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Productivity

An International Comparison

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Abstract

This study conducts an international comparison of productivity and profitability. First, the level and growth of productivity are compared in OECD countries for the period from 1975 to 2009. According to this comparison, productivity growth has been faster in the key Finnish sectors compared with Finland's competitors. One of the main engines of growth since 1995 has been the ICT revolution. Second, the profitability of industries is calculated for 2007. Profitability is divided into productivity, prices and labour compensation. The results show that profitability in Finnish manufacturing is competitive because of the high productivity level in 2007. However, the measurement of profitability and the quality of price components require further research.

Key words: Productivity, profitability, prices, labour compensation

JEL: J24, J31, O47

Tiivistelmä

Tutkimuksessa selvitetään teollisuuden ja palveluiden tuottavuutta ja kannattavuutta. Aluksi verrataan tuottavuuden tasoa ja kasvua OECD-maissa vuosina 1975–2009. Vertailun mukaan monilla Suomen avainaloilla tuottavuus on kasvanut kilpailijamaita nopeammin 1990-luvulta lähtien. Eräänä tärkeänä moottorina on ollut informaatioteknologian tuoma murros 1990-luvun puolivälistä alkaen. Lopuksi raportissa tarkastellaan kannattavuutta vuonna 2007. Laskelmissa kannattavuus on jaettu tuottavuuteen, hintoihin ja tuntipalkkaan. Tulokset osoittavat, että myös kannattavuudessa Suomen tehdasteollisuus on selviytynyt lähinnä hyvän tuottavuuden ansiosta. Tämä vaatisi kuitenkin lisätutkimusta. Erityisesti hintakomponentin laatuun tarvittaisiin lisävalaistusta.

Asiasanat: Tuottavuus, kannattavuus, hinnat, palkat

1 Introduction

The post-industrialised countries are taking new steps to operate in economic circumstances in which the labour force is decreasing and physical investments are becoming less competitive. In these countries, the only way to improve economic growth is to develop mechanisms that improve labour productivity and intangible capital.

In this report, we compare the levels and growth of productivity in OECD countries for the period from 1975 to 2009. Comparing Finland to other industrialised countries, we find that productivity growth in key industrial sectors in Finland has increased more rapidly than in the OECD benchmark countries. Profitability is differentiated in terms of 1) productivity, 2) prices, and 3) labour compensation. This analysis shows that Finnish industries have maintained their profitability because of high productivity levels in 2007.

2 Background

A key indicator in the assessment of economic performance is productivity. A traditional theory of production offers the basis for measuring productivity by dividing input into capital, labour and intermediate products. The production function also includes a time variable. The partial derivative of the production function with respect to the time variable is known as technological change or the total factor productivity change (Maliranta, 1996; Balk, 2009).

The main purpose of this study is to conduct a reliable and transparent productivity analysis across industries and countries. Productivity is the primary aspect of the competitiveness analysis. Furthermore, consumers purchase products, and higher prices are associated with greater profitability for firms. We also examine a third aspect, which is the wage level of industries. When wages are high or increasing, the profitability of a firm is low or decreasing. Therefore, an international comparison of these three aspects is important to obtain a complete understanding of competitiveness in Finnish industries.

Several studies have examined how reliable variables can be chosen to measure productivity. For example, Maynard (2008) discusses criteria for measuring work effort in cross-country comparisons of labour productivity. Heurlén and Sørensen (2008) examine why hours worked differ in various data sources. Balk (2003) conducted a survey to study various measurement problems in productivity, particularly in OECD countries (2008), and provide various perspectives on productivity measurement. To the greatest extent possible, we have considered these options when selecting our data sources and methodology.

Many studies have examined estimation techniques for international productivity comparisons. For example, van Ark and Pilat (1993) compared productivity performance at the international level. These authors used industry-of-origin estimates, and their analysis explained the manner in which productivity gaps have developed in manufacturing industries since 1950. Van Ark and Timmer (2001) compared purchasing power parities (PPP) and international productivity by using various methodologies, industry-of-origin unit value ratios, and service sectors. Bernand and Jones (1996) examined productivity convergence in 14 OECD countries from 1970 to 1987. Kaitila et al. (2008) compared the levels and development of labour productivity in different countries, especially in the private sectors of economies from 1975 to 2004.

Several practical challenges may be encountered when performing international comparisons of productivity. Data must be collected from sources that use the same methods across various countries. Price level and change (P) corrections and exchange rate transformations must be performed to compare countries at the same price level. Most importantly, however, the data sets must be obtained from various sources and databases. For cross-country comparisons of productivity at the sectoral level, input and output must be collected from the same source to ensure internal consistency (see Ark pp. 53–84). Therefore, the analysis must consider the methodology by which these data sets were collected and calculated. Following this consideration, we are able to use these data sets in the analysis.

3 Data and methodology

This study conducts an international comparison by separating profitability in the industrial and service sectors in various countries into productivity, prices and wages.

The *first step* is to divide productivity into i) the profitability of firms, ii) the compensation (wages and other labour costs) for total employment and iii) production the prices that consumers pay. Labour productivity (*LP*) is then measured as follows:

$$LP = \frac{VAL / P}{H} = \frac{1}{P} \times \frac{VAL}{W} \times \frac{W}{H} \quad (1)$$

where

VAL = value added at market prices (= OP (operating profit) + W (labour input compensation))
P = price level
H = working hours
W = labour input compensation

In equation (1), high labour productivity implies that i) the price level is low (*I/P* is high), ii) the profitability of firms is high (*VAL/W=1+OP/W*), and iii) wages are high (*W/H*). This analysis is less straightforward because working hours are unavailable. An analysis can be conducted to measure output and input by using the following definition: value = quantity x unit price. According to this definition, quantity is measured by using a ratio of value and unit price. Working hours can be calculated when the value of the labour input compensation and the unit price of working hours are known (Balk, 2003; Balk, 2009; OECD, 2008; Diewert & Nakamura, 2007).

Productivity growth studies divide their analyses into two categories (see, for example, Heurlén – Sørensen, 2008). The first category is the percentage of change in labour productivity, where ΔVA is the percentage of change in gross value added, and ΔH is the percentage change in the number of working hours between two periods:

$$\Delta LP = \frac{\Delta VA}{\Delta H} \quad (2)$$

In the second approach, VA_t is the gross value added in period *t,* and H_t is the number of working hours in period *t*:

$$LP_t = \frac{VA_t}{H_t} \tag{3}$$

The *second step* involves dividing profitability into its constituents. Equation (1) can be written so that profitability is expressed as follows:

$$\frac{VAL}{W} = \frac{VAL/P}{H} \times P \times \frac{1}{W/H} \tag{4}$$

In equation (2), the right-hand term is the profitability of firms, which is dependent on labour productivity in real terms, price level and wages per hour.

The data that are used in this study are collected from several databases. The main sources are the OECD STAN, EUKLEMS, Eurostat SBS (Structural Business Statistics) and LCS (Labour Cost Survey) databases. National databases were used to complete the 2007–2010 period when data were available.

First, we need the base year to calculate the levels of variables. SBS includes most of the necessary variables for industries in European countries in 2007:

- *Personnel costs (W)*
- *Number of persons employed (L^{TOT})*
- *Number of employees (L)*
- *Gross value added per employee (VAL/L)*

Labour costs per hour (*w/h*) are obtained from LCS for 2008. OECD STAN is used to obtain these variables for the US and Japan. The level of productivity, prices and wage costs can then be calculated for 2007, which is the base year for the analysis.

Gross value added and total hours are calculated as *VAL/L x L* and *W/(w/h)*. Total hours do not include the work of entrepreneurs, which is corrected by a ratio of the number of persons employed and the number of employees (L^{TOT}/L). Therefore, the total hours are $L^{TOT}/L \; x \; h = h^*$.

A price correction (*P*) is performed using EUKLEMS price correction tables from 1997, including exchange rate transformations. Prices are updated for 2007 by using EUKLEMS gross output price indices and denoting Finland as 1. For non-Euro countries, exchange rate changes are observed between 1997 and 2007. Finally, we have 1) *VAL/P/ h**, 2) prices and 3) labour costs per hour in 2007. Profitability (*VAL/ W*) in 2007 is calculated using the same method.

Time series data for the price-corrected value added and total hours for 1975–2010 are obtained primarily from the OECD STAN and EUKLEMS databases.

Finally, we obtain the following data:

1. Productivity (2007, 1975-2010): *VAL/P/h**
2. Price level (2007): *P*
3. Wages per hour (2007): *w/h**
4. Profitability (2007): *VAL/W*

4 Cross-country comparisons of productivity

In this chapter, labour productivity in industrial and service sectors is compared by using a methodology that establishes the productivity level to the year 2007. Cross-sectional comparisons for 2007 are made by using Eurostat SBS and LCS data. Comparisons for other years are computed using productivity time series that are obtained from OECD STAN. Productivity growth is shown as a productivity time series for 1975–2009 (figure A). The comparison is presented in figure B, in which other countries are scaled toward the Finnish productivity level by setting Finland equal to 1.

Manufacturing (NACE 15–37)

Labour productivity increased in the Finnish manufacturing industries to nearly the highest international levels. In the early 1980s, Finnish industrial productivity was below the level of the Euro11[1] countries. During the 1990s, productivity increased more rapidly than in other countries and reached the US level. One of the main sources of Finnish productivity growth is the ICT revolution that began in the early 1990s.

Figure A Value added (EUR) per hour (SBS, OECD STAN)

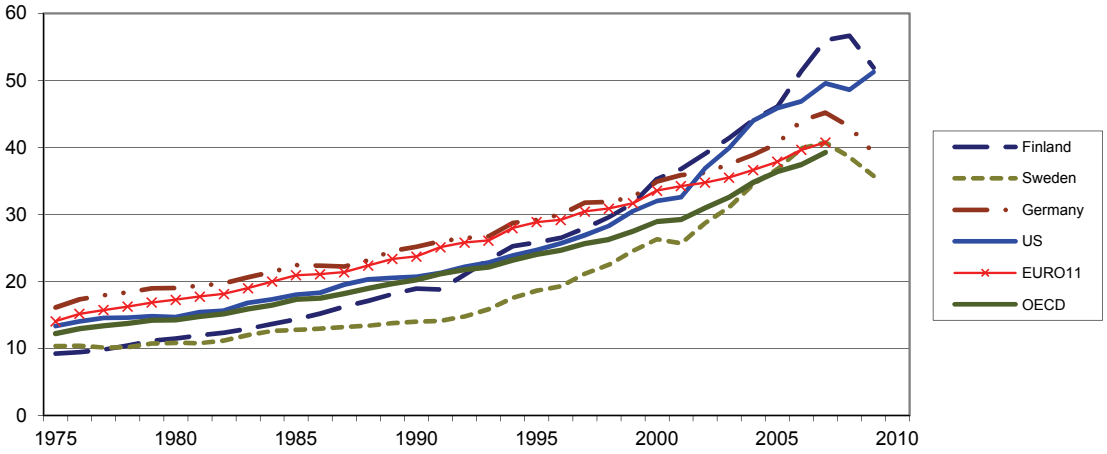
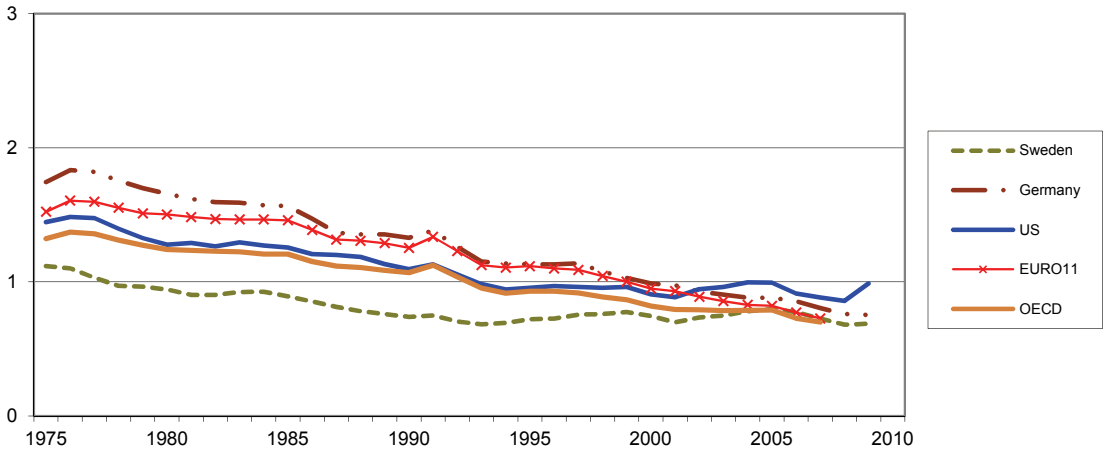


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



[1] Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Spain, and Portugal.

Wood and wood products (NACE 20)

The productivity level of the wood and wood product industries in Finland for 2007 was almost parallel with Sweden's level. However, growth in Finland has been more rapid than in Sweden. In these comparisons, US productivity appears to be surprisingly low. Further examination is required to determine why the productivity level of the US wood industries was exceptionally low in 2007.

Figure A Value added (EUR) per hour (SBS, OECD STAN)

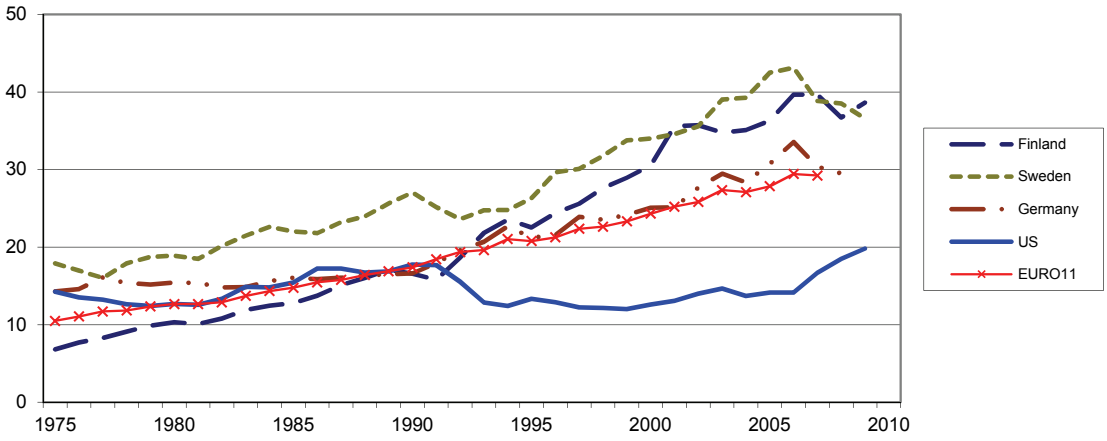
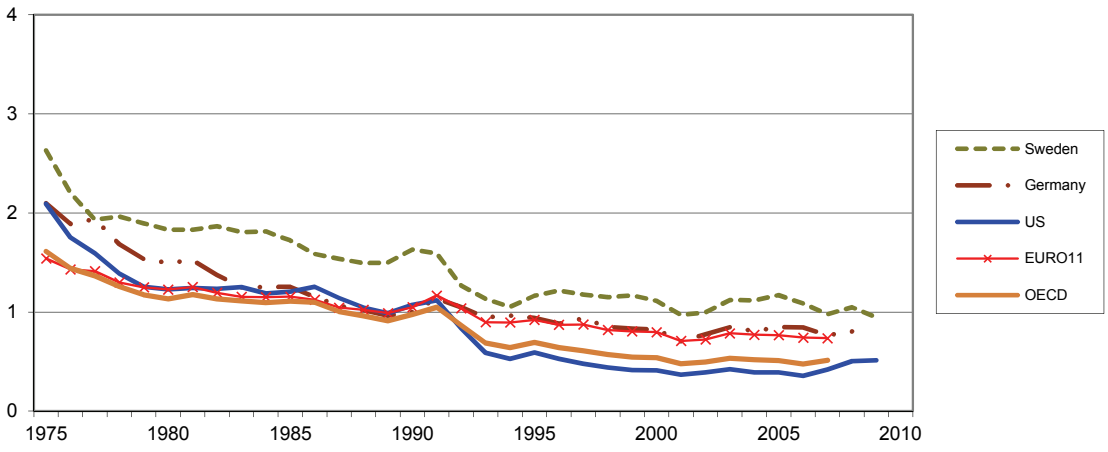


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



Pulp, paper and paper products (NACE 21)

In the pulp and paper industries, we used the 2007 level, although there were radical shifts in productivity levels compared with other studies.[2] Finland has a clear productivity advantage, but in the 2007 comparisons, the Swedish pulp and paper industries were at the highest level. The pulp and paper industries are highly capital-intensive industries. However, during the 2000s, the Finnish pulp and paper industries underwent several stages of reorganisation that increased productivity growth.

Figure A Value added (EUR) per hour (SBS, OECD STAN)

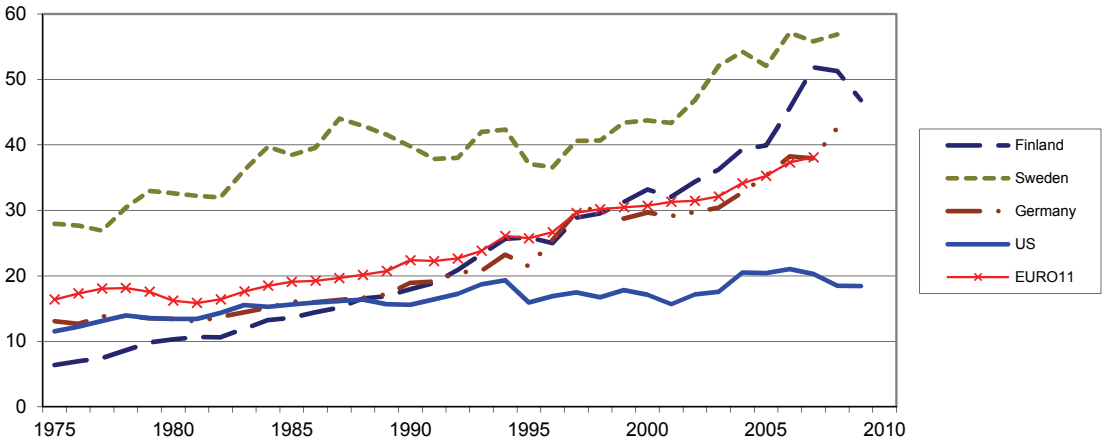
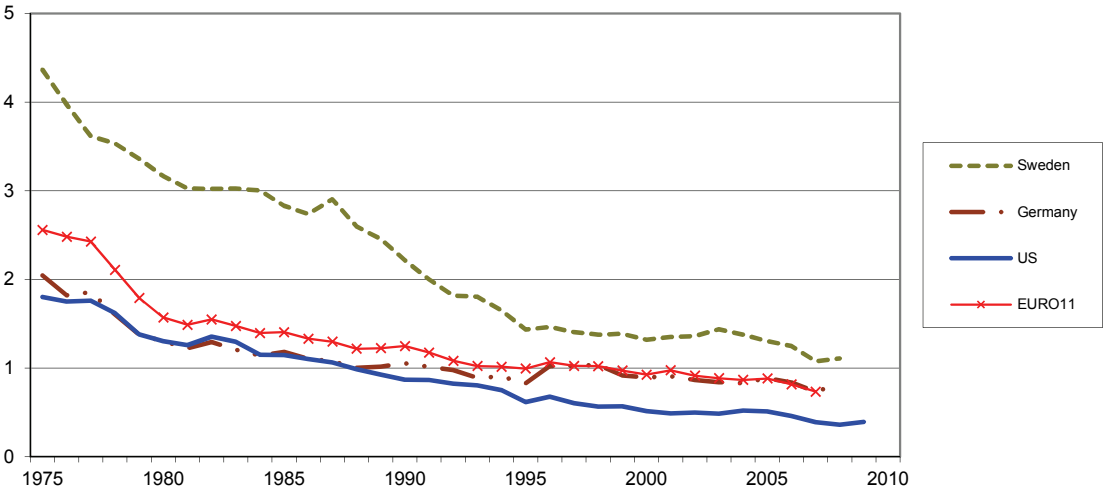


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



[2] See, for example, the work of Kaitila et al. (2008). Productivity levels for 2004 are shown in Appendix 1A. The main difficulty is that despite the lower productivity levels in 2007 than in 2004 for the Finnish pulp, paper and paper product industries, productivity grew rapidly from 2004 to 2007.

Machinery and equipment (NACE 29)

In the US and Swedish machinery and equipment industries, the level of productivity in 2007 was dramatically lower than in 2004 and in other productivity comparisons.[3] With regard to productivity growth, the fastest improvement in productivity was observed in the US and Finnish industries during the 2000s.

Figure A Value added (EUR) per hour (SBS, OECD STAN)

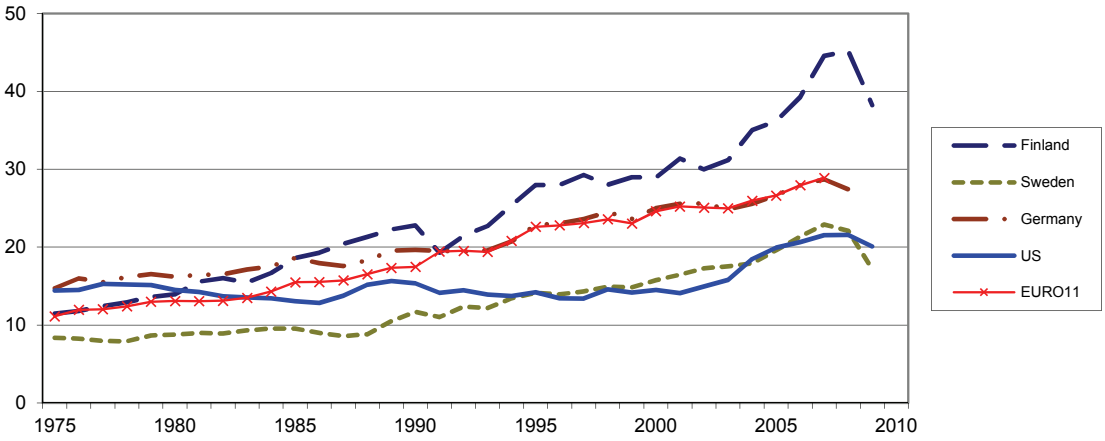
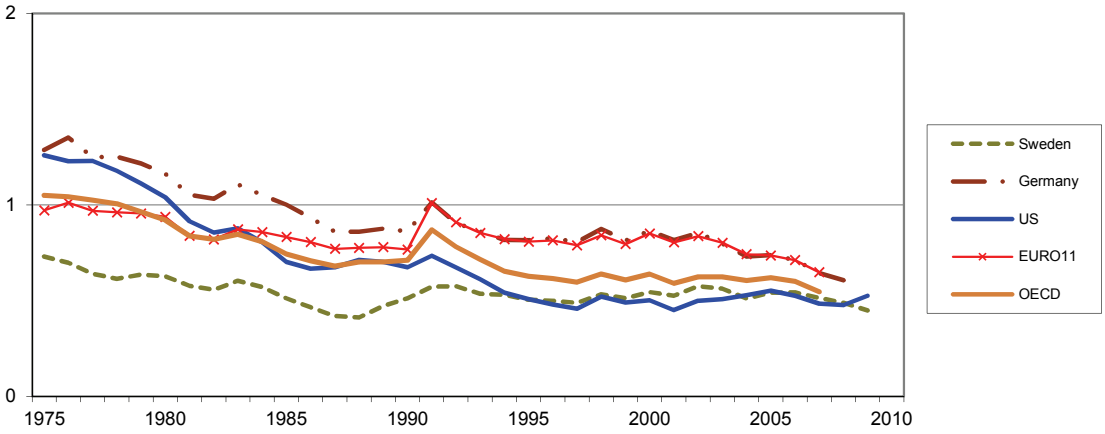


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



[3] See the study of Kaitila et al. (2008); productivity levels for 2004 are shown in Appendix 1B.

Electrical and optical equipment (NACE 30–33)

Electrical and optical equipment includes office, accounting and computing machinery (30); electrical machinery and apparatus, nec (31); radio, television and communication equipment (32); and medical, precision and optical instruments (33). In these industrial sectors, many price indices were unavailable or unreliable. Therefore, we show only the aggregate productivity of electrical and optical equipment. The most productive sector has been the ICT industry in Finland, Sweden and the US, which has demonstrated record-breaking productivity growth since the ICT revolution began in the 1990s. Technology improvements in mobility, wired and wireless telecommunications, communication processes and data recording are the ICT characteristics that have significantly improved productivity in Finland (Maliranta, 2004; Maliranta – Rouvinen, 2004).

Figure A Value added (EUR) per hour (SBS, OECD STAN)

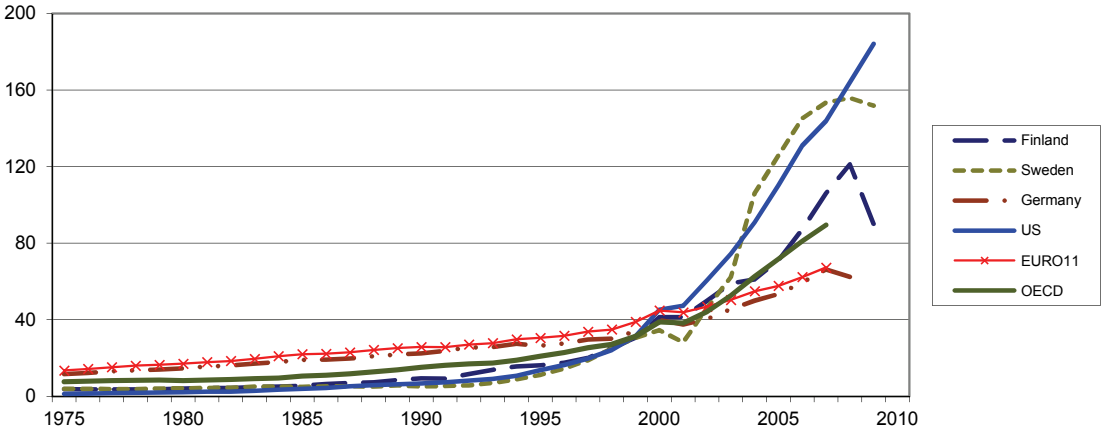
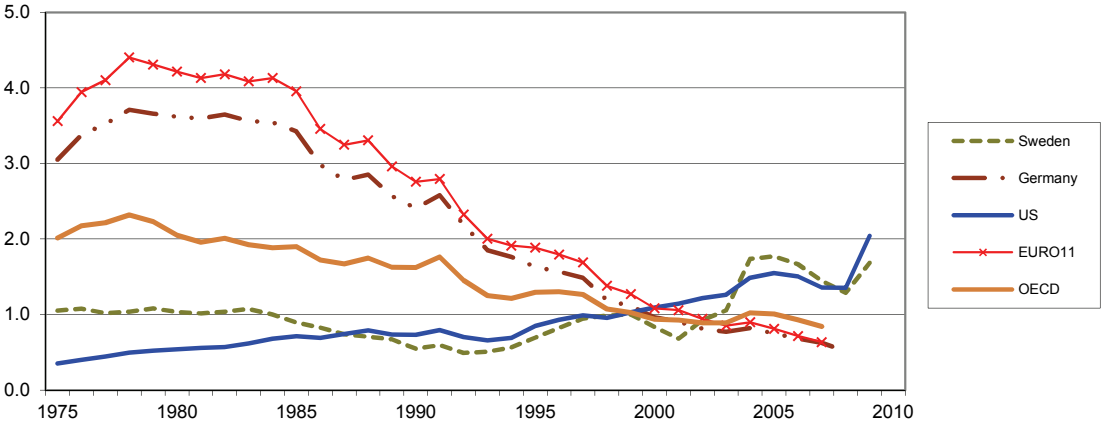


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



The service sector is one of the most rapidly growing employers in Finland. The most rapid growth has been reported in industrial-based services, such as ICT, business and consumer services. However, as discussed in the following section, productivity growth in Finland has been slower in comparison with other Western countries.

Wholesale and retail trade and repairs (NACE 50–52)

This service sector includes the sales, maintenance and repair of motor vehicles and retail sales of fuel (50); wholesale, trade and commission (51); and retail trade and repairs of household goods (52). The highest productivity level in 2007 was in Germany, followed by the US and Finland. Since 1995, productivity growth has been the most rapid in the US wholesale, retail trade and repairs sector. The results show the sensitivity of productivity level comparisons because our analysis differs remarkably from the analyses of Timmer – Ypma (2006). Their analysis, which included an international comparison of PPP-corrected labour productivity levels in retail and wholesale trade among OECD countries, found that Finland, Germany and Benelux were the leading countries for PPP-converted value added per hours worked, with higher levels than the US.

Figure A Value added (EUR) per hour (SBS, OECD STAN)

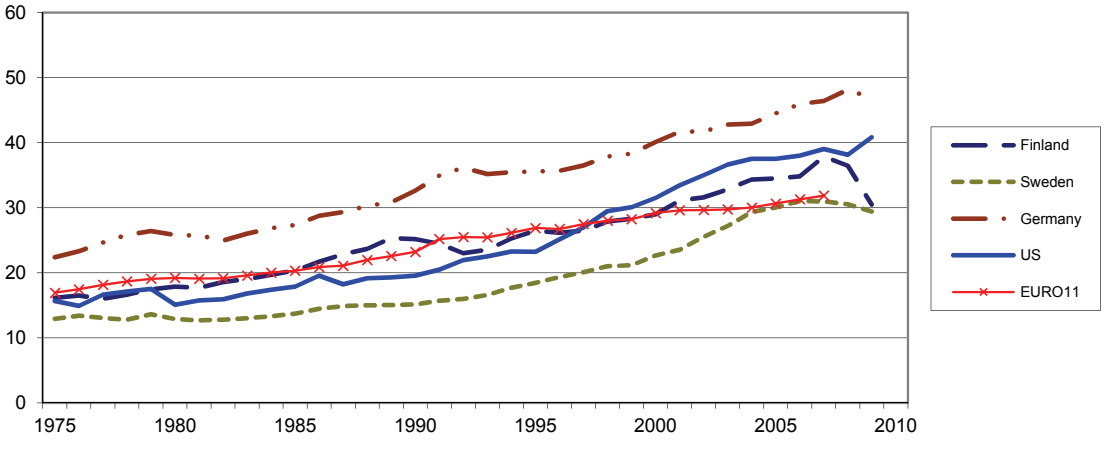
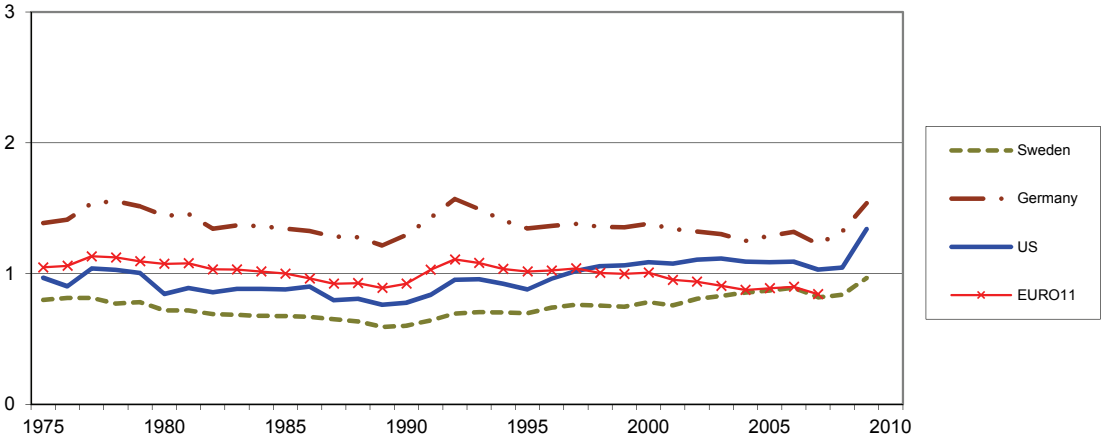


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



Hotels and restaurants (NACE 55)

In the hotel and restaurant sectors, the highest productivity level was observed in the US. Surprisingly, the productivity level was also rather high in Germany. In the productivity growth comparison, the US hotel and restaurant sector appears to exhibit the most rapid improvement. Finland has experienced medium productivity growth at nearly the same level as that of other Euro countries. International productivity comparisons in this sector are challenging because there is a greater number of small firms in southern Europe than in northern Europe (see Kaitila et al., 2008).

Figure A Value added (EUR) per hour (SBS, OECD STAN)

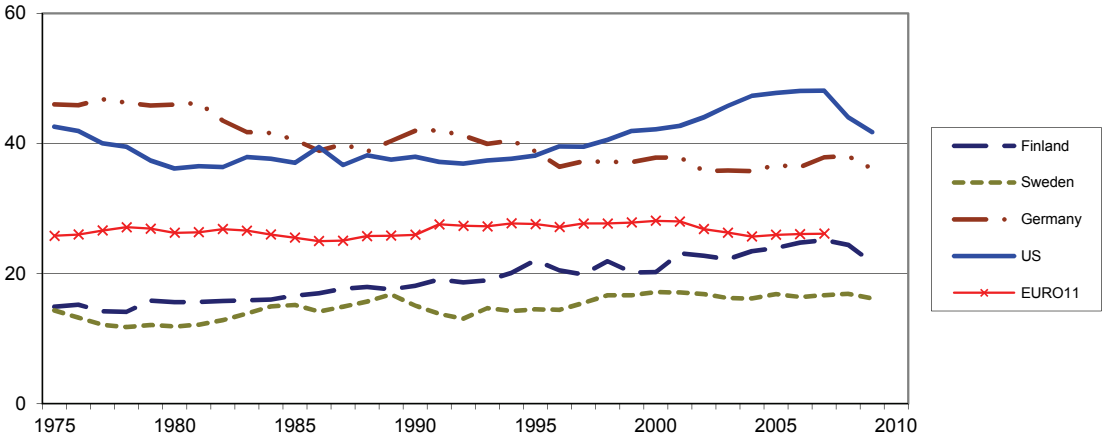
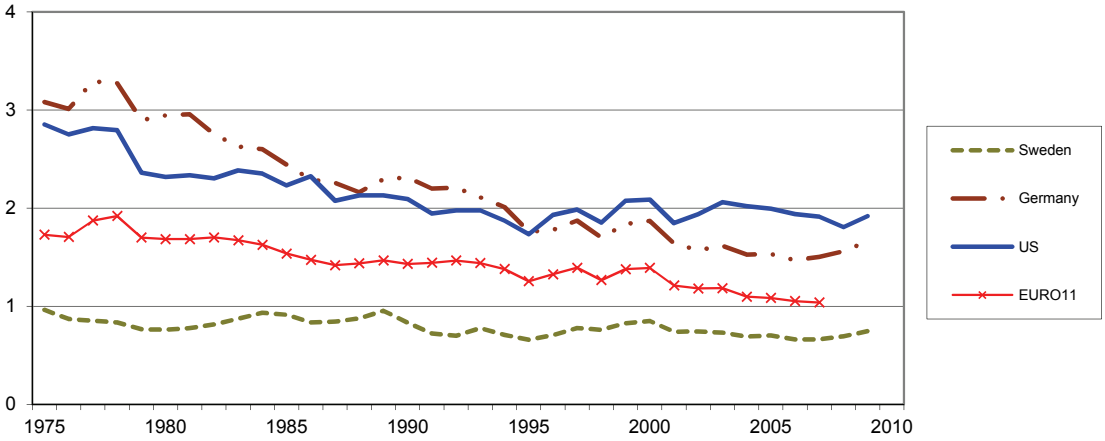


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



Transport, storage and communications (NACE 60–64)

The activities in this sector include transport and storage as well as post and telecommunications. In both level and growth comparisons, the US transport, storage and communications sector is distinguished from that of the other countries. Particularly in the 2000s, the US and Germany demonstrated the fastest productivity growth.

Figure A Value added (EUR) per hour (SBS, OECD STAN)

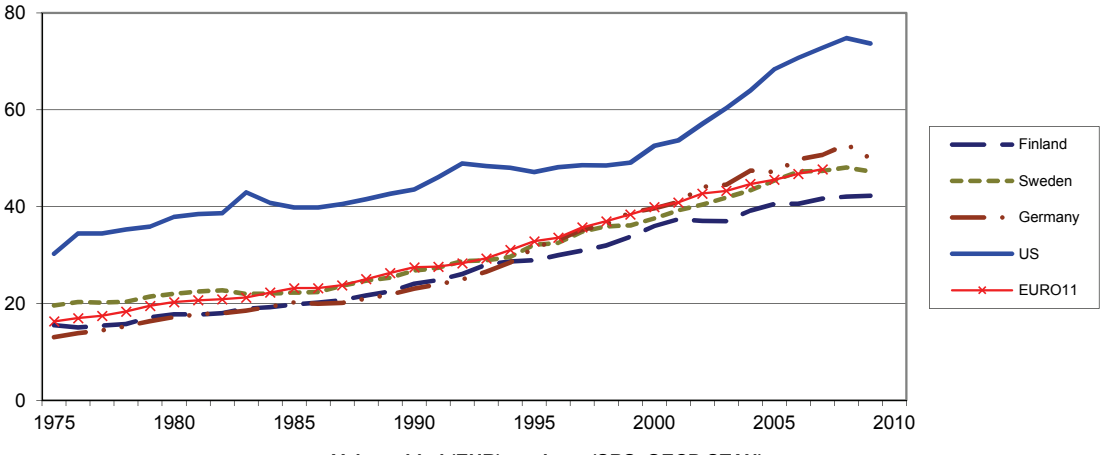
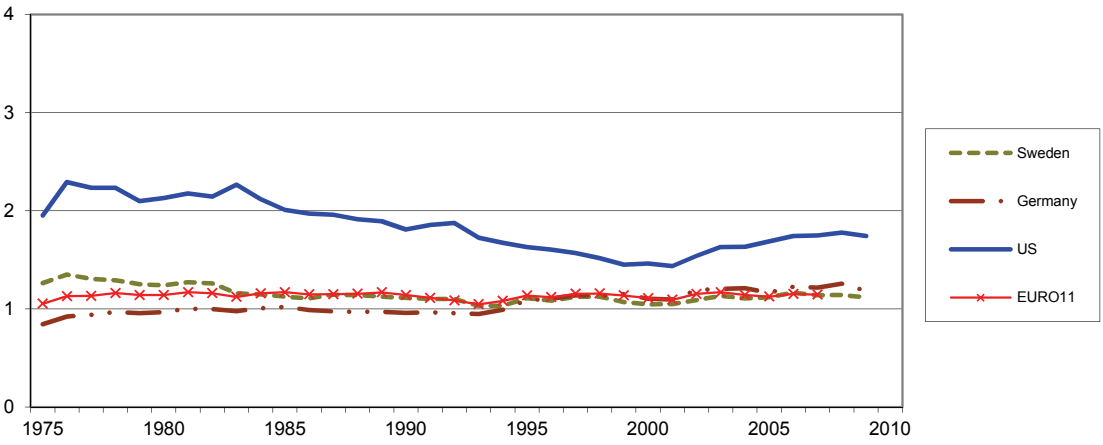


Figure B Value added per hour (SBS, OECD STAN), Finland = 1



5 Cross-country comparisons of profitability

Cross-country comparisons of profitability *(VAL/W)* were calculated at the sectoral level. For Finland, Sweden and Germany, data pertaining to value added, labour compensation and hours were obtained from Eurostat. For the US, these variables were obtained from OECD STAN and EUKLEMS and were supplemented by the US national databases. Price is an index in which Finland=1, as reported in Chapter 3. Table 1 and Appendix 2 report profitability estimates for the industrial and service sectors in Finland, Sweden, Germany and the US.

In the profitability equation, *VAL/P/h* denotes productivity, *P* describes prices and w/h denotes hourly wages. Table 1 indicates that higher productivity and prices and lower hourly wages (higher 1/w/h) are correlated with higher profitability (EUR or Finland=1). For example, higher prices and lower hourly wages render the US manufacturing industries more profitable than the Finnish, Swedish and German manufacturing industries. The main challenges in these comparisons are the price indices for electrical and optical equipment (NACE 30–33). In these industries, the prices are established by global competition; therefore, prices should be similar. However, in price development comparisons, prices in Sweden and the US are radically lower than prices in Finland. Further research is necessary to explain the remarkable differences in price levels among countries.

Table 1 Profitability comparisons at the sectoral level in 2007[4]

			EUR			*Finland=1*				
	VAL/W	*VAL/P/h*	*P*	*1/w/h*	*w/h*	*VAL/W*	*VAL/P/h*	*P*	*1/w/h*	*w/h*
Manufacturing (NACE 15–37)										
Finland	1.86	56.0	1.00	0.033	30.1	1.00	1.00	1.00	1.00	1.00
Sweden	1.23	40.7	1.04	0.029	34.5	0.66	0.73	1.04	0.87	1.15
Germany	1.45	45.2	1.07	0.030	33.4	0.78	0.81	1.07	0.90	1.11
US	2.15	49.6	1.13	0.038	26.0	1.15	0.88	1.13	1.16	0.86
Pulp, paper and paper products (NACE 21)										
Finland	1.37	51.9	1.00	0.026	37.8	1.00	1.00	1.00	1.00	1.00
Sweden	1.43	55.8	0.95	0.027	37.3	1.04	1.08	0.95	1.01	0.99
Germany	1.54	38.0	1.22	0.033	30.1	1.12	0.73	1.22	1.26	0.80
US	0.99	20.3	1.22	0.040	25.0	0.72	0.39	1.22	1.51	0.66
Chemicals and chemical products (NACE 24)										
Finland	2.22	78.6	1.00	0.028	35.3	1.00	1.00	1.00	1.00	1.00
Sweden	2.00	73.1	1.08	0.025	39.4	0.90	0.93	1.08	0.90	1.12
Germany	1.73	61.6	1.21	0.023	43.0	0.78	0.78	1.21	0.82	1.22
US	2.34	59.7	1.10	0.036	28.0	1.05	0.76	1.10	1.26	0.79
Fabricated metals (NACE 28)										
Finland	1.47	36.7	1.00	0.040	24.9	1.00	1.00	1.00	1.00	1.00
Sweden	1.11	32.5	0.98	0.035	28.6	0.76	0.89	0.98	0.87	1.15
Germany	1.74	49.0	0.99	0.036	27.7	1.18	1.33	0.99	0.90	1.11
US	1.76	36.9	0.95	0.050	20.0	1.19	1.00	0.95	1.25	0.80

[4] Appendix 2 includes all sectors.

	EUR					Finland=1				
	VAL/W	*VAL/P/h*	*P*	*1/w/h*	*w/h*	*VAL/W*	*VAL/P/h*	*P*	*1/w/h*	*w/h*
Machinery and equipment (NACE 29)										
Finland	1.51	44.6	1.00	0.034	29.5	1.00	1.00	1.00	1.00	1.00
Sweden	1.09	22.9	1.64	0.029	34.5	0.72	0.51	1.64	0.85	1.17
Germany	1.40	28.7	1.71	0.029	35.1	0.92	0.64	1.71	0.84	1.19
US	1.14	21.5	1.64	0.032	31.0	0.75	0.48	1.64	0.95	1.05
Electrical and optical equipment (NACE 30–33)										
Finland	2.79	106.1	1.00	0.026	38.1	1.00	1.00	1.00	1.00	1.00
Sweden	1.32	153.5	0.45	0.019	51.7	0.47	1.45	0.45	0.74	1.36
Germany	1.35	66.3	0.78	0.026	38.3	0.49	0.62	0.78	0.99	1.01
US	1.67	143.8	0.43	0.027	37.0	0.60	1.36	0.43	1.03	0.97
Radio, television and communication equipment (NACE 32)										
Finland	3.64	138.6	1.00	0.026	38.1	1.00	1.00	1.00	1.00	1.00
Sweden	1.56	179.6	0.45	0.019	51.7	0.43	1.30	0.45	0.74	1.36
Germany	1.06	84.3	0.48	0.026	38.3	0.29	0.61	0.48	0.99	1.01
US	3.71	216.0	0.43	0.040	25.0	1.02	1.56	0.43	1.52	0.66
Transport equipment (NACE 34–35)										
Finland	1.12	30.6	1.00	0.037	27.2	1.00	1.00	1.00	1.00	1.00
Sweden	1.12	57.6	0.73	0.026	37.8	0.99	1.88	0.73	0.72	1.39
Germany	1.36	80.2	0.73	0.023	43.1	1.21	2.62	0.73	0.63	1.58
US	2.70	97.0	0.92	0.030	33.0	2.40	3.17	0.92	0.83	1.21
Wholesale and retail trade and repairs (NACE 50–52)										
Finland	1.50	37.9	1.00	0.040	25.3	1.00	1.00	1.00	1.00	1.00
Sweden	1.09	31.0	1.08	0.033	30.7	0.73	0.82	1.08	0.82	1.21
Germany	1.68	46.4	0.89	0.041	24.5	1.12	1.23	0.89	1.03	0.97
US	1.79	39.0	0.92	0.050	20.0	1.19	1.03	0.92	1.26	0.79
Hotels and restaurants (NACE 55)										
Finland	1.21	25.2	1.00	0.048	20.8	1.00	1.00	1.00	1.00	1.00
Sweden	0.98	16.6	1.22	0.048	20.9	0.81	0.66	1.22	1.00	1.00
Germany	1.49	37.8	0.59	0.067	15.0	1.23	1.50	0.59	1.39	0.72
US	4.26	48.1	0.97	0.091	11.0	3.53	1.91	0.97	1.89	0.53

Appendix 1A Labour productivity levels in 2004

Pulp, paper and paper products (NACE 21)

Figure A Value added (EUR) per hour (SBS, OECD STAN)

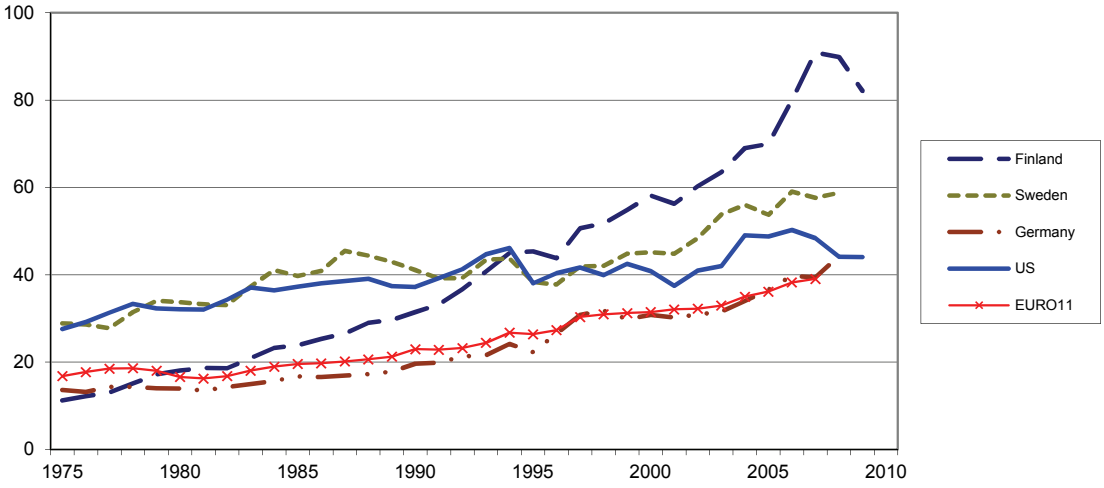
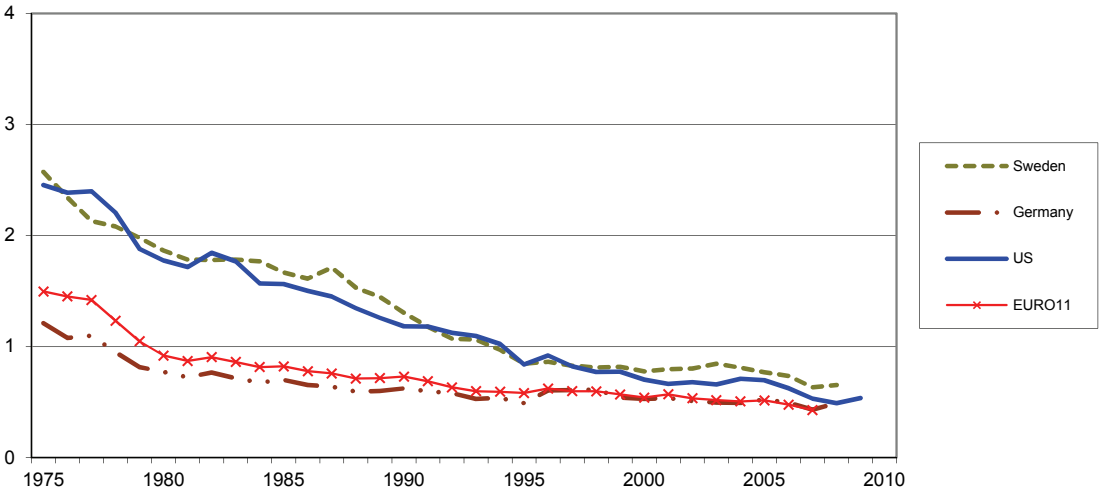


Figure B Value added per hour (SBS, OECD STAN), Finland=1



Appendix 1B Labour productivity levels in 2004

Machinery and equipment (NACE 29)

Figure A Value added (EUR) per hour (SBS, OECD STAN)

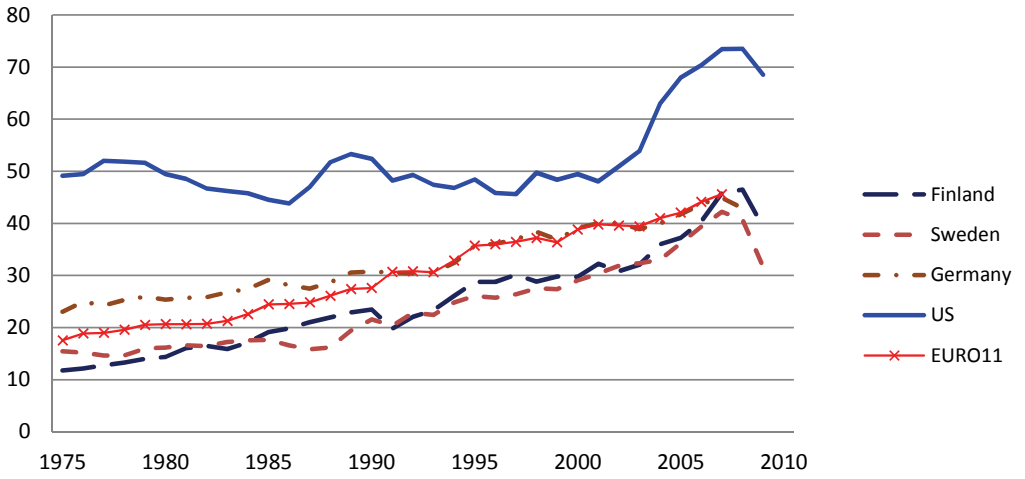
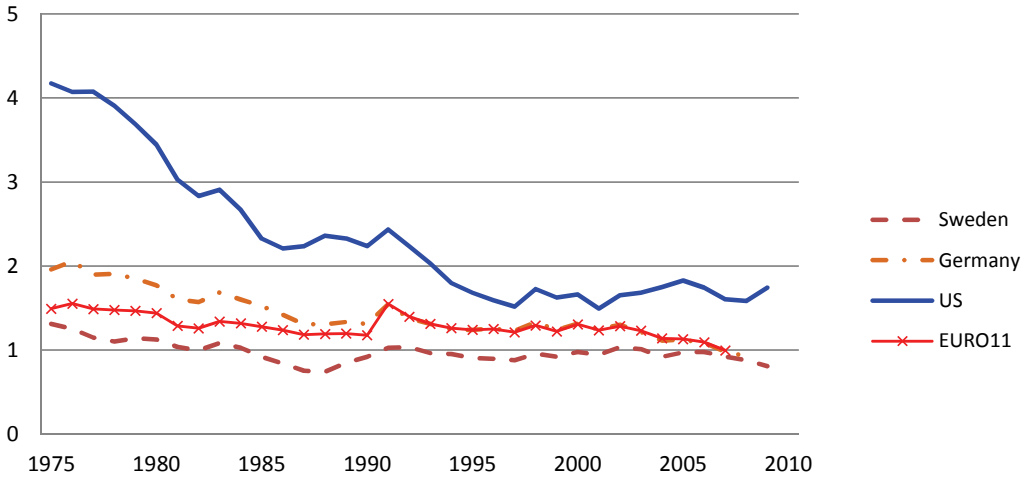


Figure B Value added per hour (SBS, OECD STAN), Finland=1



Appendix 2 Comparisons of Industrial Profitability in 2007 – Finland, Sweden, Germany and the US

	EUR					Finland=1				
	VAL/W	*VAL/P/h*	*P*	*1/w/h*	*w/h*	*VAL/W*	*VAL/P/h*	*P*	*1/w/h*	*w/h*
Manufacturing (NACE 15–37)										
Finland	1.86	56.0	1.00	0.033	30.1	1.00	1.00	1.00	1.00	1.00
Sweden	1.23	40.7	1.04	0.029	34.5	0.66	0.73	1.04	0.87	1.15
Germany	1.45	45.2	1.07	0.030	33.4	0.78	0.81	1.07	0.90	1.11
US	2.15	49.6	1.13	0.038	26.0	1.15	0.88	1.13	1.16	0.86
Wood and products from wood and cork (NACE 20)										
Finland	1.67	39.7	1.00	0.042	23.8	1.00	1.00	1.00	1.00	1.00
Sweden	1.41	38.9	0.96	0.038	26.3	0.85	0.98	0.96	0.90	1.11
Germany	1.42	30.4	1.07	0.044	22.8	0.85	0.77	1.07	1.05	0.96
US	0.92	16.7	0.94	0.059	17.0	0.55	0.42	0.94	1.40	0.71
Pulp, paper and paper products (NACE 21)										
Finland	1.37	51.9	1.00	0.026	37.8	1.00	1.00	1.00	1.00	1.00
Sweden	1.43	55.8	0.95	0.027	37.3	1.04	1.08	0.95	1.01	0.99
Germany	1.54	38.0	1.22	0.033	30.1	1.12	0.73	1.22	1.26	0.80
US	0.99	20.3	1.22	0.040	25.0	0.72	0.39	1.22	1.51	0.66
Printing and publishing (NACE 22)										
Finland	1.46	37.6	1.00	0.039	25.8	1.00	1.00	1.00	1.00	1.00
Sweden	0.95	28.5	0.98	0.034	29.3	0.66	0.76	0.98	0.88	1.13
Germany	1.31	35.3	1.01	0.037	27.3	0.90	0.94	1.01	0.95	1.06
US	2.43	55.4	0.92	0.048	21.0	1.67	1.47	0.92	1.23	0.81
Chemicals and Chemical Products (NACE 24)										
Finland	2.22	78.6	1.00	0.028	35.3	1.00	1.00	1.00	1.00	1.00
Sweden	2.00	73.1	1.08	0.025	39.4	0.90	0.93	1.08	0.90	1.12
Germany	1.73	61.6	1.21	0.023	43.0	0.78	0.78	1.21	0.82	1.22
US	2.34	59.7	1.10	0.036	28.0	1.05	0.76	1.10	1.26	0.79
Basic metals (NACE 27)										
Finland	2.73	90.6	1.00	0.030	33.1	1.00	1.00	1.00	1.00	1.00
Sweden	1.37	37.3	1.29	0.029	34.9	0.50	0.41	1.29	0.95	1.05
Germany	1.53	48.7	0.87	0.036	27.7	0.56	0.54	0.87	1.19	0.84
US	1.61	37.7	0.94	0.045	22.0	0.59	0.42	0.94	1.51	0.66
Fabricated metals (NACE 28)										
Finland	1.47	36.7	1.00	0.040	24.9	1.00	1.00	1.00	1.00	1.00
Sweden	1.11	32.5	0.98	0.035	28.6	0.76	0.89	0.98	0.87	1.15
Germany	1.74	49.0	0.99	0.036	27.7	1.18	1.33	0.99	0.90	1.11
US	1.76	36.9	0.95	0.050	20.0	1.19	1.00	0.95	1.25	0.80
Machinery and equipment (NACE 29)										
Finland	1.51	44.6	1.00	0.034	29.5	1.00	1.00	1.00	1.00	1.00
Sweden	1.09	22.9	1.64	0.029	34.5	0.72	0.51	1.64	0.85	1.17
Germany	1.40	28.7	1.71	0.029	35.1	0.92	0.64	1.71	0.84	1.19
US	1.14	21.5	1.64	0.032	31.0	0.75	0.48	1.64	0.95	1.05

	EUR					Finland=1				
	VAL/W	*VAL/P/h*	*P*	*1/w/h*	*w/h*	*VAL/W*	*VAL/P/h*	*P*	*1/w/h*	*w/h*
Electrical and optical equipment (NACE 30–33)										
Finland	2.79	106.1	1.00	0.026	38.1	1.00	1.00	1.00	1.00	1.00
Sweden	1.32	153.5	0.45	0.019	51.7	0.47	1.45	0.45	0.74	1.36
Germany	1.35	66.3	0.78	0.026	38.3	0.49	0.62	0.78	0.99	1.01
US	1.67	143.8	0.43	0.027	37.0	0.60	1.36	0.43	1.03	0.97
Office, accounting and computing machinery (NACE 30)										
Finland	1.40	53.2	1.00	0.026	38.1	1.00	1.00	1.00	1.00	1.00
Sweden	0.20	23.1	0.45	0.019	51.7	0.14	0.43	0.45	0.74	1.36
Germany	1.01	49.3	0.78	0.026	38.3	0.72	0.93	0.78	0.99	1.01
US	0.95	68.2	0.43	0.032	31.0	0.68	1.28	0.43	1.23	0.81
Electrical machinery and apparatus, nec (NACE 31)										
Finland	1.64	62.6	1.00	0.026	38.1	1.00	1.00	1.00	1.00	1.00
Sweden	0.93	75.4	0.64	0.019	51.7	0.56	1.21	0.64	0.74	1.36
Germany	0.70	41.8	0.64	0.026	38.3	0.42	0.67	0.64	0.99	1.01
US	0.91	35.9	0.66	0.038	26.0	0.55	0.57	0.66	1.46	0.68
Radio, television and communication equipment (NACE 32)										
Finland	3.64	138.6	1.00	0.026	38.1	1.00	1.00	1.00	1.00	1.00
Sweden	1.56	179.6	0.45	0.019	51.7	0.43	1.30	0.45	0.74	1.36
Germany	1.06	84.3	0.48	0.026	38.3	0.29	0.61	0.48	0.99	1.01
US	3.71	216.0	0.43	0.040	25.0	1.02	1.56	0.43	1.52	0.66
Medical, precision and optical instruments (NACE 33)										
Finland	1.50	57.2	1.00	0.026	38.1	1.00	1.00	1.00	1.00	1.00
Sweden	0.85	98.2	0.45	0.019	51.7	0.56	1.72	0.45	0.74	1.36
Germany	1.47	72.2	0.78	0.026	38.3	0.98	1.26	0.78	0.99	1.01
US	2.47	87.9	0.73	0.038	26.0	1.64	1.54	0.73	1.46	0.68
Transport equipment (NACE 34–35)										
Finland	1.12	30.6	1.00	0.037	27.2	1.00	1.00	1.00	1.00	1.00
Sweden	1.12	57.6	0.73	0.026	37.8	0.99	1.88	0.73	0.72	1.39
Germany	1.36	80.2	0.73	0.023	43.1	1.21	2.62	0.73	0.63	1.58
US	2.70	97.0	0.92	0.030	33.0	2.40	3.17	0.92	0.83	1.21
Wholesale and retail trade and repairs (NACE 50–52)										
Finland	1.50	37.9	1.00	0.040	25.3	1.00	1.00	1.00	1.00	1.00
Sweden	1.09	31.0	1.08	0.033	30.7	0.73	0.82	1.08	0.82	1.21
Germany	1.68	46.4	0.89	0.041	24.5	1.12	1.23	0.89	1.03	0.97
US	1.79	39.0	0.92	0.050	20.0	1.19	1.03	0.92	1.26	0.79
Hotels and restaurants (NACE 55)										
Finland	1.21	25.2	1.00	0.048	20.8	1.00	1.00	1.00	1.00	1.00
Sweden	0.98	16.6	1.22	0.048	20.9	0.81	0.66	1.22	1.00	1.00
Germany	1.49	37.8	0.59	0.067	15.0	1.23	1.50	0.59	1.39	0.72
US	4.26	48.1	0.97	0.091	11.0	3.53	1.91	0.97	1.89	0.53
Transport, storage and communications (NACE 60–64)										
Finland	1.50	41.7	1.00	0.036	27.7	1.00	1.00	1.00	1.00	1.00
Sweden	2.32	47.4	1.43	0.034	29.3	1.54	1.14	1.43	0.95	1.06
Germany	2.71	50.7	1.28	0.042	24.0	1.80	1.22	1.28	1.15	0.87
US	3.09	72.8	1.06	0.040	25.0	2.06	1.75	1.06	1.11	0.90

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