarding the relationship between exporting and productivity.

5.Data and Methodology

In this part of the paper the author introduces to the methodology. First, general view of the econometric methods is introduced. After that, calculation methods` pros and cons, used in this study, are presented.

6.Standard method

A common approach to simply investigate differences in productivity between exporters and non- exporters is to follow the methodology introduced by Bernard and Jensen (1995, 1999). Studies of this type use long-term data for plants analysed differences in levels and growth rates of productivity between exporters and non-exporters in a first step. Here one starts by looking at differences in average labour productivity (usually total value of shipments per worker, or value added per worker) or average total factor productivity between exporters and non-exporters. The result is an unconditional productivity differential. The next step is the computation of so-called exporter benefits, defined as the remaining percentage difference of labour productivity between exporters and non-exporters. These benefits are computed from a regression of log labour productivity on the current export status dummy and a set of control variables (usually including industry, region, company size measured by the number of employees, and year):

$$\ln LP_{it} = \alpha + \beta Export_{it} + cControl_{it} + e_{it} \qquad \text{Formula 1}$$

where i is the index of the company, t is the index of the year, LP is labour productivity, Export is a dummy variable for current export status (1 if the company exports in year t, 0 else), Control is a vector of control variables (like four-digit industry dummies, dummies for regions, company size, and year dummies), and e is an error term.

The export benefits, calculated from the formula, shows the average percentage difference between exporters and non-exporters controlling for the characteristics included in the vector Control. If good companies become exporters then we should expect to find significant

differences in performance measures between future export starters and future non-starters several years before some of them begin to export.

While most of the empirical studies that use variants of standard approach described in this section compare exporters and non-exporters across all manufacturing industries, some studies focus on companies from selected industries only and document interesting similarities and differences (see e.g. Alvarez and Lopez (2004), Blalock and Gertler (2004), De Loecker (2004), and Greenaway and Kneller (2004b)). Furthermore, Damijan, Polanec and Prasnikar (2004) recently looked at differences by foreign markets served and found that it matters whether companies exported to advanced countries or developing countries.

7.Pros and Cons

The standard approach has its weaknesses and problems. Paper analyses some recent developments that are used in dozen empirical investigations, namely the comparison of productivity between matched companies, and differences in the distribution of productivity as a whole between exporters and non-exporters.

However, we cannot observe whether they would really do so because they do start to export today; we simply have no data for the counterfactual situation. The use of a matching approach to search for causal effects of starting or stopping to export on productivity (and other dimensions of company performance) has been performed by Wagner (2002) and Girma, Greenaway and Kneller (2003, 2004), and it has been used in a growing number of empirical studies ever since (including De Loecker (2004), Arnold and Hussinger (2004), and Alvarez and Lopez (2004)).

The comparison of productivity (or productivity growth) between exporters and non-exporters usually represents mere productivity distribution. It is very difficult to deny stochastic dominance of the productivity distribution for exporters over the productivity distribution for non-exporters.

Recent studies on this relationship are another standard approach used in the investigation of the relationship between exports and productivity with the application of quantile regression, introduced to this field of analysis by Yasar, Nelson and Rejesus (2003) and Roger Koenker, Kevin F. Hallock, (2001).

This method examines the productivity effect of exporting at different points of the conditional output distribution. To describe it differently, quantile regression allows to test for differences in the effects of exporting on company's productivity as one moves from the lower to the upper tail of the conditional productivity distribution, and to identify the regions where these effects are especially weak, or strong, or not significantly different from zero at all.

Quantile regression can be illustrated as follows (see Koenker and Basset (1978) and Buchinsky (1998))

$$\ln y_{it} = x_{it}^{`}\beta_{\theta} + u_{it} with\ Q_{\theta}(\ln \frac{y_{it}}{\_}) = x_{it}^{`}\beta_{\theta} \qquad \text{Formula 2}$$

where ln **y** is the vector of log output, **x** is a vector of all the regressors in (1), **β** is the vector of parameters to be estimated, and **u** is a vector of residuals.

8.Labour Impact on Productivity Growth

The effects of shifts in sectorial shares on aggregate productivity growth can severely impact productivity and result. This factor is one of the most important involved in our research. It can be calculated using different techniques. In all cases, it is crucial to consider the shift of employment not only from sectors with low-productivity growth to sectors with high-

productivity growth but also from sectors with low-productivity levels to those with high-productivity levels. The reason is that the positive contribution to aggregate productivity of the high-growth sectors may be offset by their lower-than-average productivity levels. Standard approach is to express the productivity for the economy as a whole as the sum of the productivity level of each sector weighted by the sectorial employment shares:

$$P_n = \frac{Y_m}{L_m} = \frac{\sum_{j=1}^{n} Y_j}{L_m} = \frac{\sum_{j=1}^{n} L_j * P_j}{L_m} = \sum_{j=1}^{n} P_j * S_j \qquad \text{Formula 3}$$

where Y is output, L is employment by sector (j = 1…..n) and the total economy (m), P is labour Productivity (Y/L), and S is the sectorial employment share.

Meļihovs and Davidsons base their estimation on quarterly data for the period 1995Q1 – 2005Q4. The data sample in our estimation includes 4 additional observations for the year 2006. As the real capital K_t indicator, Meļihovs and Davidsons use accumulated capital, using the reported capital stock at the end of 1994 as the initial value, investment in real gross capital formation and using a depreciation rate of 10% per annum, which is the average depreciation rate over the sample period. We use the same methodology for calculation of the real capital stock, with the exception that we use the reported capital stock at the end of 2000 as the reference value to compute the real capital stock K_t in the period 1995Q1-2006Q4. Labour force surveys are the source of employment figures.

Based on the extended data set, we have re-estimated the above specified model. Results of the estimation, as well as results obtained by A. Meļihovs and G. Davidsons are presented in Table 1 below It should be noted that the estimated long-run factor intensity parameter of the production function was not significantly affected by changes in the data: Figure 1 shows dynamics of the estimated total factor productivity and its growth in the period 1996-2006:

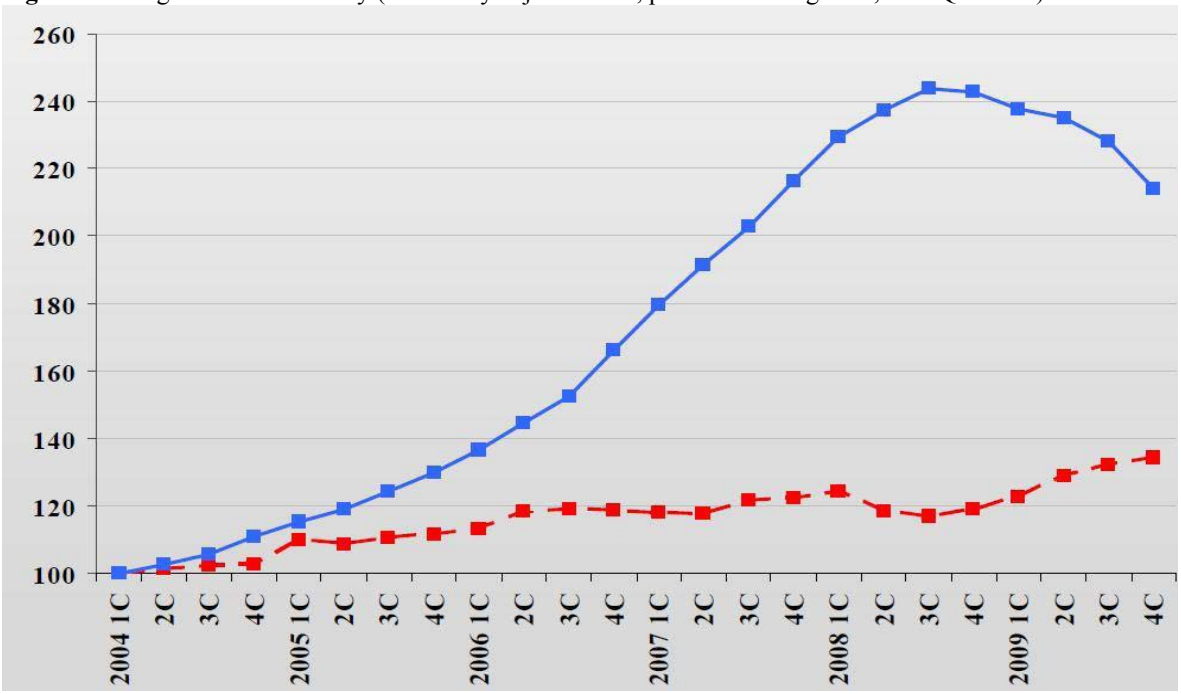
Table 1: State space system estimation results: production function parameters

	Coefficients	Standard error	z-Statistic	Probability	Coefficients*
β	0.341	0.046	7.480	0.000	0.341
ϕ	0.381	0.056	6.978	0.000	0.365
λ	-0.854	0.185	-4.624	0.000	-0.443
	Final state	Root MSE**	z-Statistic	Probability	Final state*
Log(A_t)	-0.211	0.005	-42.388	0.000	-0.221
γ_t	0.006	0.003	2.093	0.036	0.009
Log likelihood	251.218				

*Source: A. Meļihovs, G. Davidsons, 2006.

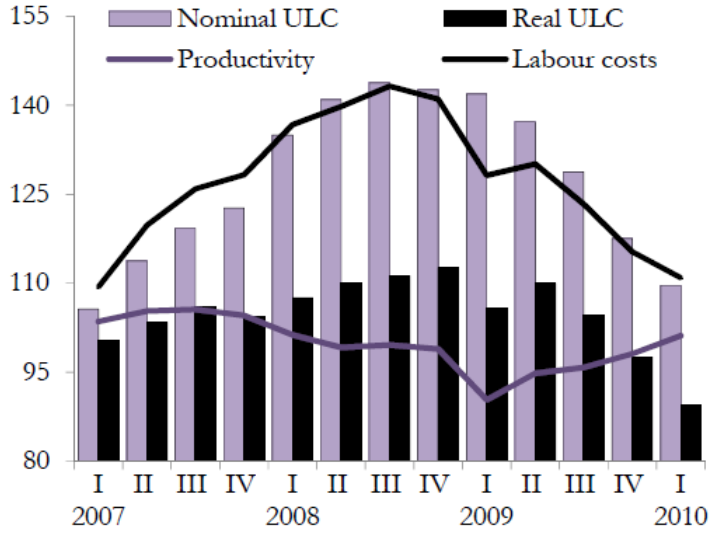
** Root mean standard error

Figure 11. Wages and Productivity (seasonally adjusted data, per one working hour, 2004Q1 = 100)



Source: Bank of Latvia

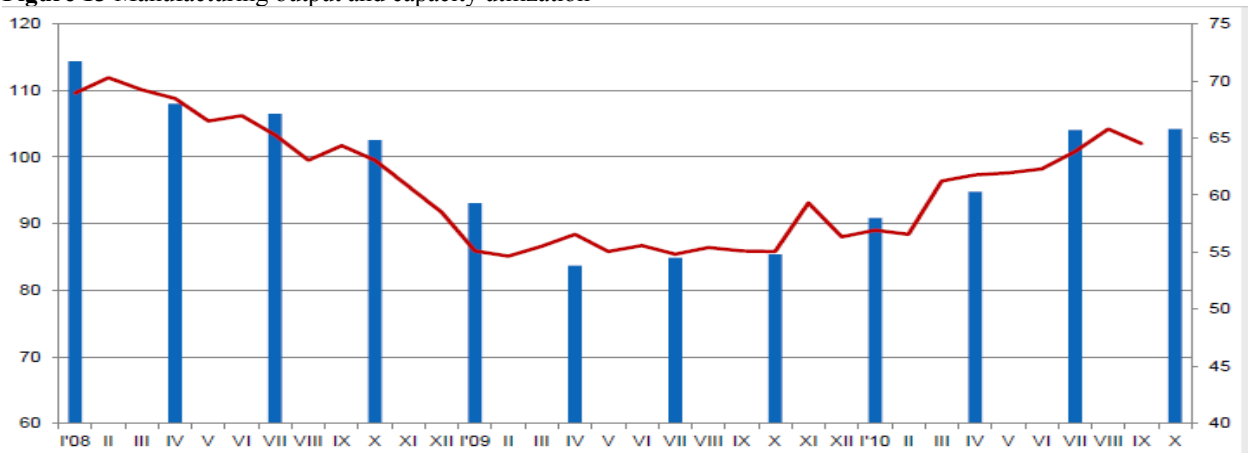
Figure. 12. Changes of Labour Costs in Latvia (4th quarter of 2006=100)[2]



Source: Eurostat

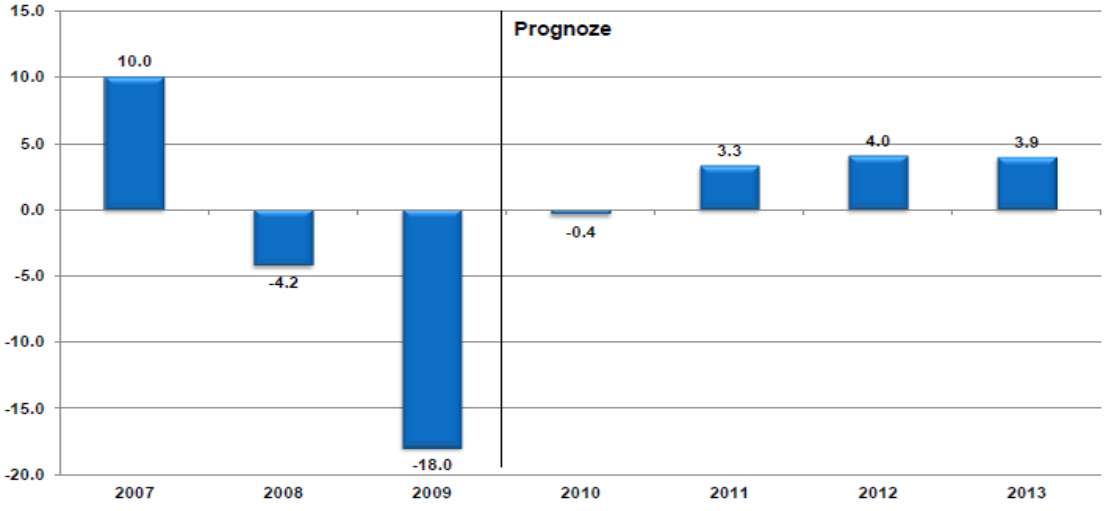
[2] ULC is defined as a relationship between the labour costs and labour productivity. If the productivity is growing faster than wages, the ULC decreases and it means that price competitiveness of the country increases and vice versa.

Figure 13 Manufacturing output and capacity utilization



Source: Central Statistical Bureau

Figure 14. Gross Domestic Product in Latvia



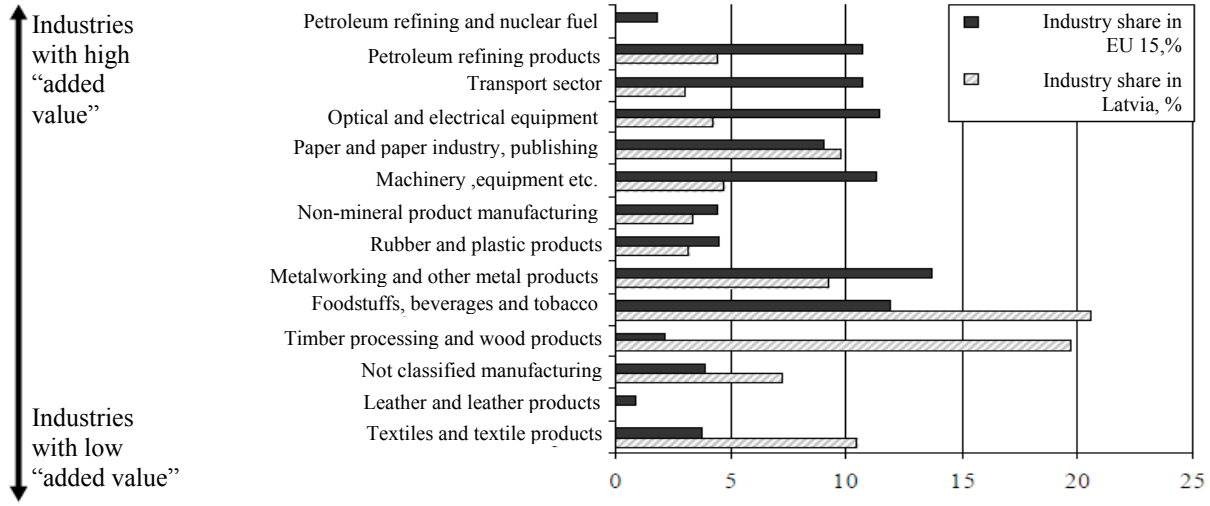
Source: Central Statistical Bureau

It is assumed that labour productivity of employed persons in Latvia and the EU27 countries is almost the same. The result is - 60% of the average EU27 level is achieved. The reason for it is an excessively high specialisation in sectors where productivity is not particularly high also in the EU27countries. These results are particularly affected by bulky employment in agriculture, hunting and forestry. Other sectors with low productivity (manufacture of textiles, wood and articles of wood and cork) are also strongly represented in the Latvian economy.

Expectations regarding the technology transfer capacity and opportunities for Latvia assumed not so optimistic within the current economic framework of Latvia, and the country is

unlikely to ever attain the average income level of the EU27 countries. Even if the quality of labour and technologies in Latvia are almost similar as in developed European economies, the large share of sectors producing goods and offering services with a relatively low value added will be an obstacle on the way to attaining the income level consistently with the given economic framework, with maximum income accounting only for around two thirds of the EU27 average.

Figure. 13. Distribution of manufacturing industries by their added value.



Source: Central Statistical Bureau

Moreover, instead of being comparable with the current status of the economy, the changes must be related to the EU27 countries (i.e. Latvia's performance must outpace these countries). Nowadays, almost all high-tech companies outsource low-skilled labour operations (usually mounting and assembly) to the countries where labour costs are low. In addition, it is dependent on distinctive historical development trends (e.g. privatisation process) across countries. The patent data seem to be a more reliable and unbiased research factor, for, in contrast to the indicator above, it captures the outcomes of scientific research activities (i.e. indicates that an important investigation is accomplished but does not provide information on utility of the invention).

In order to separate the short-term variance from the long-term trend, the error correction model was estimated. It resulted in around 0.34 long-term return on capital and a slightly higher 0.37 short-term return (however, the difference is statistically insignificant).

9. Concluding remarks

Talking about conclusion that emerges after fifteen years of microeconometric research in the relationship between exporting and productivity is that exporters are more productive than non-exporters, while exporting does not necessarily improve productivity.

Nonetheless, there are some difficulties concerning comparison of the results from the vast numbers of studies in detail, it still seems to be early to speak of these findings as solid facts, and to discuss any policy conclusions to be based thereon. Furthermore, there are a number of important issues that have only been touched upon recently in some studies, and that deserve future research efforts that cover more countries:

Furthermore, there is a different area of future research that is driven by an emerging theoretical literature. A number of theoretical papers, including Bernard, Eaton, Jensen and Kortum (2003), Melitz (2003), Helpman, Melitz and Yeaple (2004), and Yeaple (2005), take the results from the empirical literature on companies and exports as a starting point and develop models of international trade with heterogeneous companies which focus on the relationship between productivity and exports.

Conclusion

In this research we analyzed the possible relationship between companies' labor productivity growth rates and their export orientation. We described that there is an effect of companies' export activities on labor productivity growth.

During our research we found that the relationship between labor productivity growth and the export sales ratio is not necessarily stable over time. This is a unanticipated result.

Our results, describes a time-varying relationship between labor productivity growth and the export-sales ratio. The reason for this result might be that companies also sell their products not necessarily in European Union, but also in more distant and technologically less advanced countries. This could increase the costs of coordination and control of exporting firms, but companies are less likely to benefit from this kind of exporting, if they export to a technologically less advanced country this means that innovation level of their product is also not so important as for advanced countries in EU.

One possible reason for these results is that most previous studies are restricted to analysing the relationship between a companies' export status and the growth of its labour productivity, using the companies' export *status* as a primary treatment variable and comparing the performance of exporting and non-exporting companies.

As a first step of our research, there is not yet clear from our modelling is whether these exporting status effects will occur primarily through their indirect effects from post export returns, or directly from company's' transformation powers. There is not yet fully approved direct correlation between these factors. As limitations in our data this research was unable to identify does exporting status is critical for high productivity, and therefore author is forced to use in future researches more information analysis presented by authority institutions.

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Appendix - Tables and Figures

	Table A1: Labour productivity per hour worked														
	1995	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
European Union (27 countries)	83,9	83,9	83,9	84,1	84,7	85	85,7	86,1	86,5	86,9	86.9 (b)	87	87,2	87,5	87,8
European Union (25 countries)	88	88,1	88,3	88,5	89	89,3	89,9	90,3	90,6	90,8	90.8 (b)	90,7	90,8	90,9	91,3
European Union (15 countries)	100	100	100	100	100	100	100	100	100	100	100.0 (b)	100	100	100	100
Euro area (17 countries)	100,2	99,9	99,7	99,8	99,6	99,2	99,3	99,1	98,9	98,4	98.9 (b)	99	99,4	99,6	100,1
Euro area (16 countries)	100,6	100,3	100,1	100,1	100	99,6	99,6	99,4	99,3	98,7	99.2 (b)	99,2	99,7	99,8	100,3
Belgium	129.5 (e)	129.0 (e)	127.9 (e)	124.1 (e)	124.3 (e)	129.1 (e)	123.8 (e)	125.6 (e)	124.5 (e)	124.8 (e)	121.5 (e)	119.9 (e)	119.5 (e)	117.7 (e)	117.9 (e)
Bulgaria	27	23,5	22,5	24,1	25,7	27,7	28,3	29,8	30,7	30,5	31.5 (b)	32,1	33,1	34,9	35,1
Czech Republic	44,3	45,1	43,7	43,4	44,2	43,9	47,1	47,2	49,8	51,1	51.1 (b)	51,7	53,8	54,1	56,2
Denmark	106	107,1	105,8	104,1	103,3	103,6	100,5	101,5	99,7	102,4	100.5 (b)	99,7	99	98,9	97,8
Germany (including former GDR from 1991)	110,8	111,4	110,4	109,3	110	107,1	107	107,2	110	110,1	111.7 (b)	111,7	111,4	110,6	110
Estonia	..	..	..	..	..	34,5	35,6	37,4	40,1	42,2	44.1 (b)	45,4	48	48,1	52
Ireland	..	..	..	93,3	94,1	95,4	97,1	102,1	104,8	105,1	104.0 (b)	104,9	107,6	102,4	105,9
Greece	..	..	..	..	..	64,5	67	68,7	70,2	70.9 (p)	69.1 (p)	67.2 (p)	67.4 (p)	69.4 (p)	70.7 (p)
Spain	93,1	92,9	91,4	90,9	89,4	87,5	87,4	88,7	88,6	88,6	88.9 (b)	90,7	92,5	93,1	96,7
France	111,7	110,4	111	112,5	112,6	114,6	115,6	118,5	115,1	113	114.4 (b)	114,8	114	112,3	111,9
Italy	102,8	101,2	100,9	101,1	99,7	98,9	99,5	93,6	92,2	90,1	89.4 (b)	88,7	89,3	91	91,7
Cyprus	62,7	62,7	62,2	63,4	63,9	64,5	65	64	62,8	64,7	65.7 (b)	65,7	67,4	70,4	70,5
Latvia	..	..	..	..	..	26,5	27,8	29	29,9	31,8	32.7 (b)	33,6	36	37,7	39,5
Lithuania	30,6	31,2	32,4	33,5	34,2	33,8	37,5	38,8	42,4	43,2	42.6 (b)	44,3	46,1	47,3	44,7
Luxembourg	..	..	..	..	..	..	..	148,1	154,1	157,6	159.2 (b)	167,7	167,9	167,3	166
Hungary	40,1	40,4	40,9	41,9	41	41,5	45,4	47,1	48,5	49,7	49.6 (b)	49,9	50,3	52,9	53,5
Malta	72.4 (e)	66.7 (e)	68.3 (e)	68.8 (e)	69.6 (e)	72.1 (e)	79.8 (e)	70.2 (e)	71.4 (e)	69.1 (e)	70.6 (e)	70.2 (e)	69.0 (e)	70.4 (e)	72.2 (e)
Netherlands	111,2	110,5	110,8	112,5	114,1	116,4	116,3	117,1	115,2	117,7	119.8 (b)	119,4	120,5	121,9	117,3

Austria	105,7	104,6	101,8	102,4	102,7	102,4	98	99,4	99,6	100,5	99.2 (b)	100,3	99,7	100,4	100,8
Poland	32,3	33,5	34,7	35,5	76.9 (b)	38,7	39,3	41,1	42	43,3	43.2 (b)	42,8	43,7	44	46,7
Portugal	..	..	..	..	..	53,1	52,8	52,7	53,2	52,4	54.6 (b)	55	55,7	55,6	56.7 (p)
Romania	..	..	..	..	18,5	18,6	20,2	22,8	24,7	27,4	28.4 (b)	31	33,8	38,1	37
Slovenia	..	..	..	..	..	64,7	65,7	65,8	66,9	69,2	72.3 (b)	73,6	74,5	73,8	71,2
Slovakia	39,2	41,1	43,2	45,5	45,9	46,7	49,5	52,4	54,9	55,5	56.9 (b)	59,8	62,7	66	69,3
Finland	91,5	89,6	91	94,3	93,9	95,8	94,8	94	92,7	96,1	94.4 (b)	94,2	97,3	97,1	94,7
Sweden	99,1	99,3	100	99,4	100,6	101,7	98,1	99,3	102,5	105	101.7 (b)	103	103,8	102,6	99,8
United Kingdom	88.4 (e)	90.1 (e)	91.3 (e)	91.8 (e)	92.9 (e)	94.5 (e)	95.2 (e)	96.3 (e)	97.8 (e)	99.9 (e)	98.3 (e)	98.1 (e)	96.1 (e)	96.7 (e)	94.3 (e)
Iceland	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Liechtenstein	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Norway	113,4	119,5	120,8	112,9	119,5	139,2	139,7	135,5	140,5	147,3	157.4 (b)	162	155,3	161,6	152,3
Switzerland	97,3	98,4	99,3	98,4	96,1	95,8	94,9	96	93,8	92,3	91.3 (b)	93,2	97	99	..
Montenegro	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Croatia	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Former Yugoslav Republic of Macedonia, the	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Turkey	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
United States	110.4 (e)	111.3 (e)	110.4 (e)	110.8 (e)	112.8 (e)	112.2 (e)	112.6 (e)	113.1 (e)	116.3 (e)	117.8 (e)	118.8 (e)	115.6 (e)	115.6 (e)	114.3 (e)	117.7 (e)

(..) - Not available

(b) - Break in series

(e) - Estimated value

(p) - Provisional value

Note: GDP in Purchasing Power Standards (PPS) per hour worked relative to EU-15 (EU-15 = 100)

Source: http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tsieb040